

A READABILITY SURVEY OF SOCIAL SCIENCE, SCIENCE AND INDUSTRIAL ARTS UNDP MATERIAL USING THE CLOZE PROCEDURE

**Daniel Stamp and fourteen Diploma students*
School of Education, USP.**

As teachers, we all realise the importance of choosing material which our pupils can read and understand. If the material is too difficult, pupils may become frustrated and turn away from the topic. The teacher, therefore, in his new role as organiser, director, stimulator and evaluator of individual learning, must be aware of the problems associated with printed materials.

In its generic sense, the term 'readability' refers to the relative ease with which people can respond in various ways to passages of written prose. Historically, researchers have measured a variety of responses to index the readability of prose passages. The types of responses have included measures of reader interest, reading speed, recall of the passage, proportion of correctly answered questions about the passage and proportion of cloze items answered correctly.

The objective of readability research is to find out the suitability of language used in the students' instructional materials.

There are two major approaches to this objective. The first approach consists of adapting materials to the students, either by selecting materials which are understandable to him or by adjusting the language in materials to suit his language comprehension ability. The main direction of research into readability has been to develop accurate prediction formulâs and testing methods for estimating the suitability of materials for students, but increasing attention is now being given to developing the technology necessary for adjusting materials to suit the abilities of the students.

The second major approach consists of adapting the student to the materials by giving him appropriate instruction in language comprehension skills. Readability research has contributed to the theory of language comprehension instruction by analysing and identifying linguistic features which serve as the stimuli for the comprehension process.

*This study was undertaken as a class exercise by the following students, and was co-ordinated by Daniel Stamp: Takui Ma'afu, Sesilia Fifita, Ofa Uepi Aoete Apelu, Michael Liliu, Salote Loanakadavu, Tara Kenatale, Sateki Fiisipeau, Leela Narayan, Hari Chand, Maya Lal, Akilesh Kumar, Teakura Eliaba, and Indar Deo.

There are two methods by which readability is measured. They are the readability formula and cloze procedure method. The former are the most frequently used and most widely accepted methods for measuring readability. Their advantage is that they can be used to predict how difficult a passage would be for a group of readers. They are usually based upon the analysis of easily identifiable aspects of the text such as sentence length and word complexity or familiarity.

Until the cloze readability procedure was developed by Taylor¹, investigators usually measured the comprehension difficulty of materials by making the conventional type of completion or multiple-choice test for each of a set of passages, administering the passages and their corresponding tests to a single group of students, and then calculating the mean percentage of questions the students answered correctly on the test for each passage.

The second procedure, the cloze readability procedure, has provided a more adequate method of measuring passage difficulty. Cloze readability tests are made by deleting every fifth word in a passage and replacing the deleted words with underlined blanks of a standard length. Students are instructed to write in each blank the word they think was deleted, and they are given whatever time they need in order to complete the task. Responses are scored correct when they exactly match the words deleted. Because cloze readability tests are made entirely from a set of standard mechanical operations, they are not subject to the biases that test writers may impose during the writing of conventional tests.

There has now accumulated quite a number of investigations into the validity of various aspects of the cloze readability procedure. Rankin, who reviewed the research on the general cloze procedure, and Bormuth², who reviewed the research pertaining specifically to the cloze readability procedure, each concluded that the evidence seems to support strongly Taylor's contention that responses to items on cloze tests seem to be psychologically indistinguishable from responses to items normally used to measure comprehension and also his contention that the tests provide valid measures of the comprehension difficulties of passages.

Researches and arguments about cloze readability have therefore led many of us to conclude that the cloze method is the most effective method of measuring readability.

As to its applicability in the South Pacific, Professor J. Anderson of the University of Adelaide in South Australia, carried out research in Papua New Guinea based on the cloze method³. The results that he obtained were similar to the results of a similar test conducted in America and Australia. Below is a table illustrating this point:

TABLE 1

Cloze Test Percentage Scores Corresponding to Multiple-Choice Test Scores of 75% and 90%

Comparable Cloze Scores

Multiple-Choice Criterion Levels	Bormuth (1967) USA	Bormuth (1968) USA	Rankin & Culhane USA	Anderson & Hunt (PNG)
75%	38	44	41	44
90%	50	57	61	53

Table 1 shows therefore that the cloze method works in a similar way with second language learners, as it does in USA.

If results from independent investigations conducted in different countries and within different educational systems seem remarkably close, then this is evidence that points to the reliability and effectiveness of the cloze procedure method. Therefore, there is no reason why this procedure cannot be applied in the South Pacific.

Meanwhile, Warwick Elley of the University of the South Pacific conducted a similar survey in Fiji. He gave the two tests to 100 Class 7 students. The correlation he obtained between the multiple-choice type and the cloze test type was .79. Again, this shows that the cloze procedure method is reliable.

Today, in many schools of the South Pacific, the students are given a lot of reading to do from the pupils' booklets prepared by the UNDP. In view of the above point, the Curriculum Development Unit research group in the Study of Contemporary Issues at USP felt it appropriate to test the readability of the prepared pupils' booklets.

