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UTILIZATION OF THE CLOZE PROCEDURE AS A TEACHING TECHNIQUE

by

Michael Roy Sampson

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I hereby recommend that this dissertation prepared under my direction

by Michael Roy Sampson

entitled Utilization of the Cloze Procedure as a Teaching Technique

be accepted as fulfilling the dissertation requirement for the Degree

of Doctor of Philosophy.

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Final approval and acceptance of this dissertation is contingent on the candidate's adequate performance and defense thereof at the final oral examination.

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ABSTRACT

The purpose of this study was to examine the use of the cloze procedure as a teaching technique. Investigated was the effectiveness of cloze in improving reading comprehension, strengthening vocabularies, and encouraging divergent production.

To this end, answers to the following questions were sought.

1. Does the instructional use of cloze result in statistically significant increases in comprehension scores on the Gates-MacGinitie Reading Tests (GMRT)?

2. Does the instructional use of cloze result in statistically significant increases in vocabulary scores on the GMRT?

3. Does the instructional use of cloze result in statistically significant increases in comprehension scores on the Cloze Comprehension Test?

4. Does the instructional use of cloze result in statistically significant increases in divergent production scores on the Cloze Divergent Production Test?

The population for this study consisted of the third grade classes of a metropolitan school district in Tucson, Arizona. The sample consisted of 92 students from three

schools. Students were randomly assigned to experimental or control groups within three randomly selected classrooms.

The study spanned a fifteen week period. During this time, the control group students worked in a basal reader and reading centers. The experimental group students worked in the same basal reader and attended the same centers. However, cloze exercises from Read On were substituted for different reading centers three times per week. The students completed the cloze exercises individually and then met in groups of six to eight and shared their answers. Discussions focused upon the fact that a variety of answers could be used with most cloze blanks and on the reasons why a particular response would or would not work according to the context surrounding the deletion.

Initial pretest score differences led to the vocabulary and comprehension data being analyzed by a two way analysis of covariance on posttest scores. The divergent production data were analyzed using a t-test for two related samples.

The data analysis yielded these findings.

1. There was no significant statistical difference at the 0.05 level between vocabulary scores on the GMRT of students who received cloze treatment and those who did not.

2. There was a significant statistical difference at the 0.05 level between comprehension scores on the GMRT

of students who received cloze treatment and those who did not. The difference was in favor of the experimental group.

3. There was a significant statistical difference at the 0.05 level between comprehension scores on the Cloze Comprehension Test of students who received cloze treatment and those who did not. The difference was in favor of the experimental group.

4. There was a significant statistical difference at the 0.05 level between pretest scores and posttest scores on the Cloze Divergent Production Test of students who received the cloze treatment. The divergent production of the students had increased.

The findings of the study supported these conclusions.

1. The cloze procedure is an effective technique in the area of reading comprehension development.

2. The cloze procedure is an effective method of increasing the divergent production of students.

3. The cloze procedure is as effective as but not superior to other techniques in the area of vocabulary development.

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

1. The cloze procedure encourages divergent production. The give-and-take atmosphere of group discussion frees

students to express their own thoughts. The end result is that the divergent production is enhanced.

2. The cloze procedure as utilized in this study is not necessarily recommended for vocabulary development.

3. The cloze procedure as utilized in this study is recommended for increasing reading comprehension.

CHAPTER 1

INTRODUCTION

Cloze procedure gained prominence in the field of reading when Taylor (1953) wrote the landmark work utilizing the technique in education. The term itself has been attributed to the Gestalt psychology of closure--the tendency to complete a familiar but unfinished pattern or to see the pattern as a whole, mentally closing the gaps. Cloze procedure is most commonly thought of as a tool to be used in evaluating the difficulty or readability of reading materials. However, many educators believe that cloze is most useful as a teaching technique, a tool to be used to encourage the use of context clues, to strengthen vocabularies, and to improve reading comprehension. This experimental study examined the effectiveness of the cloze procedure as a teaching procedure in those areas.

The Problem

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

Background of the Study

As early as 1908, Huey (1968) brought attention to the importance of readers selectively interacting with print in his classic work The Psychology and Pedagogy of Reading. The cloze procedure facilitates this interaction as a reader encounters a deletion. The reader begins a search for information by sampling the semantic, syntactic, and, when available, the graphic cues offered, and his role is changed from that of a passive receiver to that of an active participant.

The student who chooses an appropriate word to fill in a cloze unit might also use this same skill of using the context in his own private reading when he encounters an unknown word. Gunn and Elkins recommend that cloze exercises should be followed by teacher-directed attention to "the possibilities of using the same strategies in future reading" (1976, pp. 5-6).

Hall and Ramig (1978) cite the cloze procedure as having a linguistic base. They advocate its instructional use in connection with vocabulary and comprehension work, and they point out that the cloze procedure can "show the effect of context on the meaning of a word" (Hall and Ramig, 1978, p. 91).

Smith states that one of the basic skills of reading is "the elimination of alternatives through the use of redundancy" (1978, p. 17). Cooper and Petrosky (1976) recommend that cloze passages "designed especially for teaching about redundancy" (p. 203) be used to increase students' insightfulness about redundancy in printed materials.

Significance of the Study

The cloze procedure would appear to be an excellent method of involving students in the reading process in an instructional manner. Its inherent quality of forcing readers to interact with print should result in improved comprehension. Following completion of cloze activities, group discussions about decisions students made and the reasons for those decisions should result in vocabulary development because of student interaction.

Few studies have been conducted with cloze as a teaching tool, and thus little research base exists. Jongsma's (1971) review covered only four studies in which the cloze experimental population were elementary students. He concluded that the sparse research did not support the cloze procedure as being an effective teaching technique. However, he suggested that factors outside the cloze procedure itself might have led to this lack of empirical support. These factors included: (1) The failure of investigators to incorporate direct instruction with the use of cloze, (2) expectation of the cloze procedure to improve "general reading ability" with no focus on specific aspects of reading, (3) weak experimental designs, (4) problems of measuring student gains, and (5) the limited amount of time spent on cloze instruction.

In the period of time between Jongsma's 1971 review and the present, many articles and conference reports supporting instructional uses of the cloze procedure have been formulated. However, few research based studies with elementary students were carried out. Of these, results were mixed as to the significance of instructional gains. Several of the later studies were superior to earlier studies in aspects such as the incorporation of direct instruction with the cloze and the allowing of students to discuss their responses, but all suffered from either a lack of a sufficient supply of well designed instructional cloze materials or from insufficient amounts of exposure to cloze treatments.

It seemed worthwhile, therefore, to conduct a study with a strong experimental design that would deal with the question of the effectiveness of the cloze procedure as a teaching technique over an extended period of time.

Statement of the Problem

Answers to several questions concerning the effectiveness of cloze as a teaching technique were sought in this study. The following null hypotheses were tested:

1. There is no significant (alpha = 0.05) statistical difference between vocabulary scores on the *Gates-MacGinitie Reading Tests* of students who receive cloze treatment and those who do not.
2. There is no significant (alpha = 0.05) difference between comprehension scores on the *Gates-MacGinitie Reading Tests* of students who receive cloze treatment and those who do not.
3. There is no significant (alpha = 0.05) difference between comprehension scores on the Cloze Comprehension Test of students who receive cloze treatment and those who do not.
4. There is no significant (alpha = 0.05) difference between pretest scores and posttest scores on the Cloze Divergent Production Test before and after the experimental treatment.

Limitations

This study was limited in the following ways:

1. Only third grade students were used.
2. The sample size was limited to 92 students.

3. It was assumed that the instruments yielded a reliable indication of children's vocabulary, comprehension, and divergent production.

