RANDOM CLOZE AN ALTERNATIVE TO THE TRADITIONAL CLOZE

BY

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ABSTRACT

The major purpose of the study was to determine the effectiveness of a random cloze test procedure in comparison to a traditional cloze test procedure. It was also of interest to investigate any relationship that might exist between cloze test performance for three streamed Grade 11 classes and their performance on reading comprehension test form 5, level 17 of the Canadian Test of Basic Skills. Further it was of interest to determine the general suitability of the Grade 11 social studies textbook Towards Tomorrow: Geography from a readability stand-point. The appropriateness of the streaming practices of Stelly's Secondary School was another secondary consideration.

The results of the study indicate a significant correlation ($r = .60$) between the traditional and random cloze tests used in the study. The correlations between the traditional and random cloze tests, and the CTBS test results indicate a significant correlation as well ($r = .68$). In each instance it is plausible that the three tests measure some of the same reading comprehension variables.

Towards Tomorrow: Geography appears to be appropriate reading material for approximately 75 percent of the students included in the sample.

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Chapter I

Introduction

Statement of the Problem

Assessing the reading difficulty of passages and specifically matching students to appropriate reading materials have been the subjects of considerable research, discussion, and debate. A number of readability formulae have been developed in an attempt to address these needs. Because of their ease of use, their ability to measure reading levels by grade, and their ability to successfully predict relative difficulty, they have been widely accepted and used extensively (Allen, 1985). However, some limitations such as conceptual load and interest were noted by researchers such as Taylor (1953) who believed that these limitations warranted further investigations into predicting readability. This work lead to the development of the cloze procedures (Taylor, 1953). The cloze procedure was developed to be relatively easy to construct and administer in keeping with the popular readability formulae. Taylor recognized the fact that one of the reasons for the popularity of readability formulae was their ease of use.

A review of the research and literature regarding the cloze procedure suggests overwhelming support for Taylor's 1953 model (Helfeldt & Henk, 1985). Further, there is research that indicates a correlation between cloze performance and reading performance (Bormuth, 1969; Rankin, 1958; Rankin &

Helm, 1986; Ruddell, 1963). Cloze tests have also been correlated with standardized reading achievement tests (Fletcher, 1959; Jenkinson, 1957; Ruddell, 1963; Smith & Zinc, 1977).

The cloze procedure was confirmed to be a powerful tool for measuring readability by the 1960's (Bormuth, 1964, 1967, 1968a; Rankin & Culhane, 1969). However, there is evidence of sampling bias with the traditional cloze procedure which deletes every nth word (Bormuth, 1964; Meredith & Vaughan, 1978; Porter, 1978; and Taylor, 1954). Since the English language is constructed in predictable patterns, fixed interval deletion scheme such as this can lead to the construction of a biased cloze passage such that cloze forms constructed over the same passage may not be equivalent. Some of the cloze tests will tend to delete more function words while other tests will delete more structural words. Meredith & Vaughan (1978) found that random deletion patterns provided a more stable index than an nth word deletion pattern. One way to address this concern is to construct and administer multiple cloze forms over the same passage. This approach is not practical (Bormuth, 1964) and hinders the reliability of cloze which is unfortunate as it is easy to administer and has maintained some credibility as a legitimate tool for measuring student reading performance in specific and general contexts. The cloze procedure continues to have the potential to meet the demands of educational researchers and it is easy to administer and interpret in a classroom setting. In this respect cloze is rather unique and warrants further refinement to address the sampling bias that may occur when every nth word is deleted.

There are a number of studies which have looked at aspects of alternate cloze. It is not uncommon for these studies to include the administration of a standardized reading test (Helfeldt & Henk, 1985; Helfeldt, Henk, & Fotos, 1986; Kirkwood & Wolfe, (1980). Typically the standardized test is used as a criterion for assessing student reading ability. Two of these recent studies (Helfeldt & Henk, 1985; & Helfeldt, Henk, & Fotos, 1986) have gone beyond the random deletion procedure and added a new feature. This new feature provides the number of blanks that coincide with the number of letters associated with the missing words as an additional clue. The purpose of this additional clue is to address a problem regarding the limited context (i.e. less than four words) which may not provide enough information to permit an accurate prediction of the deletion (Fillembaum, Jones & Rapoport, 1963; MacGinitie, 1960; 1961). Although the additional clue is not relevant to this study, the design and method are useful for the purposes of the present study.

In some instances cloze passages have been developed using reading passages taken from standardized reading tests. Passages have also been identified from textbooks currently in use at a particular grade level. When textbooks are the source, readability formulae such as the Fry graph have been applied to the randomly selected passages to give a general indication of their reading level (Chance, 1985; Grant, 1986).

In the face of concerns about the misuse of readability formulae and their doubtful criterion, the Fry graph has maintained some credibility when it is used as originally intended (Allen, 1985; Fry, 1986). There is also support for

readability formulae although they do not address psycholinguistic theory of reading because of the strong correlation between surface and deep measures of complexity (Kirkwood & Wolfe, 1980). The use of readability formulae in general and the Fry graph in particular for establishing the reading level of text passages used for cloze test construction are also of interest in this study.

Purpose of the Study

The purpose of this study is to extend the research base currently available with respect to the alternate cloze test construction as it attempts to address the sampling problem of traditional cloze construction which calls for the deletion of every nth word.

It is also the intent of this study to assess the appropriateness of the reading level of the Grade 11 textbook Towards Tomorrow: Geography which was written specifically to support the British Columbia Social Studies curriculum. A secondary purpose will be to provide some insight into the extent to which performance on either or both cloze forms is reflective of reading performance on a standardized reading test and in turn give some indication of the extent to which this performance is supportive of the streaming placement procedures at Stelly's Secondary School, Saanich School District.

Significance of the Study

Recent work in the area of traditional cloze and alternate cloze procedures has focussed on elementary, junior secondary, and university level subjects. Further, the subjects tend to represent average and above average students. There is a need for more studies with students of a variety of ability levels, generally, and more specifically at the senior secondary level.

Further, the recent research tends to go beyond looking at deletion patterns and provides additional clues which introduces a new set of variables to the task and consequently is not distinctly assessing the performance of traditional and random cloze procedures which are still worthy of investigation because of the overwhelming support for cloze as a predictive readability measure and as an easily constructed and administered procedure which can also be used to match individual students with specific reading materials.

Definition of Terms

Random cloze test - A random cloze test is one which takes a written passage of approximately 250 to 300 words and randomly deletes 50 words beginning with the second sentence of the passage. For the purposes of this study, when the random table of numbers indicated two consecutive deletions the researcher omitted the second number and went on to use the next one to ensure that there was at least one word between deletions. To further assist students with the context, the passage was extended to include the remainder of the paragraph in

which the deletions ended thus creating passages of varying lengths between 250 and 300 words.

Traditional cloze procedure - A traditional cloze test is one which takes a written passage of approximately 250 to 300 words and deletes every fifth word for a total of fifty deletions beginning with the second sentence of the passage. To assist students with the context of the passage, the passage was extended to include the remainder of the paragraph in which the deletions ended thus creating passages of varying lengths between 250 and 300 words.

Readability - Dale & Chall (1948) defined readability as follows:

> In the broadest sense, readability is the sum total (including the interactions) of all those elements within a given piece of printed material that affects the success a group of readers have with it. The success is the extent to which they understand it, read it at an optimum speed, and find it interesting. (p. 23)

After a comprehensive review of the research on readability Klare (1984) characterized it as follows: "1. Legibility, of either the handwriting or the typography. 2. Ease of reading, owing to the interest -- value of the writing. 3. Ease of understanding, owing to the style of writing" (p. 681).

Readability formula - A readability formula is an authentic means of predicting the reading level of a text. Typically it involves a relatively simple arithmetic calculation which considers word and sentence length.

CTBS - The Canadian Test of Basic Skills was developed to measure basic skills such as recording comprehension and mathematical ability. They have been standardized and permit the user to compare an individual student's progress over time and also to compare student performance to the standards indicated in the supporting documentation for the tests.

Research Questions

1. Is a random cloze test as effective as a traditional cloze test in determining a student's ability to comprehend a written passage?
2. Is there a relationship between the results gathered from random and traditional cloze tests?
3. Is there a relationship between random cloze results and CTBS reading comprehension results?
4. Is there a relationship between traditional cloze results and CTBS reading comprehension results?
5. Is the prescribed Social Studies 11 textbook, Towards Tomorrow: Geography readable for students of varying ability levels?
6. Are the streaming placement procedures used by the English department at Stelly's supported by the CTBS and/or cloze test results?