METHODOLOGY OF SURVEY

When designing the three cloze tests used in the survey the researchers took into account several criteria considered relevant, such as age and the level of study of the students. The three cloze tests were prepared for Forms 2 and 3 students in the Suva-Nausori area with ages ranging from 13-15 years old. Other criteria are discussed below.

Three discipline areas were tested. They were Social Science, Science, and Industrial Arts. The three samples tested in each discipline were taken from UNDP Form 3 Social Science and Science Form 2 Industrial Arts pupils' pamphlets.

"A Close Look at the Cloze Test in Assessing Readability" by Warwick Elley suggested the following methodology:

1. Select 2 or 3 typical passages from the material to be rated, each at least 100 words in length.
2. Delete every fifth word after the first line of the passage.
3. Prepare the mutilated passage as a test, with blanks of uniform length in the gaps.
4. Administer the test to the students for whom the material is intended, and ask them to fill the gaps by writing in the words intended by the author.
5. Score the students' responses, accepting only the exact word deleted from the original text. Mis-spellings are not penalised.
6. Where students score approximately 40-45% correct, or more, it can be concluded that the material is within their comprehension.

The researchers followed the same method as above. Out of the total words deleted in each passage, one fifth were nouns; for example, if there were 20 words deleted, 4 were nouns. The time taken for the three tests was not specified but varied, to allow all pupils to finish.

One sample test from Social Science is shown below along with the standard cover that was used to introduce each test. In five of the nine selections, accompanying diagrams were included alongside the text.

Cloze Test — Directions

Name: Race:
School: Sex:
Form: Date:

The Tests

The tests are to find out how well we read. Some words have been left out..... the passages, and we have to write missing words, in the blank.....

Each blank stands for one word only.

Now that the teacher has explained what to do, turn over the page and complete the tests.

Social Science - Test 2

The conflict that I am going to describe is one that I myself was personally involved in. It took place between..... parents and myself over..... Muslim boy.

I became friendly with this boy spent long hours in

.....with him. Anyway, things going fine until my parents thought we were getting involved in our relationship. personally did not like boy at all because was not of our, but he was a Muslim. just couldn't reason with Anyway, after several attempts discourage me from talking this boy, things came a head one particular I was talking to boy when my inquisitive interfered. She told the boy and chased me inside house.

SUMMARY OF FINDINGS.

The sample is not large enough to come to hard and fast conclusions. Nevertheless, a few comments can be made from the data obtained.

The mean percentage scores for all three disciplines are well below the expected mean of 40% plus.

TABLE 2
Mean Scores on Readability Tests

	No. of Schools	No. of Pupils	Mean %
Science	6	164	22
Social Science	7	206	21
Industrial Arts	3	80	26

1. All the materials proved very difficult for these Form 2-3 pupils.
2. Industrial Arts materials showed a slightly higher mean.
3. No significant differences were found between Fijians and Indians, although the number of Fijians tested was much smaller in each case.
4. No significant differences were found between the sexes.
5. Statistical analysis of the tests showed that each of the 3 tests in the different disciplines was of equivalent difficulty.
6. Initial indications show that urban school children scored slightly higher than rural school children. A factor which may account for this is that urban students are more accustomed to the English language.

IMPLICATONS FOR SOUTH PACIFIC EDUCATORS

The majority of activities in which pupils work, either individually or in small groups, depends on the use of written directions, explanations, comments

and questions which the pupils must read. All practising teachers realise that an inability by the pupils to read and comprehend these instructions all too often results in failure and frustration.

This survey indicates that the readability of some of the pupils' materials in the South Pacific is far too difficult and that the vast majority of school students cannot comprehend the written word at this level. The results show that very few students are capable of reaching the 40% platform which indicates comprehension.

If the innovatory curriculum with its emphasis on pupils' materials is to succeed in the South Pacific, then teachers must be made aware of the language difficulties of their students. The readability of curriculum materials currently in use should be critically examined, not only by educators but by secondary school teachers themselves.

We make the following recommendations:

- ★ This study should provide the starting point for further research into the readability of pupils' materials. Teachers can design their own tests based upon the cloze procedure to gauge the readability of materials they are using.
- ★ If a teacher suspects that written material is too difficult for his students, stories or activities should be rewritten, and the passage simplified. A comparison of the teacher's text with the published one would be a worthwhile follow-up.
- ★ In choosing text-books for courses or for the school library, use readability as a major factor in deciding which book to buy. Most publishers will provide sample pages on request, which the teacher could use to make up a 'cloze test'.
- ★ Always be aware of the comprehension problems faced by the students. Read through the text, simplifying where necessary. Use other materials to supplement the text, e.g., tapes (if available), diagrams and charts.

REFERENCES

1. Dieghton, Lee C. **The Encyclopaedia of Education**, Crowell-Collier Educational Corporation, 7, 361-67.
2. Bormuth, John R. (1963), Cloze as a Measure of Readability, **International Reading Association Proceedings**, 8, 131-4.
3. Anderson, Jonathan, Cloze Procedure as a Measure of Readability, **Papua New Guinea Journal of Education**, 6(3), 21-8.
4. Elley, Warwick B. (1977), A Close Look at the Cloze Test, **Set 77 Number One NZCER**.