Definition of Terms

Definitions of the following terms are supplied so as to enable the reader to better understand the use of the specialized terminology:

1. Cloze. "A method of intercepting a message from a 'transmitter' (writer or speaker), mutilating its language patterns by deleting parts, and so administering it to 'receivers' (readers or listeners) that their attempts to make the patterns whole again potentially yield a considerable number of cloze units" (Taylor, 1953, p. 416).
2. Cloze Comprehension Test. An instrument developed to serve as a pretest, posttest measurement of comprehension for this study.
3. Context. "The setting, physical or linguistic, in which words occur and which places constraints on the range of alternatives that these words might have" (Smith, 1978, p. 240).
4. Cloze Divergent Production Test. A cloze instrument developed for this study to serve as a pretest, posttest measure of the range of children's responses.

5. Exact Replacement. A cloze replacement which is the same as the original word deleted from a passage.
6. Read On Comprehension Cloze Activities. Published materials in which students are generally required "to supply, in context, bits of information which are typically considered to be context clues." Highlighted are "those facets of vocabulary, relationships, and personal involvement which are important to comprehension" (Valmont and Cera, 1979, p. T3).
7. Read On Phonics Cloze Activities. Published materials in which students are required to "combine their knowledge of semantics, syntax, and phonics in order to complete the cloze blanks successfully" (Valmont and Cera, 1979, p. T2).
8. Semantically Consistent Replacement. A cloze replacement in which the replacement of the deleted item is acceptable within the context surrounding the deletion.

CHAPTER 2

REVIEW OF THE LITERATURE

In this chapter is a review of the related relevant literature in two areas: (1) the reading process and the cloze procedure; and, (2) the cloze procedure as a teaching technique.

The Reading Process and the Cloze Procedure

The reading process involves the interaction of language and thought between the reader and the author. Recent work in the areas of psychology, linguistics, and information theory (Miller, 1956; Kohlers, 1969; Goodman, 1965, 1967, 1973; Smith, 1971, 1973, 1975; Lindsay and Norman, 1972) have attempted to explore this interaction (Lindberg, 1977). For example, Goodman (1978) describes reading as being an active process involving cognitive functioning. His model states that the reader uses three kinds of information available to him. These interrelated systems include the symbol system or graphophonic cues, the language structure or syntactic cues, and semantic or meaning cues. The symbol system uses relationships between graphic shapes and sounds. Language structure refers to grammar or the syntactic relationships which exist in language. The semantic system includes conceptual structures which may be organized into meaning. Readers use these three information sources as they attempt to bring meaning to the visual markings before them.

The brain, as the information processing organ, attempts to minimize the effort required to reach meaning by deciding what tasks must be met, what information is available and where to seek it, which strategies should be used, and which input channels to use. Once a meaning choice is arrived at, it is tested for appropriateness with the context of the sentence or passage. If meaning is not achieved, then a "short circuit" occurs. The reader, in order to be productive, must modify or reject his choice as he regresses to the original point of meaning interference, rereads, and reconstructs until meaning is achieved.

The cloze procedure requires readers to respond to a reading passage by supplying words which have been deleted from the text. It demands that the reader search for information clues in order to predict what word or type of word could go in the deletion. In order to fit the deletion, the word must be syntactically and semantically consistent with the rest of the sentence. Graphic clues, if any are present, must also be utilized. These are the same processes which psycholinguistic theory asserts takes place during reading (Yellin, 1978).

Lindberg (1977, p. 179) looked at the relationships between syntactically and semantically acceptable cloze responses in an attempt to find out if cloze was more of a measure of grammatical than of semantic understanding. She found that with fourth grade readers cloze did not appear to be just a measure of grammatical knowledge, as readers made use of both cue systems. She concluded that "the cloze procedure, at least for non-conceptually dense materials, measures the ability to process for meaning as well as for grammatical structures," (p. 230).

Cambourne (1977, p. 5) feels many similarities exist between the working of cloze activities and reading. He says:

> To complete a test which has various kinds of deletions systematically distributed through it, requires the reader firstly to sample the graphic display and secondly to fill in the gaps by making educated 'guesses' (predictions, etc.) about the appropriate word(s) which need(s) to be put back. These educated guesses it seems, are based on a number of psycholinguistic processes, e.g., the reader's feel for the way language flows (i.e., syntactic knowledge) his/her knowledge of the story-line or topic being read about and his/her memory for the way the story/topic has been developing (i.e., semantic knowledge).

Reading and completing cloze units are different conceptual tasks. However, this researcher concurs with Cambourne in arguing that the same kinds of processes (the use of semantic, syntactic, and graphic cues) do underlie both reading and cloze activities. The working of cloze activities should emphasize to the reader that meaning for cloze blanks may be obtained by using these cue systems in conjunction with one another. These same processing strategies might well be used by students in their everyday reading.

Literature Relating to the Cloze Procedure as a Teaching Technique

Very little research has been reported on the subject of using the cloze procedure as a teaching technique. A close examination of the relatively small body of literature reveals that many of the sources are suggestions concerning how to use the cloze procedure as a technique, leaving an even smaller number of studies with a research base. This review of literature is restricted to those research based studies at the elementary school level.

Schneyer (1965) investigated the effects the cloze procedure had upon reading comprehension. The control group consisted of 22 boys and 12 girls who received regular basal reader instruction, while the experimental group, made up of 19 boys and 13 girls, received cloze passages in addition to their regular basal instruction. Students involved were sixth graders. The cloze passages were 200 words in length with 20 deletions and were selected from basal readers. Deletion patterns were of two types: noun-verb and every tenth word. A total of 57 exercises were constructed. Immediate feedback was given students as cloze passages were scored on the same day and returned. Only exact replacement responses were indicated as being correct. Scores were obtained for each student from the Gates Reading Survey (Form I), the California Test of Mental Maturity (Elementary Level, short form) and an informal word recognition inventory at the beginning of the study. Form II of the Gates Reading Survey was given as a posttest after eleven weeks. The results were used in an analysis of covariance. No significant differences between the two groups in comprehension scores were found. Schneyer hypothesized that discussions with the students of why they completed a deletion with a certain response might have been better than just checking the response as being right or wrong. The strong point of the study was that students worked with the cloze procedure daily. However, failure to discuss responses probably distracted from possible gains. The generalizability of the study is questionable because of the lack of randomnization in the selection and assignment of students. Teacher differences were not considered, and gains in areas other than comprehension were not investigated.

Kingston and Weaver (1970) attempted to utilize the cloze procedure as a teaching technique. The population consisted of 74 culturally different first graders who were participating in a language experience approach to beginning reading. The children's experience scores were taken and adapted by deleting lexical items. Students were asked to provide words that would made sense in the cloze blanks, and their answers were discussed. Tests given during the school year included a series of cloze tests with four basic patterns: (1) nth word deletions, (2) multiple choice cloze, or maze, (3) lexical cloze, and (4) aural-reading cloze. It was concluded that first graders can effectively participate in cloze activities and that cloze tests are effective predictors of first grade achievement in reading.

The effect of cloze training upon the reading comprehension of fourth graders was investigated by Faubion (1972). The cloze training focused upon students' verbalization and use of structure words in response to cloze activity. Two fourth grade classrooms were assigned to treatment groups, and one fourth grade classroom was assigned to a control group. The _Stanford Reading Achievement Test_, Form W, and the _CTAGI_ were used as pre-test measure of reading comprehension. Two series of one-hundred word passages were developed from social studies materials. One series of lessons used the every fifth word deletion pattern while the other utilized a structure word deletion pattern.

Treatment covered a ten day period, with students in each experimental group receiving exercises with both deletion patterns daily. Exercises were scored and handed back the following day. Experimental group B differed from experimental group A in that they were encouraged to verbalize about their responses.