Chapter II

Review of the Literature

Introduction

The readability of written text has been the subject of considerable research, discussion, and debate since early in the 20th Century when such researchers as Dewey (1935), Dolch (1948), Gray & Leary (1935), Lorge (1939), Thorndike (1921), and Washburne & Vogel (1926) attempted to identify the features of written expression which contribute to reading ease and difficulty.

This early work laid the foundation for the development of a number of readability formulae which have been used in a variety of ways since they were first introduced. Some of the most notable formulae include; Dale & Chall (1948), Flesch (1948), Fry (1968), Gunning (1952), and Spache (1953). Essentially all of these formulae rely heavily on word and sentence length as measures of difficulty. This limits the usefulness of readability formulae given the numerous and complex interaction of variables which impact readability. However, because they provide some indication of relative difficulty, are relatively easy to compute, and provide a specific grade level placement, they have been used and misused extensively (Armbruster, Osborn & Davison, 1985; Bormuth, 1966; Fry, 1986).

Taylor (1953) was interested in readability. He examined readability formulae, noted some of their limitations, and developed the cloze procedure as a possible alternative. He was convinced that readability formulae addressed only some features of readability and ignored others such as the semantic features. He was able to draw on the emerging research in the area of psycholinguistics in his research and development activities. Specifically he used total language context, redundancy, "transitional probabilities," and statistical random sampling. Heerman (1983) analyzed the validity of Taylor's cloze testing methodology. He identified those areas of study which served as the foundations for cloze. The three areas were communications theory (Shannon, 1948), psychology of speech and communication (Miller, 1951), and dispositional mechanisms (Osgood, 1960).

Taylor (1953) defined cloze as a functional unit of measurement which is based on the human tendency to complete familiar unfinished patterns. The term was derived from the notion of closure in gestalt therapy. Specifically he defined a cloze unit as, "Any single occurrence of a successful attempt to reproduce accurately a part deleted form a 'message' (any language product) by decoding, from the context that remains what the missing part should be." and defined the cloze procedure as,

> 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 (p. 417)

Although today the cloze procedure is used to match individuals to specific text, it was Taylor's (1953) intent to use it much like a readability formula to determine the relative difficulty of different passages of written text. A study was conducted in which cloze passage results were compared with the results from applying the Dale & Chall (1948), and Flesch (1948) readability formulae. Various forms and data gathering conditions were employed. The cloze scores consistently ranked three written passages in the same fashion as the Dale & Chall and the Flesch formulae. The study also found that the cloze procedure was internally consistent when different deletion patterns were used with the same passage. It is particularly of interest to this study that Taylor (1953) found the random deletion more efficient than the nth word deletion pattern. He used the word "efficient" to describe the quantitative differences that occurred although all conditions produced the same findings. The quantitative differences indicated, "particularly with regard to the discovery that the analysis also discriminated among subjects" (p.424). He postulated that if the passages had been longer this difference would have disappeared.

It was possible to demonstrate that cloze effectively accommodates passages whose language level is "misleading" for readability formula. Cloze appeared to assess the true difficulty of written text of various kinds. It takes a measure of the likeness between patterns the writer used and patterns that the reader anticipates. A "cloze score appears to be a measure of the aggregate influences of all factors which interact to affect the degree of correspondence between the language patterns of transmitter and receiver" (Taylor, 1953, p.

433). Consequently, it should be useful with various reading materials and with readers of various ability levels. Subsequent research supports this view as well (Bormuth, 1968a; Gingrich, & Eagleeye, 1978; Maclean, 1980; Rankin, 1959, and Taylor, 1956).

The Development of the Cloze Procedure

Since Taylor (1953) introduced cloze it has been researched and used in a variety of contexts. Ohnmacht, Weaver, & Kohler (1970) summarized the many uses and applications of the cloze technique. These include: (a) providing a number of different ways for assessing the readability of prose, (b) constructing instructional exercises for teaching reading, (c) measuring general reading achievement, and (d) using it as a tool for clinical diagnosis. Clearly cloze has been recognized as having the potential to provide an accurate measurement of the comprehension difficulty of written passages (Bormuth, 1966).

The focus of this study and consequently the review of the literature will be on assessing the readability of prose and measuring general reading achievement. Bormuth (1966) examined a number of linguistic variables, both structural and semantic, in an attempt to determine the effectiveness of readability formulae and the cloze procedure as well as to gain some insight into the relative importance of specific linguistic variables to readability which in turn impact reading comprehension. He used 20 passages of approximately 275 - 300 words from materials from a variety of fields and disciplines. The

Dale & Chall (1948) formula was used to select passages suitable for the elementary student. The elementary audience is noteworthy because Taylor's initial work (1953) was with college students. Bormuth developed five different cloze test forms deleting every fifth word such that each form deleted different words although the same passage was used. The California Reading Test was used to assign students to one of five different ability groups. Bormuth found that cloze was equally useful with students of varying ability levels.

Bormuth's (1966) findings regarding different ability levels have been discussed by those supporting his view that cloze has the ability to discriminate equally well for a range of abilities and by those who oppose that view. For example, Miller and French (1974) used various deletion patterns (every 5th, 7th, 10th word). They constructed these cloze tests on social studies and science materials used with senior secondary students whose reading ability varied from Grades 9 to 12. They found that different deletion patterns did not significantly influence results across grade levels. Allington & Strange (1978) examined the hypothesis that good and poor readers differ in their integration of cue systems. They found that semantic and syntactic clues helped good readers more consistently although all readers utilized graphic, syntactic, and semantic clues. Older poor readers tended to demonstrate behaviour similar to that of younger better readers.

Peterson & Carroll (1974) found that cloze was useful in predicting reading comprehension for disabled readers where disabled readers were defined as two or more years below grade level.

Cloze Validity

Close validity has been established by correlating cloze test results with the results of standardized reading tests. Essentially validity studies investigate the relationship between a new or different procedure, in this instance the cloze test, and more traditional indicators such as standardized reading tests (Peterson, Peters & Paradis, 1972). Ultimately the concern is to determine that significant results are truly significant and not simply occurring by chance.

Taylor (1956) found that there was a correlation between cloze and general intelligence test performance. There are also a number of research findings which indicate the high correlation between cloze tests and standardized reading tests (Fletcher, 1959; Friedman, 1964; Gallant, 1965; Greene, 1965; Jenkinson, 1957; Rankin, 1958; Schneyer, 1965; and Smith & Zinc 1977). The focus of much of this work was, however, on measuring passage difficulty rather than comprehension difficulty.

Bormuth (1967) confirmed that cloze testing extended the information available through multiple choice comprehension tests. "The chief problem that prevents the full-utilization of cloze tests is that there is no frame of reference by which the size of the cloze score can be interpreted" (p. 291). There was no way of identifying when a given cloze score represented an acceptable level of performance. In an attempt to address this limitation Bormuth conducted a

study with Grade 4 and 5 students using nine passages as the basis for cloze test construction and multiple choice comprehension test construction.

He summed all cloze and multiple choice test results and found that a score of 38% and 50% on cloze correlated to a corrected score of 67% and 87% on the multiple comprehension tests respectively. He believed it was possible to generalize beyond these grade levels for the following reason. "The linguistic variables which influence the comprehension of readers at one level of reading ability have almost identical influence upon readers at other levels of ability" (Bormuth, 1967, p. 293). He believed it was then possible to generalize independent and instructional level information for cloze tests similar to that derived for multiple choice comprehension tests.

One year later Bormuth (1968a) published another study in which he extended his previous work to include oral comprehension. Although the word recognition findings were inconclusive, he confirmed the earlier percentage correlations of the 1967 study. He concluded that cloze tests appear to be consistently valid measures of passage difficulty.

Rankin and Culhane (1969) were also concerned with the need for a frame of reference for interpreting cloze results and replicated Bormuth's (1968a) work with similar subjects although they used different reading materials to construct the cloze tests and multiple choice comprehension tests. They concluded that the percentage correlations identified by Bormuth could be

used with confidence as their results were similar with the average difference between the two studies being 3.1%.

Peterson, Peters, & Paradis (1972) conducted a similar study with secondary students as the subjects. The results did not support previous findings. However, it is interesting that the Nelson-Denny Reading Test was used. This test was also used by Entin and Klare (1978) who encountered similar difficulties. They explored potential concerns with the Nelson-Denny Reading Test with respect to erratic passage difficulty.