Posttest measures of reading comprehension included the CTAGI and the Stanford Reading Achievement Test, Form X. These measures indicated no significant difference between the two experimental groups or between the experimental groups and the control group.

It would seem that this outcome was a predictable one considering the brief amount of instructional time provided in the study. Ten days of instruction using a total of twenty cloze exercises was probably not enough to result in students' gains.

Blackwell, Thompson and Dziuban (1972) investigated the value of using the cloze technique for increasing vocabulary development. Subjects for their study consisted of twenty-nine third and fourth grade students. The pretest/posttest measure was the Stanford Diagnostic Reading Test, Form W. The experimental group worked a series of cloze passages as a treatment. The cloze passages had an automatic deletion count of five. The control group dramatized the identical stories completed as cloze passages by the experimental group. The study covered a five-week time interval.

Results revealed superior vocabulary score gains (a < 0.05) by the experimental group. The teacher also reported that the students found the cloze procedure to be highly interesting.

A study using the cloze procedure to improve reading comprehension was reported by Kennedy and Weener (1973). Eighty remedial third grade readers were divided into two control and two experimental groups. Control group one received no treatment. Control group two practiced oral reading. One experimental group received visual training using the cloze procedure and the other experimental group received auditory training with the cloze procedure. Training consisted of the use of sentences and stories for twenty-minute sessions. Five such sessions were conducted. Results of the Durrell Listening-Reading Series reading comprehension subtest indicated that visual training with close exercises improved reading comprehension scores. Improvement was also seen in the experimental group which received auditory training, but their scores were lower than those of the control class group.

Kennedy and Weener conjectured that cloze procedure training aided student ability to use context clues. They also surmised that the cloze procedure had the effect of encouraging students to pay attention to units longer than the word. The results of Kennedy and Weener's study are thus supportative of the usage of the cloze procedure as an instructional strategy for remedial readers.

Paradis and Bayne (1975) examined the effect of systematic cloze instruction on the reading achievement of first and second grade students. Nine second grade students and twenty-two first grade students with reading abilities ranging from pre-primer to third grade were selected as sbujects. A posttest only control group design was utilized. Instructional groups were based upon teacher judgment. Within instructional groups, students were assigned to experimental and control treatments. The experimental treatment consisted of cloze materials developed from basal reader materials at students' instructional reading levels. An equal number of lexical and structure words were deleted with no systematic nth word deletion pattern. Words deleted usually were introductory or recently introduced ones. The lesson format was as follows: The teacher read the first paragraph in the story to the students. The students were then given the story and asked to fill in the blanks. The teacher and students would then discuss the words the students had provided and the merits of their selections. The average lesson was between 10 and 15 minutes long.

The control treatment consisted of self-selected reading for approximately two-thirds of the time and phonics skill reinforcement for the other third. Again, ten to fifteen minutes were allowed for these activities.

The study was carried out over an eight week period. Two or three sessions were provided each week for an average time of thirty minutes per week. Measuring instruments consisted of: (1) a cloze test designed for the study, (2) the "Word Recognition Lists" from the Diagnostic Reading Scales, and (3) reading subtests of the Stanford Achievement Test, Primary Level 1. Results of the test indicated no significant effect from cloze instruction, as the control group students had equal gains as the experimental group students.

Gunn and Elkins (1976) examined the use of cloze materials with a third grade classroom. Included in the cloze materials were exercises which pointed to the role of function words as well as vocabulary-development tasks. Significant reading comprehension gains (as measured by an unnamed standardized test) were noted after an eight week period. The authors inferred that "the tasks" demands of the exercises, the language interactions which followed, and teacher-directed attention to specific applications . . . all contributed to growth in the conceptual and linguistic skills which influence comprehension" (p. 12).

Houston (1976) used twelve sixth grade classes as subjects in a study which examined an every tenth word deletion count with a cloze experimental group and an every tenth word deletion count with the first letter retained with a modified cloze experimental group. Treatment for each of these groups included 27 cloze lessons. A control group received no treatment. The Gates-MacGinitie Reading Tests were used as pretest and posttest measures. An analysis of variance of pretest scores revealed significant differences between the experimental and control groups. Therefore, Houston used analysis of convariance to analyze the posttest data. Her findings were that no significant differences in vocabulary scores existed between the experimental and control groups at the 0.05 level. Significant differences were found in favor of the control group (alpha = 0.05) over the experimental groups in reading comprehension scores. In comparisons between the two experimental groups, it was found that no significant difference (alpha = 0.05) existed in vocabulary scores while the cloze group did significantly better (alpha = 0.01) than the modified cloze group in comprehension.

Johns (1977) conducted a study in which 222 fourth grade students were assigned to a control group and three cloze experimental groups. The experimental groups included: (1) a group that was given every tenth word cloze deletions; (2) a group that was given noun-verb cloze deletions; and (3) a group that was given modified cloze deletions.

Instruction spanned a 24-week period and included 48 cloze lessons. No significant differences in vocabulary or comprehension scores (as measured by Survey D of the <u>Gates-MacGinitie Reading Tests</u> were found among the groups. A major flaw in Johns' study appeared to be in the materials used for the cloze instruction. Johns reported that it was very difficult to locate interesting and varied materials and the available material was heavily concentrated in the field of science. In addition, Johns made no visitations to view the experimental groups, so it was difficult to ascertain how effective the teachers of the groups were in the cloze instruction process.

Yellin (1978) conducted an investigation in which cloze product and process approaches for teaching reading comprehension were compared. In the product approach, students worked cloze exercises individually and were given the "correct" answers to the exercises and asked to grade their papers. In the process approach, discussions were held and students shared why they responded to the cloze blanks in the manner they did. One-hundred and four fifth graders were involved in the study, with two classes being assigned to the product approach and two classes being assigned to the process approach. Instruments used to measure reading comprehension included the first edition of the <u>Gates-MacGinitie Reading Tests</u>, Survey, D, and a cloze test.

Exact replacement criteria were used in scoring the cloze test. Yellin's cloze treatment exercises were narrative and expository material selected from the SRA Power Builders Kit Lab IIB and IIC. Readability of the material ranged from 2.0 to 4.5. An every fifth word deletion pattern was utilized. Treatment consisted of 30 cloze exercises over a six week period. The data were examined by means of a two-way analysis of covariance. No statistically significant difference was found between the product approach and the process approach group or between high, average, and low readers in the two groups.

Yellin felt that the six week period of time that his study spanned was too brief to allow the cloze instrument to show gains. He also recommended that the study be replicated and synonym scoring of cloze tests be compared with the exact response scoring.

Summary

This chapter reviewed ten cloze elementary instruction research studies (see Table 1). Eight of the reported studies have been conducted since Jongsma's 1971 review of cloze teaching research. At that time, Jongsma recommended that future studies incorporate direct instruction with the use of cloze, focus on specific aspects of reading, feature strong experimental designs, use different types of

Table 1. Summary of Cloze Elementary Instructional Research.

Researcher(s)	Population	Instructional Objective	Results
Schneyer (1965)	Sixth graders (n=18)	Reading comprehension	No significant difference
Kingston and Weaver (1970)	Culturally different first graders (n=74)	To determine if first graders were capable of completing cloze activities	First graders were capable of working cloze activities. Cloze tests were effective predictors of first grade reading achievement.
Faubion (1972)	Fourth graders (n=3 classrooms)	Reading comprehension	No significant difference
Blackwell, Thompson, and Dziuban (1972)	Third and fourth graders (n=29)	Vocabulary development	Significant gains in vocabulary development
Kennedy and Weener (1973)	Remedial third graders (n=80)	Reading comprehension	Visual training with cloze exercises improves reading comprehension
Paradis and Bayne (1975)	First and second graders	Reading achievement	No significant difference
Gunn and Elkins (1976)	One third grade classroom	Reading comprehension	Significant gains in reading comprehension
Houston (1976)	Twelve sixth grade classes	Reading comprehension Vocabulary development	Significant control group gains in reading comprehension No significant gains in vocabulary development
Johns (1977)	Fourth graders (n=222)	Reading comprehension Vocabulary development	No significant difference
Yellin (1978)	Fourth graders) (n=104)	Reading comprehension	No significant difference between product and process cloze groups

instruments to measure reading gains, and allow longer periods of time for cloze instruction. An examination of these eight studies shows sporadic compliance with Jongsma's recommendations. The majority of the studies did employ direct teaching with the cloze procedure, but experimental designs continued to be weak. Treatment continued to be over short periods of time--Faubion, ten days; Blackwell, Thompson, Dziuban, five weeks; Paradis and Bayne, eight weeks. Johns' study did span an adequate period of time, but suffered from a lack of appropriate cloze materials and the lack of a test that was sensitive to reading gains. Yellin did provide an adequate test, a cloze measure, but his exact replacement scoring requirements probably penalized students for being creative and different in their responses.

Therefore, it appeared that while some studies had complied with some of Jongma's recommendations, a study had not yet been conducted which combined them all. This study attempted to do just that, as direct structured instruction was combined with the cloze exercises, specific aspects of reading ability were focused upon, a strong experimental design was employed, a cloze testing format was employed, and the study spanned thirteen weeks of instruction.

CHAPTER 3

DESIGN OF THE STUDY

The purpose of this chapter is to present information concerning: (1) the population and the sample, (2) training of the teachers, (3) nature of the treatment, (4) instruments, (5) scoring of the instruments, and (6) research design and data analysis.

The Population

Third grade classes of a metropolitan school district in Tucson, Arizona, comprised the population of this study. The district had ten elementary schools with a total elementary school population of 4,729 students. Approximately 25% of the students came from low income families. The district was comprised of 84% Anglo students, 12% Hispanic students, 2% Black students, 1½% American Indian students, and ½% Asian students.

The Sample

The sample was comprised of third grade students (n = 92) from three schools. Five of the ten elementary school prinicpals contacted consented to have their school participate in the study. At least one teacher in each of the five schools volunteered the use of their reading class. Three teachers were randomly selected to participate in the study from the pool of volunteers. Only students reading at a third grade or higher instructional reading level (according to the teacher's judgment) participated in the study. The three schools were representative of the district in terms of socio-economic status.

Schools 1 and 2 had an organizational structure in which students from four different classroom teachers received reading instruction from one reading teacher. Therefore, the teacher effect was balanced as students from all four third grade sections received instruction from the same reading teacher. All subjects had an equal opportunity to be chosen or not chosen to participate in the study and an equal opportunity to be assigned to either the control or experimental treatment.

School 3 differed from Schools 1 and 2 in that a single self-contained third grade classroom was used. Of the twenty-seven students in the class, eleven were randomly assigned to the control treatment, eleven were randomly assigned to the experimental treatment, and five did not possess the required third grade instructional reading level and did not participate in the study.

Training of Teachers

The teachers who were selected for participation in the study received two one hour sessions of training in how to use the cloze procedure as a teaching technique before the start of the project. The teachers not selected received the same training after the conclusion of the study. Specifically, training centered on the semantic, syntactic and, when available, graphic clues that cloze provides, and on how cloze lessons might be integrated into a school's regular reading program.

Nature of the Treatment

Read On Cloze Exercises

Twenty-seven cloze exercises from the Read On series were selected for use in this study. The materials were of a high interest, low vocabulary nature, as the topics and illustrations were designed to appeal to children of the nine through twelve age range while the Spache readability levels for the stories never exceeded 2.9. The authors' perceptions about the reading process and the importance of context clues is revealed in the following quotation:

> Reading is a process in which readers continually make predictions, sample information, and confirm that which they expect to see in print. Meaning is not on a printed page; people create meaning in their minds and project it onto the materials they are reading. Reading comprehension occurs when the reader's

> thinking processes are stimulated by the graphic (printed) clues on a page. Growth in reading with comprehension depends, in part, on identifying and using context clues. In Read On, context clues are viewed as being related to three aspects of general comprehension: vocabulary including comparisons, contrasts, multiple meanings, synonyms, antonyms, and idioms; relationships including main idea/detail, sequence, cause/effect, inference, conclusions, relating information, analogous relations, and classification; and personal involvement including evaluating characters, evaluating opinions, and author's purposes (Valmont and Cera, 1979, p. T1).

The deletion pattern of the Read On materials is of a selective nature, with words being deleted that emphasize facets of vocabulary, relationships, personal involvement, and specific phonic elements. For example, in a cause and effect lesson, the cause might remain in the story while the effect is deleted. Other selections present specific sound-symbol relationships via an intentional cloze deletion pattern that focuses upon these relationships.

Experimental Group Treatment

The experimental group treatment consisted of the school's regular reading instruction with the additional treatment of twenty-seven exposures to cloze materials from Read On (Valmont and Cera, 1979). The specific lessons utilized are referenced in Appendix G.

The students completed three cloze lessons each week. They were given approximately twelve minutes to read the selections and respond to the cloze units. At the conclusion of that time, students met with their teacher and other students who had completed the activity. The group of six to eight students shared their answers and discussed the various possibilities that semantically and syntactically could complete the cloze units. Graphic clues, when present, were also utilized. The group discussions focused upon the fact that a variety of answers could be used with most cloze blanks and on the reasons why a particular response would or would not work according to the context surrounding the deletion. This activity involved approximately eight minutes. Total instructional time was held constant with the control group, as the experimental group met in a cloze center in lieu of one of their reading centers.

Control Group Treatment

The control group treatment consisted of the regular reading instruction provided by the teacher. This instruction included work in basal readers and reading centers. These centers dealt with comprehension, research skills, phonic activities, independent reading, listening, creative writing, and various other reading and language related topics.

Instruments

The following instruments were used to collect the data necessary to test the hypotheses: (1) reading comprehension and vocabulary subtests of the *Gates-MacGinitie*

Reading Tests, Second Edition, Level C, Forms 1 and 2 (1978); (2) the Cloze Comprehension Test designed by the researcher; and, (3) the Cloze Divergent Production Test which was a modified passage from Read On (Valmont and Cera, 1979).

The Gates-MacGinitie Reading Tests, Second Edition, Level C

Forms 1 and 2 were used as a pretest and posttest to measure reading comprehension and vocabulary. Working time for the comprehension section was 35 minutes while working time for the vocabulary section was 20 minutes.

The content and nature of the Gates-MacGinitie Reading Tests are described briefly below.

Vocabulary. This subtest employs a multiple-choice format in which the student is required to select from a series of five alternatives the correct synonym for the stimulus word.

Comprehension. This subtest employs a multiple-choice format in which children respond to questions about a short reading selection. Question types include both literal and inferential. Content of comprehension passages include natural science, humanities, social science, and narrative materials.

Reliability and Validity. Alternate forms and Kuder-Richardson Formula 20 reliability coefficients were computed for each level of the test. The K-R 20 coefficients ranged from 0.90 to 0.95 for vocabulary and from 0.88 to 0.94 for comprehension.

Content validity was sought by the authors by: (a) selection of vocabulary words from a study of words from sixteen commonly used reading series and from lists of words frequently used in reading materials, (b) vocabulary words had to have general usefulness, (c) comprehension passages covered the spectrum of content areas, (d) questions were of both a literal and inferential nature, and (e) only items of appropriate difficulty and usefulness as test items were selected from a large pool of items.