The work of Bormuth (1967, 1968a), Peterson, Peters, & Paradis (1972), and Rankin and Culhane (1969) lead to the identification of a "frame of reference" as defined by Bormuth (1967). Earlier work by Betts (1954) formed the basis for generating significant features of reading comprehension which in turn have been used to generate frames of reference for readability. Betts identified four types of information which he formulated as questions. These are:

1. What is the highest reading level at which an individual can read with full understanding and free from mechanical difficulties (independent or basal level);
2. What is the highest reading level at which systematic instruction can be initiated (instructional level);
3. At what level is an individual "baffled" by the language (frustration level); and

4. What is the highest reading level at which an individual can comprehend material read to him/her (capacity level)?

Betts (1954) went on to characterize the kind of behaviour that the reader should demonstrate at three of the levels. These are presented in Table 1.

Table 1

Betts' Levels of Reading Behaviour which pertain to Cloze Test Interpretation

Level	Descriptive Behaviour
Frustration	• Comprehension scores on both factual and inferential questions below 50% • Inability to pronounce 10% or more of the words • Inability to anticipate meaning • Unfamiliar with facts in passage • Frequent or continuous finger pointing • Presence of tension • Withdrawal from reading situation • Easily distracted • Silent reading slow and characterized by limited use of context clues; lip movement, and low vocalization. • Oral reading characterized by lack of rhythm; failure to interpret punctuation; high pitched voice; irregular breathing; word reversals and omission of words.
Instructional	• Comprehension scores on both factual and inferential questions at least 75% • Accurate pronunciation 75% of the time • Ability to anticipate meaning • Freedom from tension • Absence of finger pointing • Absence of unnecessary head movement • Good reading posture • Silent reading characterized by ability to locate specific information, reading rate higher than oral reading rate; using right word techniques; absence of vocalization; ability to identify mechanical or comprehension difficulties • Oral reading characterized by rhythm, punctuation, conversational tone, and reasonable eye-voice span.
Independent/ Basal	• Comprehension scores on both factual and inferential questions at least 90%. • Freedom from tension • Absence of finger pointing • Acceptable reading posture • Oral language characterized by rhythm, correct use of pronunciation, punctuation, and conversational tone. • Silent reading characterized by a reading rate that is higher than oral reading rate, and the absence of vocalization.

(Betts, 1946, pp. 446-51)

The independent, or basal, reading level "for a given individual represents that level of achievement at which experiences, vocabulary, language construction and organization are under complete control" (Betts, 1954, p. 446).

He summarized that comprehension accuracy and depth are dependent upon at least three functional interrelated factors: (a) abstractness, (b) language setting or symbolism, and (c) background of the child. Generally speaking the level of abstraction increases as the written experience is increasingly distant from the child's experience base (Betts, 1954). The link between Taylor's (1953) initial use of cloze in determining reading passage difficulty and Betts' (1954) work with the individual reader and his/her ability to read material is critical to the present use of the cloze testing technique. The inclusion of a reference point or benchmark for reading performance is critical as well. The possibility of determining which of the three reading levels (frustration, instructional, and independent) has been used in many contexts. It has been of importance in cloze testing historically Bormuth (1967; 1968a) as well as currently.

Deletion Patterns

There is some research to suggest that varied deletions can hinder or enhance comprehension particularly where the deletion patterns either inhibit or enhance the reader's ability to use context clues to predict the missing words. Where deletions do not interfere significantly with the ability to use context clues, better readers benefit, and the less able readers' performances, unlike that of better readers, remain comparable to their performances with passages

that inhibit the use of context clues (Goetz & Dixon, 1979; Neville & Pugh, 1976-77; Rankin & Thomas, 1980; Smith-Burke, Gingrich & Eagleeye, 1979).

MacGinitie (1961) extended the work in the area of differing deletion patterns and also investigated the impact of varying the number of adjacent words to the deletions. He used 15 different sets of omissions representing eight patterns used with each of two prose passages. Two descriptive narrative passages were selected for different content, style, and difficulty. It was possible to compare the difficulty of restoring the same words in each of the four omission patterns. Omitting every 3rd word was more difficult than every 6th, 12th, or 24th word deletions. Extending the context beyond five words was not helpful. One word on either side of a deletion was equally useful, although less than four words between deletions proved problematical. The rules of the English language result in "a basic limitation in the length of units which can be restored from context" (MacGinitie, 1961, p. 4). He also found that structural deletions were easier than lexical deletions.

Culhane (1970) examined different deletion patterns for prose which was not narrative and found that every 10th word deletions were most appropriate for non-narrative prose and supported MacGinitie's (1961) findings that every 5th word deletion was appropriate for narrative prose.

McNinch, Kazelski & Cox (1974) were also interested in the text variations demonstrated in different forms and disciplines. They suggested that since vocabulary varied from discipline to discipline and that the amount of

information inherent in words and in redundancy of information, one deletion pattern may not be appropriate. They found, however, that with college students no one deletion pattern was suited for a particular subject area.

Taylor (1972) explored the relative influences of preceding, following, and surrounding contexts on cloze responses. He asked the following questions: (a) Would students (university journalism) guess more missing words correctly or interagree more consistently among themselves? and (b) How would these two sets of performances compare with responses to both contexts presented together, with each word surrounded by 10 words, 5 before and 5 after? He found that there was no interagreement and that they did not guess more missing words. He also found that clues before and after were of approximately equal assistance.

Ohnmacht, Weaver, and Kohler (1970) cited an unpublished doctoral dissertation by Rankin (1957) which suggests that every 5th word sampling may lead to a sampling bias towards function rather than content words which points to the need to compare nth word with total random sampling.

Meredith & Vaughan (1978) compared the stability and reliability of scores resulting from nth word and random deletions. They worked with junior secondary students and found that random deletion patterns were a more stable index. However, they identified the need for cut off points because random deletions proved more difficult than every 5th word deletions.

Henk (1981) also examined the different effects of every 5th word and random deletions. Included as well were comparisons between standard and cued blanks, and verbatim versus context synonyms. Henk's major concern was the less than random deletion pattern that emerges with nth word deletions. He noted that nth deletions vary in impact across subject areas. He discussed the reluctance of researchers to implement total random patterns and cites some reasons. First, a total random test is more difficult to construct and second, there is evidence to suggest that there may be insufficient context if deletions are too close together. He found, however, that word length cues seem to overcome the proximity problems of less than four words. Rankin's (1959) statement about deletion patterns appears to have remained true. "The type of comprehension measured by a cloze test is a function of the type of words selected for deletion" (p. 139).

Rankin (1974) provided a summary of research with respect to deletion patterns. He concluded that it appears that the nth deletions measure general rather than specific comprehension skills and that these nth deletions correlate best with standardized reading test performance. However, performance on a specific cloze test is influenced by the type and number of deletions.

Clearly in spite of Rankin's (1974) summary review of deletion patterns, there are still concerns with potential sampling bias with nth word deletion patterns. This limitation warrants further investigation. This is particularly true in light of the fact that in the last decade readability formulae have been criticized more widely for their use and misuse (Armbruster, Osborn & Davison, 1985,

Davison & Kantor, 1982; Gionfriddo, 1985; Lange, 1982; Osborn, Jones & Stein, 1985; and Rush, 1985) although limitations had been identified by a number of researchers in the past (Bormuth, 1966; Chall 1958; Pearson, 1974-1975; and Taylor, 1953). The cloze procedure has the potential to address the concerns or limitations which surround readability formulae, and it is relatively easy to construct, score, and interpret.

The specific concerns with respect to the tendency to bias sampling with every nth word deletion schemes warrant further study and refinement of the procedures as cloze appears to remain a credible practical tool for matching students and reading materials. It appears to address four basic interrelated factors influencing readability: vocabulary level, sentence structure, idea density, and human interest.

Recently, Helfeldt & Henk (1985) compared a totally random cloze format and a traditional 5th word deletion pattern using three reading test passages. A number of sequences were employed and administered along with the Nelson-Denny Reading Test. The subjects were college students. The study also included an additional factor - the cueing of the number of blanks to the length of the word deleted. The findings suggest that this additional factor may compensate for the proximity concerns for less than four words between deletions. However, as the authors suggest, further investigations are required.

A year later, Helfeldt, Henk, & Fotos (1986) conducted a study which extended the cue condition factor combined with a random deletion scheme. In

this instance the subjects were sixth grade students. The additional cueing factor was the inclusion of the first letter of the word deleted as well as the inclusion of the number of blanks to coincide with the word length. The Metropolitan Achievement Test was used as a criterion measure in the study. The additional cues of the blank length and the inclusion of the first letter of each word deleted were introduced in an attempt to compensate for the fact that some random deletions may be too close together and not provide enough context for prediction purposes. The findings of this study were inconclusive and may have introduced variables quite different from those examined in the past. These variables may not be mutually supportive of comprehension. Further concerns were raised regarding the sample which tended to be quite homogeneous with respect to reading ability. The researchers suggest that further work should be done, particularly with lower ability students.

Summary

The early work with cloze tests was an attempt to replace readability formula which seemed to be flawed or limited. Rather than being interested in matching individual readers with appropriate text, the emphasis was on determining the general reading level of text passages and ultimately determining the appropriate grade level placement of readers and textbooks.

Taylor (1953) developed the cloze test in accordance with this perspective. He determined the cloze test to be a powerful tool because of its apparent ability to account for all the factors involved in the communication

process between the writer and the reader. Subsequently, Bormuth (1967; 1968a) and Rankin & Culhane (1969) did further research in an attempt to determine individual student benchmarks for comprehension. They validated percentage scores for cloze tests to correspond with the well accepted benchmarks defined by Betts (1954). These were independent, instructional, and frustration comprehension levels.

The work of such researchers as Allington and Strange (1978) and Peterson & Carroll (1974) indicated that the cloze technique is appropriate to use with less able readers and supports the view that good and poor readers operate on the same skill development continuum.

Varied deletion patterns have been the subject of considerable research. MacGinitie (1961) investigated various deletion patterns and found that deletion patterns where there were less than four words between deletions did not provide the reader with enough context. Somewhat later Ohnmacht, Weaver & Kohler (1970) determined that nth word deletion patterns appeared to support the notion of sampling bias because of the tendency to delete function rather than content words. Henk (1981) found that nth word deletions vary in impact from subject area to subject area. Meredith & Vaughan (1978) found that a random sampling technique produced more stable results than nth word deletions with junior secondary students.

Doubts about the reliability of traditional nth word deletion patterns remained a concern. At the same time readability formulae were being

criticized more frequently. Bormuth (1966), Davison & Kantor (1982), and Pearson (1974-1975) are examples of researchers who expressed concern over the use and measure of readability formulae.

The powerful potential for cloze to take into account many, if not all factors that affect reading comprehension points to the need to pursue alternatives to traditional cloze which compensate for a potential sampling bias.

Chapter III

Research Design and Method

The major purpose of this study is to investigate the use of a random cloze procedure as compared to a traditional cloze procedure with every fifth word deleted. It is also the intent of this study to assess the appropriateness of the reading level of the Grade 11 textbook Towards Tomorrow: Geography, which was written specifically to support the British Columbia Social Studies Curriculum. A secondary purpose is to gain some insight into the extent to which performance on either or both cloze forms is reflective of reading performance on a standardized reading test and in turn whether or not this performance is supportive of the streaming placement procedures at Stelly's Secondary School.

Method

The students who participated in this study were asked to complete two cloze tests and one reading test in three class periods. The reading test was administered on the first day, a Friday, with the two cloze tests being administered on the following Monday and Tuesday.

The reading comprehension section of the Canadian Test of Basic Skills, High School Edition (CTBS), form 5, level 17, was administered at the outset to all students who participated in this study. Appendix A outlines the general directions given to teachers regarding the administration of the CTBS reading

comprehension test. The cloze tests were developed from two passages of approximately 250 - 300 words were randomly selected from the Grade 11 social studies textbook entitled Towards Tomorrow: Geography (Appendix B). This text is currently prescribed for use in British Columbia schools and was specifically written for the Ministry of Education to support the new Social Studies curriculum. The passages were randomly selected and the Fry Readability Formula applied as a means of determining general level of difficulty. The two passages selected were of approximately the same readability level.

Students were given 30 minutes to complete each cloze task. Prior to administering the first cloze task, students were given an introduction to the traditional cloze procedure and the alternate form where a random table of numbers was used to identify deletions. Appendix C. includes copies of the cloze tests used in the study. They were told that only correct completion would count and consequently they were encouraged to complete every blank. Although three different classroom teachers administered the reading comprehension test and the cloze tasks, specific instructions for the teacher and directions to be given to the students were provided by the researcher (see Appendix D).

The purpose of administering the two cloze tests in a different order (a and b) within each of the four groups was to compensate for any order effect that may influence the results of the study.

Note: Two passages were used to develop both traditional and random cloze tests. Students received both a traditional and random cloze test. However, they were placed in one of four groups and within each group they were randomly assigned to complete the two tests within their group in a different order as outlined in Table 13.

Table 2

Summary of Cloze Tests by Treatment Group

Group	Day 1	Day 2
1	a) Traditional Cloze (P1) b) Random Cloze (P1)	Random Cloze (P1) Traditional Cloze (P1)
2	a) Traditional Cloze (P1) b) Random Cloze (P2)	Random Cloze (P2) Traditional Cloze (P1)
3	a) Traditional Cloze (P2) b) Random Cloze (P2)	Random Cloze (P2) Traditional Cloze (P2)
4	a) Traditional Cloze (P2) b) Random Cloze (P1)	Random Cloze (P1) Traditional Cloze (P2)

P1 refers to Passage 1 and P2 refers to Passage 2

The purpose of administering the two cloze tests in a different order (a and b) as outlined in Table 2 within each of the four groups was to compensate for any order effect that may influence the results of the study.

Population and Sample

Subjects in the study were 50 Grade 11 students who were enrolled in one of three streamed English classes -- Communications 11, English 11 (regular), and English 11 (honours) at Stelly's Secondary School, Saanich School District.

Table 3

Summary of School Sample Used in this Study

	3 Classes	Communications 11	English 11 (regular)	English 11 (honours)
Total number of students	50	11	21	18
Total number of boys	29	8	11	10
Total number of girls	21	3	10	8

Measuring Instruments

The measuring instruments used in this study were the reading comprehension component of the Canadian Test of Basic Skills, High School Edition, form 5, level 17, and two cloze tests -- one traditional construction and one alternate (random) construction. The Canadian Test of Basic Skills was used because it includes a number of tests in core areas and provides for students at the secondary level.

The various tests included in the Canadian Test of Basic Skills, High School Edition, were designed to provide an assessment of student progress based on those goals which are generally held for secondary education. The levels of the test correspond roughly to the chronological age of students for whom the tests are designed. Each test, including the reading comprehension component, requires 40 minutes to complete. Standard scores, within-grade percentile ranks and standards as well as grade level equivalents are available for the tests.

The types of reading passages included for Level 17 are: Literature - Poem, Person label, Bank ad, Natural Science, Newspaper editorial, Consumer publication, Psychology, Literature - Drama, and Natural Science.

The test questions cover textbook and everyday content and fact, inference, and generalization skills.

Cloze Tests

Four cloze tests were constructed for two randomly selected passages from the Social Studies 11 textbook, Towards Tomorrow: Geography.

The Fry Graph readability formula was used to get a general sense of the reading difficulty of the two passages. The formula grade level placements were as follows: (a) Passage 1 -- Grade 12, and (b) Passage 2 -- Grade 12.8. The first sentence of each passage was left intact as was the remainder of the

paragraph that included the last deletion. Both a traditional and random cloze test was constructed for each of the two passages although each individual student completed only two cloze tests (1 traditional and 1 random). Before constructing the cloze tests additional passages were sampled and the Fry Graph readability formula applied to ensure that the initial two random samples were representative of general text difficulty.

Procedures

In the first week of December, 1988, the Canadian Test of Basic Skills, High School Edition, form 5, level 17 was administered to three classes: Communications 11, English 11 (regular), and English 11 (honours). The test was completed on the Friday. On the following Monday and Tuesday students completed two cloze tests. Each student in the sample completed one traditional and one random cloze test.

Although the regular classroom teachers administered the CTBS and the two cloze tests, they were provided with specific instructions regarding the introduction and administration of the three tests. Any students whose data was incomplete were excluded from the study. This meant that although the original sample was 60, which allowed for 15 students to be randomly assigned to each of four groups, only 50 subjects have been included in the results. Care was taken to ensure that relatively equal numbers of students from each of the three classes were assigned to each of the four groups. Further, the students in each group were randomly assigned to a sub group (a or b) to receive the random

and traditional cloze tests in a different order. Approximately 50 per cent of the students in each group started with a traditional cloze test and the other 50 per cent a random cloze test. Table 4 outlines the number of students in each group who completed all three tests.