Cloze Comprehension Test

Rationale for Using Cloze Test. The cloze procedure was selected as one measure of reading comprehension for the following reasons: (1) cloze passages are flexible enough to be written for any reading material, (2) cloze is an objective measure of comprehension, (3) a high correlation exists between standardized reading achievement test scores and cloze scores (Bormuth, 1967; Rankin and Culhane, 1969). In addition, Jongsma (1971, p. 29) has suggested that cloze tests might be an alternative to standardized tests.

Background of Cloze Test Construction and Rationale for Modifications. Bormuth (1965 a) has conducted extensive research in establishing the desirable length of cloze tests. He demonstrated that a test of fifty cloze items has a reliability of 0.85.

MacGinitie's (1961) work indicated that there was no significant difference in the difficulty of restoring omitted words when every 24th, 12th, or 6th word was omitted. However, omitting every third word made restoration more difficult. MacGinitie did not actually utilize an every fifth word deletion pattern, but it has become a standard in cloze testing.

Throughout these studies, the age of the population used for cloze research has exceeded the third grade level. Rankin and Culhane (1969) used upper elementary school students; while Bormuth used fourth through eighth grade students (1965a) and fourth through sixth grade students (1969). MacGinitie (1961) used college students in his research.

Due to the lack of a research base with third grade students, it seemed that the use of cloze testing with third grade students should be examined. Pilot cloze testing with such students led to a decision to break from the standard format of an every fifth word deletion pattern and a fifty deletion passage. It was discovered that the fifth word deletion pattern was too difficult for the third grade students, while an every tenth word deletion pattern appeared to be appropriate. The use of a fifty deletion passage was ruled out as the long length (over 500 words and 50 responses using the every tenth word deletion pattern) appeared to be frustrating for the third grade students.

Information Concerning the Cloze Comprehension Test Used in the Present Study. The cloze comprehension test used in this study was developed from a basal reader selection (Goldreich and Goldreich, 1976). The selection, "Dr. Penny, Veterinarian", was chosen because: (1) it was of a non-sexist nature and was of interest to both girls and boys, (2) the story structure was conducive to being clipped at approximately 250 words while maintaining the story line, and, (3) the Spache readability level of 3.26 was appropriate. Procedures for constructing the cloze test included leaving the first and last sentence in the passage intact with an every tenth word deletion pattern. Total number of deletions was 25.

Cloze Divergent Production Test

Background Information Concerning Divergent Production. Guilford (1959), in his model of the structure of the intellect, identified two major types of productive thinking, convergent and divergent production. Convergent production focuses upon uniform responses, while divergent production focuses upon responses of the student's own creation. There is usually one "correct" response to a convergent production task, while, in contrast, many acceptable answers exist to divergent production tasks.

A convergent production task required of a student might be to name the capital city of Maine, while a divergent production task might be to write a new ending to a story. Most of the thinking required of students in our schools of today is of the convergent production type. The cloze procedure seemed to be a good vehicle to use to encourage the divergent thinking of children, as the possibilities for acceptable answers to cloze units are many.

Information Concerning the Cloze Divergent Production Test Used in the Present Study. A special cloze test was used in this study to test the hypothesis that the cloze procedure encourages children to be more divergent in their thinking. The Cloze Divergent Production Test was a 140 word selection taken from Read On, Book D, page 75 (Valmont and Cera, 1979). It had a variable deletion pattern with a total number of eight deletions. The test was administered to the experimental group students in both the first and fifteenth week of the study.

Scoring of the Instruments

The Gates-MacGinitie Reading Tests

The Gates-MacGinitie Reading Tests were scored by a research assistant. Extended scale scores were recorded for each student for the comprehension and vocabulary tests.

The extended scale scores were chosen because the scale measures reading achievement in equal units that represent the same difference all along the scale. They allow growth in achievement of a student or a group of children to be compared with the growth of other students or groups, even when the level of achievement is not the same to begin with.

Cloze Comprehension Test

Previous Cloze Scoring Practices. Research conducted by Bormuth (1965b), Jongsma (1974), and Taylor (1953) indicated that in scoring cloze tests credit should be allowed only for exact word replacements--that accepting synonyms did not increase the validity of the procedure and only increased inefficiency and subjectivity of scoring.

Asher, Hymel, and Wigfield (1976) have questioned these findings. They reported that most studies which have recommended the use of exact replacement scoring have not used the scores of individual students as the unit of analysis, but group passage scores. Cloze scoring procedures in these studies have been compared in terms of how they discriminate passages of varying reading difficulty level, i.e., (Taylor, 1953; Bormuth, 1965b). A scoring system that is more flexible in terms of the readers' responses might fare more favorably in comparison to exact replacement scoring if the individuals were used as the unit of analysis.

However, synonym scoring in itself does not appear to be appropriate as it is inflexible in terms of analyzing a reader's understanding. In two studies (Ruddell, 1964) (Asher et al., 1976), it was found that including synonyms in cloze scoring only slightly increased the correlation of cloze scores with standardized achievement test scores.

It appears that both exact replacement and synonym scoring are inappropriate if one wishes to make decisions about readers' comprehension on an individual basis. Therefore, a special cloze scoring procedure, which allows for semantically consistent replacements, was developed for use in this study.

Cloze Scoring System Used in Present Study

Semantically consistent replacement scoring involves scoring as correct a word or words which replace a deleted item in a manner which is acceptable within the context surrounding the deletion. This would include, but would not be limited to exact word and synonym replacements. The replacement would not necessarily have to be the same part of speech, verb tense, noun number, etc., as the deleted item. A judge's instruction sheet with examples of various semantically consistent replacements is included in Appendix E.

Judge and Intrajudge Reliability of Scoring System

A master judge was briefed on how to score the cloze comprehension tests and given a judge's instruction sheet. The master judge was an advanced doctoral student at the University of Arizona who possessed expertise concerning what language is and how individuals use language. After the master judge had scored the cloze comprehension tests, approximately ten percent of the tests were randomly selected to be scored by a panel of three additional judges who had similar qualifications as the master judge. The purpose for doing so was to estimate the reliability of ratings.

The formula for intraclass correlation, as outlined by Ebel (1951) was used to estimate the reliability of ratings. Reliability of ratings was found to be 0.92, while reliability of average ratings was 0.98. (See Appendix H for estimation of the reliability of ratings.) Thus it was found that the master judge and the other three judges were making essentially the same decisions in scoring cloze tests using semantically consistent criteria. The master judge was deemed a reliable scorer.

Cloze Divergent Production Test

This instrument was used to measure the divergent production of groups in the form of a rating which examined multiple responses. This word production rating was obtained by counting the number of different responses per group per cloze deletion. For example, sixteen students in group one might provide five different words that would be deemed acceptable according to semantically consistent scoring criteria for the first deletion on the test. Therefore, their word production rating for the first deletion would be five. To obtain the overall group word production rating, the scores for all eight cloze deletions on the Cloze Divergent Production Test were combined.

Research Design and Data Analysis

The non-equivalent control group design was used in this study (Campbell and Stanley, 1966). Symbolically represented, this design is as follows:

$$\begin{array}{ccc} O & X & O \\ \hline O & & O \end{array}$$

The vertical dimension refers to events occurring at the same time while the horizontal dimension refers to events in temporal order. The treatment to the experimental group is represented by X and the lack of an X represents the treatment to the control group. The pretests are represented by O's before the treatment while the posttests are represented by O's after the treatment. In the present study, treatment

X was the use of the cloze procedure in conjunction with the regular reading program. The treatment of the control group was the regular reading instruction without the addition of the usage of the cloze procedure. The O's preceding treatment consisted of the Gates MacGinitie Reading Tests, Level C, Forms 1 and 2, and a Cloze Comprehension Test. The experimental group also received a Cloze Divergent Production Test. Initial pretest differences resulted in analysis of covariance being selected as the statistic of merit to equate the schools. In addition, analysis of covariance has been shown to increase power of statistical analysis (Huck, 1972).