Table 4

The Number of Students Assigned to the Groups

	Total	Sub Group A	Sub Group B
Group I	13	6	7
Group II	11	6	5
Group III	11	6	5
Group IV	15	8	8

Note: The tests were marked by the researcher. Exact word completions only were recorded as correct although spelling was not a consideration.

Limitations of the Study

1. The population consisted of three classes of Grade 11 students from a single middle class school in Victoria, B.C. and generalizations to other populations cannot be made.

2. The passages used to construct the cloze tests were at a higher reading grade level as measured by the Fry Graph readability formula than the grade level the students were currently enrolled in.

3. The placement procedures used to determine which streamed class students were placed in was quite informal.

4. The cloze test has proven intimidating for some students (Smith-Burke, Gingrich & Eagleeye, 1978) and anxiety about the test procedure may interfere with their ability to complete the tests.

5. The random cloze tests avoided consecutive deletions and, consequently, were not entirely random constructions.

Chapter IV

The Analyses and Results

This chapter presents the statistical analysis of the data gathered and the results of the analysis.

The primary purpose of this study was to extend the research base currently available with respect to an alternate random cloze as it attempts to address the sampling problem of traditional cloze construction which calls for the deletion of every nth word. Secondary purposes include investigating the relationship between the traditional and random cloze test results and the CTBS results, as well as considering the appropriateness of a Social Studies textbook, and the streaming practices at Stelly's Secondary School.

Three classes of Grade 11 students were used as the subjects. The individual students were streamed by ability into Communications 11, English 11 (regular), or English 11 (honours). They all completed the CTBS Reading Comprehension test, form 5, level 17. The new Social Studies 11 text Towards Tomorrow: Geography was used to randomly select two passages which were then used to construct traditional and random cloze tests. Each student was randomly assigned to one of four groups such that each student completed one traditional and one random cloze test. The data analysis includes a descriptiive overview of means, standard deviations and in some specific

instances ranges are provided. General trends in the results gathered from the three tests administered in the study is possible as a result of the initial overview as well as more in depth statistical investigations. Pearson correlations, t tests, and analyses of variance were used to compare the results between and among the three tests which were used to permit the researcher to investigate, and subsequently answer the research questions.

Questions to be Answered by the Analysis

1. Is a random cloze test as effective as a traditional cloze test in determining a student's ability to comprehend a written passage?

2. Is there a relationship between the results gathered from random and traditional comprehension results?

3. Is there a relationship between cloze test results and CTBS reading comprehension results?

a) Is there a relationship between random cloze results and CTBS reading comprehension results?

b) Is there a relationship between traditional cloze results and CTBS reading comprehension results?

4. To what extent is the prescribed Social Studies 11 textbook, Towards Tomorrow: Geography appropriate for students of varying reading ability levels?

5. Are the streaming placement procedures used by the English department at Stelly's supported by the CTBS Reading Comprehension test results?

6. Are the streaming placement procedures used by the English department at Stelly's supported by the cloze test results?

Overview of the Analysis

The data collected for the analysis consisted of the raw scores obtained on the CTBS Reading Comprehension component,. form 5, level 17, and the raw scores on traditional and random cloze tests for each of the two passages selected from the Grade 11 textbook Towards Tomorrow: Geography prescribed to support the British Columbia Social Studies Curriculum.

Before addressing the questions and corresponding hypotheses for this study, it is necessary to review the data gathered with respect to the construction of the study. Specifically, order effect for the cloze test, the comparability of the two randomly selected passages used to construct the cloze tests, and the difference between and among the reading comprehension ability of the four groups used in the study were investigated. The major reason for exploring the issues of order effect, comparability of groups and the comparability of the two passages used to construct the cloze tests is to determine whether or not it is possible to deal with the four groups as one and

the cloze tests constructed from the two different passages as one. If this collapsing to one is possible it would facilitate the investigation of the research questions and streamline the data required for analysis purposes. The first two hypotheses address this consideration.

1.0 There will be no significant difference between group performance on four individual traditional and random cloze tests for Day 1 and Day 2.

The researcher attempted to address a potential order effect by assigning each student within each of the four groups to one of two different sequences such that on day 1 one-half the students in each group completed a random cloze test and the other one-half of the students completed a traditional cloze test.

Means, standard deviations and *t* test results outlined on Table 5 were used to address hypothesis 1.0.

Table 5

Mean and Standard Deviations for Traditional and Random Cloze Tests by Group and Comparison Among Groups

	n	Mean	Standard Deviation	t test	t value	Probability	Significance
Traditional Passage 1	24	28.3 (Group 1) 27.3 (Group 2)	8.2 (Group 1) 6.0 (Group 2)	Group 1 and Group 2 (Traditional Passage 1)	.35	.73	not sig.
Traditional Passage 2	26	29.7 (Group 3) 23.7 (Group 4)	7.7 (Group 3) 7.1 (Group 4)	Group 3 and Group 4 (Traditional Passage 2)	2.06	.06	not sig.
Random Passage 1	28	24.5 (Group 1) 22.9 (Group 4)	8.1 (Group 1) 7.2 (Group 4)	Group 1 and Group 4 (Random Passage 1)	.55	.58	not sig.
Random Passage 2	22	19.1 (Group 2) 24.5 (Group 3)	7.6 (Group 2) 8.6 (Group 3)	Group 2 and Group 3 (Random Passage 2)	-1.57	.13	not sig.

The results of the data interpretation, using the t test, indicate that order effect did not impact significantly on the results of the cloze tests such that the null hypothesis 1.0 cannot be rejected; 1.0 there is no significant difference between group performance on the four individual traditional and random cloze tests for Day 1 and Day 2.

Since order of presentation does not significantly affect cloze test results it is possible then to proceed to compare the difference between and among the four groups with respect to the two passages used to construct the traditional and random cloze tests. The hypothesis to be tested was: 2.0 there will be no significant difference among the 4 groups on the traditional cloze tests constructed using passage 1 and passage 2; and 3.0 there will be no significant

difference among the 4 groups on the random cloze tests constructed using passage 1 and passage 2.

Table 6 outlines means and standard deviations for the traditional and random cloze tests for each of the two passages used in the study. Table 7 outlines the results of analyses of variance between and among the four groups in the traditional and random cloze tests.

Table 6

Means and Standard Deviations for Traditional and Random Cloze Tests Results

	n	Mean	Standard Deviation
Traditional Close Passage 1 (Group 1 and 2)	24	27.8	7.2
Traditional Cloze Passage 2 (Group 3 and 4)	26	26.3	7.8
Random Cloze Passage 1 (Group 1 and 4)	28	23.6	7.5
Random Cloze Passage 2 (Group 2 and 3)	22	21.8	8.4

Table 7

Comparison of Traditional and Random Cloze Tests Among Groups (1 to 4)

Analysis of Variance	F	Probability of F	Significance
Traditional Cloze (P1 and P2)	1.6	.19	not sig.
Random Cloze (P1 and P2)	1.2	.3	not sig.

The interpretation of the data comparing the two passages on both the traditional and random cloze tests outlined on tables 6 and 7 suggest that the null hypotheses cannot be rejected such that: 2.0 there is no significant difference among the 4 groups on the traditional cloze tests constructed using passage 1 and passage 2; and 3.0 there is no significant difference among the 4 groups on the random cloze tests constructed using passage 1 and passage 2.

There does not appear to be a significant difference between the two passages used to construct the traditional and random cloze tests making it possible to deal with the two traditional or random cloze tests constructed using passage 1 and passage 2 as a single set and the data pooled for passage 1 and passage 2.

The remaining issue to be addressed with respect to the construction of the study is the comparability of reading comprehension ability between and among the four groups. An examination of the CTBS results permits the

researcher to investigate the issue and pose the following hypothesis such that: 4.0 there will be no significant difference between and among the four groups on the CTBS reading comprehension test.

Table 8

Comparison of CTBS Test Results Among Groups (1 to 4)

Analyses of Variance	F	Probability of F	Significance
	.784	.50	not sig.

Data outlined on table 8 indicates that the null hypothesis cannot be rejected such that: 4.0 there is no significant difference between and among the four groups on the CTBS reading comprehension test.

Because the four groups appear to be at similar reading comprehension ability levels as measured by the CTBS test, it is possible to treat the four groups as one and consider the major research questions in the study using the complete sample of 50 students.

The investigation of the issues surrounding the test construction have been addressed and in each instance the collective results permit the researcher to proceed to investigate the major or primary research question in a straightforward manner. The four groups can be treated as one, the two passages can be treated as one and there does not appear to be any order effect interfering with the results.

The primary purpose of the study is to determine whether or not there is a relationship between the traditional cloze test results and the random cloze test results. The following hypothesis addresses this question such that: 5.0 there will be no significant correlation between the results obtained on the traditional cloze test, both passage 1 and passage 2, and the random cloze tests results, both passage 1 and passage 2, for all students included in the study. This hypothesis is pursued by considering means, standard deviations, and more specifically Pearson Correlations between traditional and random cloze test results as outlined in tables 10 and 11.

Table 9

Mean and Standard Deviations for Traditional, Random, Traditional and Random, and CTBS Raw Scores using all three classes

	n	Mean	Standard Deviation
Traditional Cloze	50	25.9	5.9
Random Cloze	50	21.7	5.8
Traditional and Random Cloze	50	23.8	6.2
CTBS	50	41.6	6.8

Table 10

Pearson Correlations between Traditional and Random Cloze Test Results

r	probability of r	significance
.60	.000	significant

The interpretation of the data outlined on table 9 indicates that the null hypothesis should be rejected such that: 5.0 there is a significant correlation between the results obtained on the traditional cloze tests and the random cloze tests.

It would appear that the traditional and random cloze tests used in this study are measuring similar readability variables as suggested by the correlation (.60) between the traditional cloze scores and the random cloze scores. If the specific variables are different, collectively they balance in general level of difficulty to produce similar results.

The secondary purpose of the study was to gain some insights into the relationship between cloze test results and CTBS reading comprehension results. More specifically to compare the two different cloze test results with the CTBS results for the sample as a whole. The following hypotheses address these comparisons such that: 6.0 there will be no significant correlation between the CTBS raw scores and the cloze test results, both traditional and random, for the complete sample of all three classes; 7.0 there will be no

significant correlation between the CTBS raw scores and the traditional cloze test results for the complete sample of all three classes; and 8.0 there will be no significant correlation between the CTBS raw scores and the random cloze test results for the complete sample of three classes.

Table 11

Means and Standard Deviations for Form 5, Level 17 of the Canadian Test of Basic Skills

	n	Mean	Standard Deviation
Communications 11	11	29.8	7.9
English 11 (regular)	21	42.5	6.3
English 11 (honours)	18	47.7	6.2

Table 12

Pearson Correlation Coefficients for Traditional and Random Cloze Tests, and CTBS Test Results

	r	Probability of r	Significance
Traditional and Random Cloze	.68	.000	significant
Traditional Cloze	.64	.000	significant
Random Cloze	.68	.000	significant

The interpretation of the data outlined on tables 11 and 12 permits the researcher to reflect the null hypotheses as follows: 5.0 there is a significant correlation between the CTBS raw scores and the cloze test results both traditional and random for the complete sample of three classes; 6.0 there is a significant correlation between the CTBS raw scores and the traditional cloze test results for the complete sample of three classes; and 7.0 there is a significant correlation between the CTBS raw scores and the random cloze test results for the complete sample of three classes.

In this study there is a correlation between cloze test performance and CTBS results for all three classes which suggests that the three tests are measuring some similar features of reading comprehension, although the interpretation of the data does not indicate a particularly strong relationship.

The general appropriateness of the Grade 11 textbook Towards Tomorrow: Geography was also of some interest to the researcher. To investigate this, overall cloze test results and the traditional and random cloze test results were considered in light of the benchmarks originally established by Betts (1954).

Betts' work identified three levels of reading performance -- the frustration level, the instructional level and the independent level. Generally these benchmarks indicate a threshold of reading ability; (a) where a student is incapable of reading the material with any amount of assistance (frustration level), (b) where a student is capable of reading the material with assistance (instructional level) and (c) where a student is capable of reading the material without assistance (independent level). Table 1 provides some specific behaviours associated with each of these levels. The three levels have been successfully applied to the interpretation of cloze tests results such that below 40% accurate blank completion is interpreted as frustration level, between 40% and 60% accurate blank completion is interpreted as instructional level, and over 60% accurate blank completion is interpreted as independent level performance (Bormuth 1967,1968(a); Rankin & Culhane, 1969).

The research question regarding the general appropriateness of the Towards Tomorrow: Geography textbook is addressed by the following hypothesis such that: 8.0 the Social Studies 11 textbook Towards Tomorrow: Geography is not appropriate for Grade 11 students.

Table 13

The Number of Students Functioning at Each of the Three Levels: Frustration, Instructional, and Independent on the Traditional and Random Cloze Tests

	Frustration	Instructional	Independent
		Traditional	
English 11 (all 3 classes)	5	29	16
Communications 11	4	7	0
English 11 (regular)	1	14	6
English 11 (honours)	0	8	10
		Random	
English 11 (all 3 classes)	14	26	10
Communications 11	8	3	0
English 11 (regular)	5	15	1
English 11 (honours)	1	8	9

Table 14

The Mean Raw Scores and Range for Traditional and Random Cloze Test Results by Class

	Traditional & Random Mean	Traditional & Random Range	Traditional Mean	Traditional Range	Random Mean	Random Range
English 11 (all 3 classes)	23.9	7-16	25.9	9-46	21.9	7-42
Communications 11	16.3	7-27	18.6	9-27	13.9	7-23
English 11 (regular)	25.3	13-39	27.8	17-37	22.8	13-39
English 11 (honours)	30.1	19-46	31.3	22-46	28.9	19-42

The results of both the traditional and random cloze tests presented in tables 13 and 14 suggest that the Towards Tomorrow: Geography textbook prescribed for Social Studies 11 is appropriate for use with the majority of students. However, it is also important to indicate that approximately 25% of the students in this study are operating at the frustration level with the textbook and, consequently, should be using alternate materials. It is also worth noting that there is a wide range of reading ability within the Grade 11 population and this range is reflected most in the English 11 (regular) classroom. Further, students who did not complete all of the three reading tests in the study and, consequently were not included in the sample, tended to have scored very low on either the CTBS or initial cloze test.

The remaining research questions that have yet to be answered has to do with the streaming practices used by the English Department at Stelly's Secondary School. It was of interest to explore the appropriateness of the class groupings as defined by the three tests used in this study. The hypotheses which address this questions are as follows such that: 9.0 there will be no significant difference between the three classes in their mean cloze test performance, both traditional and random; 10.0 there will be no significant difference between the three classes in their mean performance on the traditional cloze test; 11.0 there will be no significant difference between the three classes in their mean performance on the random cloze test; and 12.0 there will be no significant difference between the three classes in their mean performance on the CTBS test.

Table 15

Comparison of the Three Classes' Performance on Traditional and Random Cloze

Analysis of Variance

	F Value	Probability of F	Significance
Traditional and Random Cloze	32.6	.000	significant
Traditional Cloze	16.1	.000	significant
Random Cloze	20.2	.000	significant

Table 16

Comparison of the Three Classes' Performance on the CTBS Test

F Value	Probability of F	Significance
51.8	.000	Significant

The interpretation of the data presented on tables 15 and 16 indicates that there is a significant difference in student performance between and among the three classes on all four considerations such that: 9.0 there is a significant difference between the three classes in their mean cloze test

performance, both traditional and random; 10.0 there is a significant difference between the three classes in their mean performance on the traditional cloze test; 11.0 there is a significant difference between the three classes in their mean performance on the random cloze test; and 12.0 there is a significant difference between the three classes in their mean performance on the CTBS test.

This would suggest that the majority of students are grouped appropriately into Communications 11, English 11 (regular) or English 11 (honours). However, it is noteworthy that the range and standard deviations suggest that some individual students may not be placed in the appropriate class.

Chapter V

Summary and Conclusions

Conclusion

The results of this study suggest that the use of the random cloze deletion system is comparable to the traditional cloze deletion system. Although the random cloze test results were consistently lower than the traditional cloze test results, they were not statistically significantly different for Grade 11 students of a wide range of reading abilities.

Further, the cloze test results correlated with the CTBS reading comprehension test results suggest that they may be measuring some similar reading comprehension dimensions.

It would be interesting to conduct similar studies using students at the elementary and junior secondary level to gain further insights and possible support for the use of a random cloze test construction rather than a traditional cloze test construction.