The data from the Gates-MacGinitie Reading Tests and the Cloze Comprehension Test were analyzed using a two way analysis of covariance on posttest scores. The analysis of covariance is a combination of regression analysis and analysis of variance. In analysis of covariance, the proportion of the variance existing before the treatment is eliminated from the final analysis. This enables the researcher to control any variable that influences the variation of the criterion variable and substantially reduces the error variance (Roscoe, 1975).

The data from the Cloze Divergent Production Test were analyzed using a t-test for two related samples. The experimental group was used as its own control as the Cloze

Divergent Production Test was administered to the sample before and after the experimental treatment.

Summary

Ninety-two third grade students from three school campuses in Tucson, Arizona, participated in this study. All of these students were reading at a third grade or higher instructional reading level according to teacher judgment.

Teachers received two one-hour training sessions concerning the use of the cloze procedure as a teaching technique. This training centered on the semantic, syntactic, and phonic clues that cloze provides and on how direct structured cloze instruction could maximize the reading growth of students.

The control group worked in a basal reader and participated in reading centers. These centers dealt with comprehension, research skills, phonics activities, independent reading, listening, creative writing, and various other reading and language related activities. The experimental group worked in the same basal reader and participated in the same reading centers. However, cloze exercises from Read On (Valmont and Cera, 1979) were substituted for different centers three times per week. The students worked the cloze exercises individually and then met as a group and discussed their responses.

Instruments used in the study included the *Gates-MacGinitie Reading Tests*, the Cloze Comprehension Test, and the Cloze Divergent Production Test. A new method of scoring cloze tests, based upon the acceptance of semantically consistent replacements, was introduced.

The data from the *Gates-MacGinitie Reading Tests* and the Cloze Comprehension Test were analyzed using a two way analysis of covariance on posttest scores. The data from the Cloze Divergent Production Test were analyzed using a t-test for two related samples.

CHAPTER 4

FINDINGS OF THE STUDY

The purpose of this chapter is to present the findings of the study relevant to the four research questions. The findings are presented under the following headings:

1. presentation of basic data,
2. findings regarding hypothesis 1,
3. findings regarding hypothesis 2,
4. findings regarding hypothesis 3,
5. findings regarding hypothesis 4.

Presentation of Basic Data

Tables 2-7 present the pretest and posttest means and standard deviations for each school and the dependent variables of the Cloze Comprehension Test, the *Gates-MacGinitie Reading Tests* comprehension scores, and the *Gates-MacGinitie Reading Tests* vocabulary scores. The pretest and posttest means and standard deviations from the Cloze Divergent Production Test are located in Table 11 (p. 49).

Findings Regarding Hypothesis 1

This null hypothesis stated that there was no significant (alpha = 0.05) statistical difference between

Table 2. Gates-MacGinitie Reading Tests Vocabulary Pretest Data.

School	Experimental Mean	Experimental Standard Deviation	Control Mean	Control Standard Deviation
1	487.667	39.340	444.688	23.857
2	476.790	31.551	444.733	48.126
3	491.750	38.048	487.273	34.141

Table 3. Gates-MacGinitie Reading Tests Vocabulary Posttest Data.

School	Experimental Mean	Experimental Standard Deviation	Control Mean	Control Standard Deviation
1	488.133	32.324	455.250	25.486
2	489.790	31.743	460.733	40.835
3	507.167	29.101	485.910	36.396

Table 4. *Gates-MacGinitie Reading Tests* Comprehension Pre-test Data.

School	Experimental Mean	Experimental Standard Deviation	Control Mean	Control Standard Deviation
1	466.467	62.768	418.063	74.790
2	500.158	61.011	444.867	54.235
3	517.833	39.694	497.727	48.510

Table 5. *Gates-MacGinitie Reading Tests* Comprehension Post-test Data.

School	Experimental Mean	Experimental Standard Deviation	Control Mean	Control Standard Deviation
1	487.200	44.023	407.313	48.084
2	500.053	60.441	453.067	73.138
3	531.083	50.514	489.273	42.283

Table 6. Cloze Comprehension Test Pretest Data.

	Experimental		Control	
School	Mean	Standard Deviation	Mean	Standard Deviation
1	20.800	3.877	16.438	5.750
2	19.105	4.026	18.000	4.551
3	21.833	1.851	21.182	1.722

Table 7. Cloze Comprehension Test Posttest Data.

	Experimental		Control	
School	Mean	Standard Deviation	Mean	Standard Deviation
1	23.200	0.9411	18.500	4.502
2	22.158	2.456	19.333	3.658
3	22.667	0.8876	20.818	1.940

vocabulary scores on the Gates-MacGinitie Reading Tests of students who received cloze treatment and those who did not. The hypothesis was tested by a two way analysis of covariance on posttest scores. The significance of F was 0.119, therefore, null hypothesis number 1 was accepted (see Table 8). There was no statistical significant difference between the control group and the cloze experimental group on the vocabulary subtest of the Gates-MacGinitie Reading Tests.

Findings Regarding Hypothesis 2

This null hypothesis stated that there was no significant (alpha = 0.05) difference between comprehension scores on the Gates-MacGinitie Reading Tests of students who received cloze treatment and those who did not. The hypothesis was tested by a two way analysis of covariance on posttest scores. The significance of F was 0.002; therefore, null hypothesis number 2 was rejected (see Table 9). The cloze experimental group's comprehension scores on the Gates-MacGinitie Reading Tests were significantly better than those of the control group.

Findings Regarding Hypothesis 3

This null hypothesis stated that there was no significant (alpha = 0.05) statistical difference between comprehension scores on the Cloze Comprehension Test of students

Table 8. Analysis of Covariance of Gates-MacGinitie Reading Tests Vocabulary Scores.

Source of Variation	Mean Square	DF	F	Significance of F
Covariate				
Gates-MacGinitie Pretest Vocabulary Scores	81232.192	1	209.311	0.001*
Main Effects				
School	562.298	2	1.449	0.241
Cloze Treatment	963.850	1	2.484	0.119
Interaction				
School X Treatment	511.409	2	1.318	0.273
Error	388.093	81		
Total	1331.446	87		

*$p < 0.05$

Table 9. Analysis of Covariance of Gates-MacGinitie Reading Tests Comprehension Scores.

Source of Variation	Mean Square	DF	F	Significance of F
Covariate				
Gates-MacGinitie Pretest Comprehension Scores	231903.594	1	148.721	0.001*
Main Effects				
School	2397.463	2	1.538	0.221
Cloze Treatment	16135.956	1	10.348	0.002*
Interaction				
School X Treatment	2810.925	2	1.803	0.171
Error	1559.316	81		
Total	4402.341	87		

*$p < 0.05$

who received cloze treatment and those who did not. The hypothesis was tested by a two way analysis of covariance on posttest scores. The significance of F was 0.001; therefore, null hypothesis number 3 was rejected (see Table 10). The experimental group's scores on the Cloze Comprehension Test were statistically significantly better than the control group scores.

Findings Regarding Hypothesis 4

This null hypothesis stated that there was no significant (alpha = 0.05) difference between pretest scores and posttest scores on the Cloze Divergent Production Test before and after the experimental treatment. The hypothesis was tested with a t-test for two related samples (Roscoe 1975). Statistical significant differences ($t = 4.52$, $p < 0.05$) between the pretest and posttest scores of the total group were found; therefore, null hypothesis number 4 was rejected (see Table 11).