The Procedure

Three streamed Grade 11 English classes participated in this study which consisted of three tests: a CTBS reading comprehension test; traditional

cloze test; and a random cloze test. Students from each of the three classes were randomly assigned to one of four treatment groups although the random assignment allowed for relatively equal numbers of students from each of the three classes to be assigned to each of the four treatment groups.

The study required three hours of class time such that: on Day I students completed the CTBS reading comprehension test and on Day II and Day III they completed a traditional and random cloze test. Each of the four groups of students were randomly assigned to complete 1 of 2 traditional cloze tests and 1 of 2 random cloze tests constructed from two passages taken from the Grade 11 Social Studies textbook Towards Tomorrow: Geography.

Summary of the Analysis

Initially the analysis of the data focussed on the construction of the study to determine whether or not such things as order effect impact significantly on the study, whether or not the four groups were homogeneous with respect to ability, as defined by the tests used in the study, and the comparability of the two passages used to construct the cloze tests.

Knowing that order effect did not significantly impact on the study and that the results of the data interpretation for the construction of the study permitted the researcher to collapse the four groups into one and treat the two passages as one and it is possible to proceed to consider the major research question.

The major purpose of the study was to compare students results on traditional and random cloze tests. The Pearson Correlation (.60) indicates a significant correlation between the results obtained on the traditional and random cloze tests.

Secondary purposes for the study included investigating the relationship between the cloze test results and the CTBS results. There was a significant relationship between the tests used in the study. Also the general suitability of the Towards Tomorrow: Geography textbook was considered and found to be appropriate for approximately 75% of the students used in the study. This assumes that the classroom teacher will provide students with reading purposes, text instruction as should be the case for teaching in the content areas for those students operating at the instructional level. Finally the streaming of students by ability into the three classes (Communications 11, English 11 (regular) and English 11 (honours)) were pursued by comparing student results between and among the three classes. The results indicate that the individual class performance was significantly different; however, the standard deviations and ranges suggest that some individual students may not be appropriately grouped with their peers by ability.

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Appendix A

Instructions to teachers for Administration of Canadian Test of Basic Skills Level 17, Form 5.

CTBS Instructions

1. CTBS test to be administered is:

   Reading Comprehension level 17 - item numbers 48 - 109 inclusive.
   Working time for test = 40 minutes.

2. Materials
   - Pencils
   - Erasers
   - Answer sheets
   - Two timing devices should be used
     - wall clock
     - wrist or stop watch (second hand desirable)

3. Refer to CTBS Teacher's Guide Form 5 for background and directions. The critical information has been highlighted in yellow.

Appendix B

Passages from Towards Tomorrow: Geography used to Construct the Cloze Tests

PASSAGE 1

Nuclear Waste

The first nuclear power station, complete during the 1950's, was hailed as a breakthrough. Civilization seemed to be on the verge of a period of cheap, safe electrical power. Some enthusiasts even claimed that electricity bills would be a thing of the past.

The past 30 years have brought a more sober view. Nuclear power stations are expensive to build and are often plagued by technical problems. Depending on how the figures are calculated, nuclear stations produce slightly more power than coal at the same cost - or just break even. Perhaps the main problem is the disposal of nuclear waste. The wastes from the uranium which produces the energy must be removed at regular intervals from reactors. These materials are highly radioactive. They also contain plutonium, a particularly deadly substance, which takes millions of years to decay into harmless substances. Plutonium is also a raw material in the nuclear weapons industry.

Some nuclear waste was originally dumped at sea. Much of it is now stored underground in containers which are intended to be leak-proof. However, at just one underground location, near Hanford, Washington, there have been 20 leaks since 1958. Two solutions have been proposed: either shooting nuclear waste out into space, or burying it deep underground. One of the sites proposed for the second solution is the Canadian Shield, whose bedrock is very geologically stable. Can you think of any problems in connection with either of the proposed solutions? As in the case of chemical waste, most people strongly object to having nuclear waste buried near their homes.

It is, however, unfair to dwell upon the problems of disposing of nuclear waste without mentioning the hazards involved in generating electricity from other sources. For example, it is possible that as many as 20,000 Americans die prematurely every year as a direct or indirect result of the coal industry. Some deaths occur in the mining and transporting of coal. Far more occur because of health problems resulting from air pollution caused by the burning of coal. Burning coal also releases amounts of radioactive material into the atmosphere which are several times higher than routine emissions from nuclear power stations. Finally, coal-fired power stations are a major cause of the environmental problem of acid rain.

PASSAGE 2

The Central Business District

In spite of movement to the suburbs, the city centre provides an ideal location for those businesses which can afford it. Since the city centre is accessible to the greatest number of people, it is where you will find large department stores, head offices of banks, and cultural centres (theatres and concert halls). The core or **central business district** is the nerve centre of any city, the focus of decision-making and communications. It is here that the intensity of land use is highest, as measured by the heights of buildings, the numbers of pedestrians, and the density of traffic (unless specifically excluded from the centre).

The central business district not only contains the principal financial offices in the city, but often has the largest amount of retail floor space (though this may be exceeded by some new suburban shopping malls). The main types of stores located downtown are large department stores and specialty shops. Neither of these is used frequently by any one customer; each therefore needs explosure to the largest possible number of people in order to stay in business. Theatres and other major places of entertainment are also often located in, or near, the central business district. Again the key is accessibility. Parking is made easier by the departure of the daytime business population before the influx of people seeking evening entertainment.

Its central business district usually reflects the overall vitality of a city. In the case of Calgary, Alberta, increasing oil prices in the 1970's led to a surge of development in the city core. The two photographs of Calgary's central business district were taken from the same vantage point before and after the oil boom of the 1970's. The drop in oil prices in the 1980's brought an abrupt decline in demand for new office space in Calgary, with the result that many new offices remained unoccupied.

From a residential point of view many cities are like doughnuts, with many people living in the circle around the central business district but few actually living in the core. Streets of houses in the centre have been progressively taken over by businesses as the city has developed. In recent years, however, downtown living has become fashionable once more, and planners are trying to encourage increased residential land use in and around the central business district. You will return to this point later in the chapter.

Appendix C

The Cloze Tests used in the Study

TRADITIONAL CLOZE

PASSAGE 1

Nuclear Waste

The first nuclear power station, complete during the 1950's, was hailed as a breakthrough. Civilization seemed to be _____ the verge of a _____ of cheap, safe electrical _____. Some enthusiasts even claimed _____ electricity bills would be _____ thing of the past.

_____ past 30 years have _____ a more sober view. _____ power stations are expensive _____ build and are often _____ by technical problems. Depending _____ how the figures are _____, nuclear stations produce slightly _____ power than coal at _____ same cost - or just _____ even. Perhaps the main _____ is the disposal of _____ waste. The wastes from _____ uranium which produces the _____ must be removed at _____ intervals from reactors. These _____ are highly radioactive. They _____ contain plutonium, a particularly _____ substance, which takes millions _____ years to decay into _____ substances. Plutonium is also _____ raw material in the _____ weapons industry.

Some nuclear _____ was originally dumped at _____. Much of it is _____ stored underground in containers _____ are intended to be _____. However, at just one _____ location, near Hanford, Washington, _____ have been 20 leaks _____ 1958. Two solutions have _____ proposed: either shooting nuclear _____ out into space, or _____ it deep underground. One _____ the sites proposed for _____ second solution is the _____ Shield, whose bedrock is _____ geologically stable. Can you _____ of any problems in _____ with either of the _____ solutions? As in the _____ of chemical waste, most _____ strongly object to having _____ waste buried near their _____.

It is, however, unfair _____ dwell upon the problems of disposing of nuclear waste without mentioning the hazards involved in generating electricity from other sources. For example, it is possible that as many as 20,000 Americans die prematurely every year as a direct or indirect result of the coal industry. Some deaths occur in the mining and transporting of coal. Far more occur because of health problems resulting from air pollution caused by the burning of coal. Burning coal also releases amounts of radioactive material into the atmosphere which are several times higher than routine emissions from nuclear power stations. Finally, coal-fired power stations are a major cause of the environmental problem of acid rain.