Table 10. Analysis of Covariance of Cloze Comprehension Test Scores.

Source of Variation	Mean Square	DF	F	Significance of F
Covariate				
Cloze Comprehension Pretest Scores	512.770	1	132.738	0.001*
Main Effects				
School	2.489	2	0.644	0.528
Cloze Treatment	93.194	1	24.125	0.001*
Interaction				
School X Treatment	1.626	2	0.421	0.658
Error	3.863	81		
Total	10.704	87		

*$p < 0.05$

Table 11. T-Test for Two Related Samples of Cloze Divergent Production Test Data.

School	Pretest	Posttest
1	22	38
2	37	44
3	25	39
$\bar{X}$	28	40.33
SD	5.29	3.15
$t = 4.52^*$		

$^*p < 0.05$ (one-tail test)

CHAPTER 5

SUMMARY, FINDINGS, CONCLUSIONS, IMPLICATIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

Presented in this chapter are: (1) a summary of the study, (2) the findings of the study, (3) conclusions of the study, (4) implications, and (5) suggestions for further research.

Summary of the Study

Attention has been directed at the cloze procedure as being useful as a teaching technique: a tool to encourage the use of context clues, to strengthen vocabularies, and to improve reading comprehension. However, the majority of the experimental research studies in which the cloze procedure has been used as a teaching technique have reported nonsignificant statistical findings.

This study was designed to avoid many of the pitfalls past cloze studies have encountered. These include: insufficient exposure to cloze treatments, weak experimental designs, inadequate measurement instruments, dependence upon the technique itself to be effective without direct structured instruction through discussion, and the failure to provide students with a sufficient supply of well designed instructional cloze materials.

Answers to the following questions were sought:

1. Does the use of the cloze procedure result in statistically significant increases in vocabulary scores on the <u>Gates-MacGinitie Reading Tests</u>?
2. Does the use of the cloze procedure result in statistically significant increases in comprehension scores on the <u>Gates-MacGinitie Reading Tests</u>?
3. Does the use of the cloze procedure result in statistically significant increases in comprehension scores on the Cloze Comprehension Test?
4. Does the use of the cloze procedure result in statistically significant increases in divergent production scores on the Cloze Divergent Production Test?

Procedures

The sample for this study consisted of 92 third grade children from three randomly selected schools in a metropolitan school district in Tucson, Arizona. Students reading at a third grade or higher instructional reading level from the classes participating in the study were randomly assigned to experimental and control groups. Eighty-eight of the ninety-two children who began the study completed it. Three children moved during the course of the study and one was ill when the posttests were administered.

The study spanned a fifteen week period. During this time, the control group students worked in a basal reader and reading centers. These centers dealt with comprehension, research skills, phonics activities, independent reading, listening, creative writing, and various other reading and language related activities. The experimental group students worked in the same basal reader and attended the same centers. However, cloze exercises from Read On (Valmont and Cera, 1979) were substituted for different reading centers three times per week. The students completed the cloze exercises individually and then met as a group and discussed their responses.

Four dependent variables were used in this study to gather data for the stated problem. They were: (1) the vocabulary subtest of the Gates-MacGinitie Reading Tests, Second Edition, Level C. Forms 1 and 2 (1978), (2) the comprehension subtest of the Gates-MacGinitie Reading Tests, Second Edition, Level C, Forms 1 and 2 (1978), (3) the Cloze Comprehension Test, and (4) the Cloze Divergent Production Test.

The non-equivalent control group design was used in this study. Initial pretest score differences led to the vocabulary and comprehensive data being analyzed by a two way analysis of covariance on posttest scores. As predicted the covariates of pretest scores were significant (Tables 8, 9, and 10). The divergent production data were analyzed using a t-test for two related samples.

Findings of the Study

Findings Relative to Hypothesis 1

There was no significant statistical difference at the 0.05 level between vocabulary scores on the Gates-MacGinitie Reading Tests of students who received cloze treatment and those who did not. Null hypothesis 1 was accepted.

Findings Relative to Hypothesis 2

There was a significant statistical difference at the 0.05 level between comprehension scores on the Gates-MacGinitie Reading Tests of students who received cloze treatment and those who did not. The difference was in favor of the experimental group. Therefore, null hypothesis 2 was rejected.

Findings Relative to Hypothesis 3

There was a significant statistical difference at the 0.05 level between comprehension scores on the Cloze Comprehension Test of students who received cloze treatment and those who did not. The difference was in favor of the experimental group. Therefore, null hypothesis 3 was rejected.

Findings Relative to Hypothesis 4

There was a significant statistical difference at the 0.05 level between pretest scores and posttest scores on the Cloze Divergent Production Test of students who received the cloze treatment. The divergent production of the students had increased. Null hypothesis 4 was rejected.

Conclusions

The conclusions that follow are limited to populations similar to and under conditions similar to those in this study.

1. The cloze procedure as a teaching technique is an effective procedure to be used in the area of reading comprehension development.
2. The cloze procedure as a teaching technique is an effective method of increasing the divergent production of students.
3. The cloze procedure as a teaching technique is as effective as but not superior to other techniques in the area of vocabulary development.

Implications

Results of this study suggest the following implications.

1. The cloze procedure encourages divergent production. The give-and-take atmosphere of group discussion frees

students to express their own thoughts. The end result is that the divergent production is enhanced.

2. The cloze procedure as utilized in this study is not necessarily recommended for vocabulary development.

3. The cloze procedure as utilized in this study is recommended for increasing reading comprehension.

Suggestions for Further Research

The following suggestions for further research developed as an outgrowth of this study:

1. This study should be replicated across different grade, age, and reading levels.
2. This study should be replicated using other populations in different geographic and socioeconomic areas.
3. A study should be conducted which compares an every nth word deletion pattern in cloze materials to a selective deletion pattern such as that found in *Read On* materials.
4. Alternative measures of vocabulary development should be examined.
5. Validity and reliability figures for cloze comprehension tests designed for primary grade students should be established.

6. Validity and reliability figures for cloze divergent production tests should be established.
7. The semantically consistent scoring procedure used in this study should be investigated further.

APPENDIX A

VOCABULARY AND COMPREHENSION SUBTEST EXAMPLES FROM THE *GATES-MACGINITIE READING TESTS, SECOND EDITION*, LEVEL C*

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1. plate ⊂⊃ pot ⊂⊃ not on time ⊂⊃ clean ⊂⊃ dish	**2.** ⊂⊃	**3. beautiful** ⊂⊃ very pretty ⊂⊃ powerful ⊂⊃ at the top ⊂⊃ young
4. speak ⊂⊃ light ⊂⊃ think of ⊂⊃ talk ⊂⊃ sing	**5. dry** ⊂⊃ low ⊂⊃ not wet ⊂⊃ toy ⊂⊃ morning	

STOP

1

In one hand Roy carried his school books. In the other hand he had a big bag of cookies for the class party. Roy was glad that he didn't have to carry anything else. It was a long walk to school.

A. Where was Roy going?

⊂⊃ home ⊂⊃ to the bus stop

⊂⊃ to the store ⊂⊃ to school

B. This story says that there will be a

⊂⊃ storm ⊂⊃ ride

⊂⊃ party ⊂⊃ sale

2

The kittens chased a ball of string around the room. They climbed in and out of the sewing box. They jumped at a paper bag. Then, when they were tired, they lay down in a patch of sunlight and fell asleep.