TRADITIONAL CLOSE

PASSAGE 1

1. on
2. period
3. power
4. that
5. a
6. The
7. brought
8. Nuclear
9. to
10. plaqued
11. on
12. calculated
13. more
14. the
15. break
16. problem
17. nuclear
18. the
19. energy
20. regular
21. materials
22. also
23. deadly
24. of
25. harmless
26. a
27. nuclear
28. waste
29. sea
30. now
31. which
32. leak-proof
33. underground
34. There
35. since
36. been
37. waste
38. burying
39. of
40. the
41. Canadian
42. very
43. think
44. connection
45. proposed
46. case
47. people
48. nuclear
49. homes
50. to

TRADITIONAL CLOZE

PASSAGE 2

The Central Business District

In spite of movement to the suburbs, the city centre provides an ideal location for those businesses which can afford it. Since the city centre _____ accessible to the greatest _____ of people, it is _____ you will find large _____ stores, head offices of _____, and cultural centres (theatres _____ concert halls). The core _____ central business district is _____ nerve centre of any _____, the focus of decision-making _____ communications. It is here _____ the intensity of land _____ is highest, as measured _____ the heights of buildings, _____ numbers of pedestrians, and _____ density of traffic (unless _____ excluded from the centre).

_____ central business district not _____ contains the principal financial _____ in the city, but _____ has the largest amount _____ retail floor space (though _____ may be exceeded by _____ new suburban shopping malls). _____ main types of stores _____ downtown are large department _____ and specialty shops. Neither _____ these is used frequently _____ any one customer; each _____ needs explosure to the _____ possible number of people _____ order to stay in _____. Theatres and other major _____ of entertainment are also _____ located in, or near, _____ central business district. Again _____ key is accessibility. Parking _____ made easier by the _____ of the daytime business _____ before the influx of _____ seeking evening entertainment.

Its _____ business district usually reflects _____ overall vitality of a _____. In the case of _____, Alberta, increasing oil prices _____ the 1970's led to _____ surge of development in _____ city core. The two _____ of Calgary's central business _____ were taken from the _____ vantage point before and after the oil boom of the 1970's. The drop in oil prices in the 1980's brought an abrupt decline in demand for new office space in Calgary, with the result that many new offices remained unoccupied.

From a residential point of view many cities are like doughnuts, with many people living in the circle around the central business district but few actually living in the core. Streets of houses in the centre have been progressively taken over by businesses as the city has developed. In recent years, however, downtown living has become fashionable once more, and planners are trying to encourage increased residential land use in and around the central business district. You will return to this point later in the chapter.

TRADITIONAL CLOZE

PASSAGE 2

1. is
2. number
3. where
4. department
5. banks
6. and
7. or
8. the
9. city
10. and
11. that
12. use
13. by
14. the
15. the
16. specifically
17. The
18. only
19. offices
20. often
21. of
22. this
23. some
24. The
25. located
26. stores
27. of
28. by
29. therfore
30. largest
31. in
32. business
33. places
34. often
35. the
36. the
37. is
38. departure
39. population
40. people
41. central
42. The
43. city
44. Calgary
45. in
46. a
47. the
48. photographs
49. district
50. same

RANDOM CLOZE

PASSAGE 1

Nuclear Waste

The first nuclear power station, complete during the 1950's, was hailed as a breakthrough. _____ seemed to _____ on the _____ of a period _____ cheap, safe electrical power. Some enthusiasts even claimed _____ electricity _____ would _____ a _____ of _____ past.

The past 30 years have _____ a more sober _____. Nuclear power stations are _____ to _____ and are often plagued by technical problems. Depending on how the figures _____ calculated, nuclear stations produce slightly more _____ than coal at the _____ cost - or _____ break even. Perhaps the main _____ is the disposal of nuclear _____. The _____ from the _____ which produces the energy _____ be _____ at _____ intervals from _____. These materials _____ highly radioactive. _____ also contain plutonium, a _____ deadly _____, which takes _____ of years to _____ into harmless substances. _____ is also a raw material in _____ nuclear weapons industry.

Some nuclear waste was _____ dumped _____ sea. Much _____ it is now stored _____ in containers which are intended _____ be _____. However, at just _____ underground location, _____ Hanford, Washington, there have been 20 leaks since 1958. Two solutions _____ been proposed: either shooting nuclear waste out into space, _____ burying _____ deep underground. _____ of the sites proposed for the second _____ is the Canadian Shield, whose bedrock _____ very geologically stable. Can you think of any problems in connection with either _____ the proposed solutions? As in the case of chemical waste, most _____ strongly object to having nuclear waste buried near _____ homes.

It is, however, unfair to dwell upon the problems of disposing of nuclear waste without mentioning the hazards involved in generating electricity from other sources. For example, it is possible that as many as 20,000 Americans die prematurely every year as a direct or indirect result of the coal industry. Some deaths occur in the mining and transporting of coal. Far more occur because of health problems resulting from air pollution caused by the burning of coal. Burning coal also releases amounts of radioactive material into the atmosphere which are several times higher than routine emissions from nuclear power stations. Finally, coal-fired power stations are a major cause of the environmental problem of acid rain.

Appendix D

Instructions for Teachers and Students Regarding the Study Generally and the Cloze Tests Specifically.

Specific Instructions for Teachers and Students to be discussed on Monday December 5, 1988. Prior to administering the first cloze test.

Remind students about the study:

1. CTBS reading comprehension test completed on Friday.
2. Today: first of two cloze tests
3. Remember: you have been assigned to a particular cloze test randomly on an individual basis.
4. It is very likely that the cloze test you will be given is different from many of your classmates.

The purposes of the study you will be involved in are as follows:

1. to investigate the usefulness of an alternate random cloze test as opposed to a traditional cloze test.
2. to determine the general suitability of the reading level of the new Social Studies 11 textbook Towards Tomorrow: Geography.

3. to determine specifically how appropriate Towards Tomorrow: Geography is for you personally.

4. to gain some insight into the appropriateness of the placement procedures used by the English Department at Stelly's

Cloze Test Procedures

1. The concept behind cloze tests is the notion of bringing closure to an incomplete written passage.

2. It is important to read the passage through at least once prior to beginning to fill in the blanks. A complete reading of the passage gives you a sense of what the passage is about, and the author's writing style. Together these should give you clues about how to fill in the blanks.

3. Remember that only exact word replacements will count, so try and anticipate the kind of words you think that the author might use, not just what seems to make sense.

4. Spelling will not count.

5. Try and fill in every blank even if it is a guess.

6. Please print/write neatly.

General Introduction to the Study to be used with the Students

You will be participating in a thesis study. A thesis is a research study written up as a requirement for a Master of Arts degree.

What are Cloze Tests?

Cloze tests are construction by deleting 50 words from a 250 to 275 word reading passage. Typically the beginning and end of the reading passage is left intact so that the readers get some content for what the passage is about.

Cloze tests can be constructed from any written passage of any textbook. Their purpose is to determine the extent to which the reading level of the passage/textbook is appropriate for individual students. It is possible to use cloze tests to match you on an individual basis with the most appropriate reading material and to predict text that will pose problems for you.

Two types of cloze tests will be administered -- one a traditional cloze and one an alternate or random cloze.

Traditional cloze deletes every fifth word in a 250 - 275 word passage (i.e. there a fifty blanks to be filled in). The first sentence and the close of the last paragraph are left intact to provide the context for the passage.

Random cloze deletes 50 words from a 250 - 275 word passage on a random basis such that it is not possible to predict the number of words between the blanks. However, there will never be two blanks together. There will be at least one word left in between two blanks.

An example of a cloze task is:

It's dark in here. Please turn on the _____.

It is important to draw as many clues from the context as possible. Further, you need to put yourself in the place of the author of the written passage and attempt to predict not only the missing word by the word that is most likely to have been the author's choice.

For the purposes of this study cloze tests have been developed for the new Social Studies 11 textbook, Towards Tomorrow: Geography.

How will the study be conducted and what does it entail?

Approximately three class periods will be involved.

1. Complete a reading comprehension test from the Canadian Test of Basic Skills at the grade 11 level (40 minutes)..

2. Complete 2 cloze tasks which have been derived from 2 passages from Towards Tomorrow: Geography (30 minutes each).

3. You, as an individual, will be "assigned" to one of four treatment groups. (ie. each student within a given class will complete the cloze tests in a different order and some students will receive a different cloze test. It is important that you complete the cloze tasks which have you name on them because the whole class will not be completing the same cloze tasks in the same order).

4. The four treatment groups will be created from students in each of three classes -- English 11 (regular), Communications 11, and English 11 (honours).

The four treatments are:

1. traditional cloze passage 1, random cloze passage 1
2. traditional cloze passage 1, random cloze passage 2
3. traditional cloze passage 2, random cloze passage 2
4. traditional cloze passage 2, random cloze passage 1

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Date

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