A. How did the kittens feel?

⊂⊃ angry ⊂⊃ playful

⊂⊃ sick ⊂⊃ hungry

B. They fell asleep in a place that was

⊂⊃ dark ⊂⊃ sunny

⊂⊃ outside ⊂⊃ soft

APPENDIX B

INTRODUCTION TO CLOZE PROCEDURE: PRACTICE SESSION

Teacher says: "We are going to play a game today called 'Missing Words'." (Teacher places the following on the chalkboard.)

> Once upon a time there lived a little ____________ named Mary. Mary lived on a farm out in ____________ country. ____________ had all kinds of animal friends to play with on the farm. There were cows, ____________, horses, and sheep, just to name a few.

You see that this is a story with some words missing. Please read the story to yourself, skipping over the blanks when you come to them. Then go back and read the story again. Fill in the blanks with words that make sense. You may be able to figure out some missing words by reading what comes before and after the blank. Some blanks might have more than one answer, but fill in only the one word that seems to make the most sense to you. (After a five-minute period of time, the teacher gains the attention of the class. She/he reads the passage to the class, allowing students to volunteer responses to the close blanks. More than one response is taken for cloze blanks where divergent answers are possible.)

APPENDIX C

DIRECTIONS FOR CLOZE TEST

Teacher says: "Now that we know how to play the 'Missing Words' game, I will give you a story with some missing words and you may play the game at your desk. Remember to read through the entire story before you begin filling in the missing words. You may be able to figure out some missing words by reading what comes before and after the blank. Even though some blanks might have more than one word that makes sense, only use one word to fill in the blank. Have fun!!"

APPENDIX D

CLOZE COMPREHENSION TEST

Dr. Penny is a special kind of doctor. Her patients are mostly cats and dogs, birds and ________. But she knows how to take care of cows ________ horses, pigs and sheep--and even lions and tigers ________ other animals that we see in the zoo and ________. She is an animal doctor, a veterinarian.

Veterinarians take ________ of animals just as doctors take care of people. ________ examine them and give them medicine when they are ________. They also see that the animals have general check-ups ________ that they stay healthy. They measure and weigh them, ________ sure they eat and drink the right things, and ________ on them when they must.

Penny always wanted to ________ care of animals. When she was a little girl, ________ brought home stray cats and dogs and took care ________ them. She read many books about animals. Later, when ________ was older, she went to college and studied science. ________ she went to a school of veterinary medicine. On ________ day she became Dr. Penny. She had to study ________ but it was fun to learn especially since she ________ studying something she loved.

Every morning Dr. Penny drives ________ work at an animal hospital. She arrives bright and ________ because she is anxious to see all the sick ________ and make sure they are getting better. She and ________ doctor check the sick animals. When people get sick ________ need an operation, they go to a hospital. They ________ sleep there and stay until they are better. Sick ________ must do the same thing. Each animal in the hospital has its own clean, comfortable cage.

APPENDIX E

SEMANTICALLY CONSISTENT REPLACEMENT SCORING CRITERIA

The scoring of the cloze instrument for this study involves scoring semantically consistent replacements as acceptable responses. A semantically consistent replacement is one or more words which replace a deleted item acceptably within the context surrounding the deletion. Thus, any of the following would be considered as an accurate replacement:

A. exact replacement (example 1),

B. synonym replacement (example 2),

C. replacement which belongs to the same meaning category as the deleted item, although not necessarily a synonym, same part of speech, verb tense, or noun number, etc., as the deleted item (example 3). The replacement item does not always have to make sense within the functional context of the sentence as punctuated, i.e., a decision by the judge that the subject was making a transformation of structure, as in example 4. Replacements must make sense within the larger context of the paragraph and story, as in example 5.

Examples

1. The original passage says: "Her patients are mostly cats and dogs, birds and bunnies." Credit would be allowed for the exact replacement of bunnies.

2. The original passage says: "Her patients are mostly cats and dogs, birds and bunnies." Credit would be allowed for a synonym replacement, i.e., rabbits.

3. (A) The original passage says: "Dr. Penny is a special kind of doctor. Her patients are mostly cats and dogs, birds and bunnies." Credit would be allowed for any replacement that belongs to the same meaning category as the deleted item, i.e., fish, gerbils, etc.

(B) The original passage says: "We are going to town today." Credit would be allowed for, "We be going to town today."

4. The original passage says: "But she knows how to take care of cows and horses, pigs and sheep--and even lions and tigers and other animals we see in the zoo and circus." An insertion of an animal name of the same class as those listed, i.e., chickens, goats, is allowed, as it is hypothesized that the subject is simply making a transformation of structure and is mentally changing the sentence

to, "But she knows how to take care of cows, goats, horses, pigs and sheep, and even other animals that we see in the zoo and circus."

5. The original passage says: "Every morning Dr. Penny drives to work at an animal hospital. She arrives bright and early because she is anxious to see all the sick animals and make sure they are getting better. She and another doctor check the sick animals. When people get sick or need an operation, they go to a hospital. They usually sleep there and stay until they are better. Sick animals must do the same thing. Each animal in the hospital has its own clean, comfortable cage." The replacement of animals with people in the last cloze deletion would not be acceptable as it would not make sense within the larger context of the paragraph.

APPENDIX F

CLOZE DIVERGENT PRODUCTION TEST *

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I remember the day of the big storm. It had been warm and sunny. Suddenly it turned cool. The wind ________________ to blow. The wind blew very hard. It was very loud.

Then it started to rain. It rained softly at first. Then it rained harder and faster. The rain ______________ to hail. The lightning flashed. The thunder______________ loudly.

We were all sitting together in the house. The wind blew the door open. We all _________________ it shut. We could hear all kinds of ______________ noises outside. I was scared.

After a while the storm ______________. We went outside to look around. There were trees lying in the streets. One tree had fallen and ______________ a car. The telephone lines were hanging down. Many houses had broken windows. The storm had caused ______________ damage.

APPENDIX G

LIST OF *READ ON* LESSONS UTILIZED IN THE STUDY

Book D	Book E	Book F
Pages	Pages	Pages
16-17	8- 9	26-27
50-51	34-35	30-31
75	54-55	48-49
52-53	60-61	54-55
40-41	62-63	58-59
54-55	64-65	60-61
58-59	65-67	70-71
60-61	78-79	72-73
78-79		
84-85		
88-89		

APPENDIX H

ESTIMATION OF THE RELIABILITY OF RATINGS

Pupils	Rater A	Rater B	Rater C	Rater D	Sum	Sum^2
Pupil 1	19	19	19	21	78	1524
Pupil 2	21	20	21	20	82	1682
Pupil 3	21	22	22	22	87	1893
Pupil 4	23	23	23	22	91	2071
Pupil 5	17	16	16	18	67	1125
Pupil 6	18	17	19	18	72	1298
Pupil 7	22	21	23	22	88	1938
Pupil 8	23	23	25	24	95	2259
Pupil 9	23	23	24	23	93	2163
Sum	187	184	192	190	753	63749
Sum^2	3927	3818	4162	4046	141789	-

Sum of squared rating = 15953

Product of sum and mean $753 \times \frac{753}{36} = 15750.25$

Sum of squares

For raters $\frac{141789}{9} - 15750.25 = 4.08$

For pupils $\frac{63749}{4} - 15750.25 = 187.0$

For total $15953 - 15750.25 = 202.75$

For error $202.75 - 187.0 - 4.08 = 11.67$

Mean squares

For pupils $\frac{187}{8} = 23.375$

For error $\frac{11.67}{24} = 0.48625$

Reliability of Ratings

$$\frac{23.375 - 0.48625}{23.375 + (4-1)\ 0.48625} = 0.92$$

Reliability of Average Ratings

$$\frac{23.375 - 0.48625}{23.375} = 0.98$$

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