

The Effects of Formal Schema on Reading Comprehension—An Experiment with Chinese EFL Readers

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Abstract

This study attempts to explore the effects of formal schemata or rhetorical patterns on reading comprehension through detailed analysis of a case study of 45 non-English majors from X University. The subjects were selected from three classes of comparable English level and were divided into three groups. Each group was asked to recall the text and finish a cloze test after reading one of three versions of a passage with identical content but different formal schemata: description schema, comparison and contrast schema, and problem-solution schema. Both quantitative and qualitative analyses of the recall protocol indicate that subjects displayed better recall of the text with highly structured schema than the one with loosely controlled schema, which suggests that formal schemata has a significant effect on written communication and the teaching of formal schemata to students is necessary to enhance their writing ability.

Keywords: Formal Schema, Schema Theory, Reading Comprehension

1. Introduction

For many people, reading is the most important of the four skills in a second language, especially in English as a second or foreign language. According to Carrell [2006], effective reading in a second language is critical for students in EFL contexts, at an advanced level of proficiency, or with a need for English for Academic Purposes. For a long time, EFL reading was viewed as a rather passive, bottom-up process. In other words, EFL reading was primarily a decoding process of reconstructing the author's intended meaning through identifying the printed letters and words and building up a meaning for a text from the smallest textual units at the "bottom" (letters and words) to larger and larger units at the "top" (phrases, clauses,

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intersentential linkages). Correspondingly, problems of second language reading and reading comprehension were considered essentially decoding problems, deriving meaning from print [Rivers 1964, 1968; Plaister 1968; Yorio 1971].

Only since 1979, has a truly top-down approach been proposed in second language reading [Steffensen *et al.* 1979; Carrell 1981, 1982; Carrell and Eisterhold 1983; Johnson 1981, 1982; Hudson 1982]. The top-down perspective of reading process has had a profound impact on reading comprehension, and it views the top-down perspective of the reading process as a substitute for the bottom-up, decoding view of the reading process, rather than being its complement. Only after the appearance of the schema theory, has it been made clear that effective and efficient reading – either in a first or second language — requires both top-down and bottom-up strategies operating interactively [Rumelhart 1977a, 1980; Sanford and Garrod 1981; van Dijk and Kintsch 1983].

Rumelhart [1977b] views reading comprehension as the process of choosing and verifying conceptual schemata for the text. A schema is said to be “a cognitive template against which new inputs can be matched and in terms of which they can be comprehended” [Rumelhart and Ortony 1977: 131]. According to the schema theory, not only is the reader’s prior linguistic knowledge (linguistic schemata) and level of proficiency in the second language important, but the reader’s prior background knowledge of the content area of the text (“content” schemata) as well as of the rhetorical structure of the text (“formal” schemata) are also important [Carrell 2006].

The importance of linguistic schemata in reading comprehension has long been recognized because of the long history of the bottom up view of reading comprehension, and, with the rise of the schema theory, researchers have showed great interest in the importance of content schemata and formal schemata. However, compared with the studies on content schema, studies on formal schema are much less frequent. Therefore, the present study focused on the effects of formal schema on reading comprehension with a view to arriving at a better understanding of the unique nature of EFL reading.

This paper consists of five parts. Part One provides an overview of the study. Part Two presents the background of the study. The elaboration of the experiment is found in Part Three, while the results and discussion are presented in Part Four. Part Five summarizes the findings of the experiment and discusses the implications of the results to the development of EFL reading instruction as well as the limitations of this study.

2. Literature Review

Formal schemata [Sharp 2002] are part of the macrostructure of a text and contain the logical organization of the text which the writer has used to represent the intended meaning.

Meyer and Freedle [1979] explored the effects of different formal schemata on recall. The 4 types of formal schemata compared were: (1) contrastive schema; (2) cause-effect schema; (3) problem-solution schema; and (4) collection-of-descriptions schema. The first three types of formal schemata have “an extra link of relationship” over the descriptive schema. Results demonstrated that subjects who were exposed to formal schemata 1 and 2 recalled more than formal schemata 3 and 4. The results can be explained by schema theory. Based on this theory, recall of information relayed by the first three formal schemata, which offer extra linkage, should be better than that of the descriptive schema. Meyer *et al.* [1980] conducted another experiment to confirm that readers who adopted the strategy of identifying the author’s organization structure would be able to recall more information than students who did not. Results were consistent with the predicted outcome.

The experiments described above were conducted on L1 readers. Research dealing with L2 readers has been more limited. However, Carrell [1984] used Meyer’s passage on “Loss of body water” presented in different schemata to test the effects of top-level organization on ESL readers. Results indicated that certain highly structured schemata facilitated the recall for L2 readers in general. L2 readers tested included Spanish, Arabic, Oriental languages (Korean and Chinese), and Malaysian. Carrell’s work was duplicated by Foo [1989], Goh [1990], and Talbot *et al.* [1991] using exactly the same texts. For all of these investigations, the general conclusion was that the formal schemata of the texts had an effect on reading comprehension as measured by recall and the more tightly controlled schema seemed to be easier to comprehend. Perego and Boyle [2000] also stated that text structure knowledge enhanced comprehension by helping readers to anticipate and predict the direction of a plot or argument, thereby facilitating attention to the larger meaning of the text. Besides, Sharp [2002] studied the effects of the four formal schemata of expositions on comprehension by cloze test and recall protocol. The four formal schemata include description, cause-effect, listing and problem-solution. The result was consistent with the previous work in that it clearly demonstrates that formal schemata do affect reading comprehension. However, the results indicated that it was the most loosely organized text (description) that scored the highest, which was quite different from other investigations of this type [*e. g.* Carrell 1984; Foo 1989; Goh 1990].

The above-mentioned studies have provided a general view upon the role that formal schema plays in EFL reading comprehension. However, some aspects still remain unexplored. First, some results were quite contradictory, for example, Sharp [2002] versus Carrell [1984] as well as Foo [1989]. Besides, no study has been conducted to study the effects of formal schemata in English reading on a specific cultural group — Chinese EFL non-English college students.

A text is a complete linguistic unit to discuss a topic, while around the topic different

people have different ways of developing it [Xiao 2001]. Kaplan [1966] claims that the rhetorical pattern of a text is language-specific and culture-unique and reflects the thought pattern of a particular group. For instance, the English thought pattern is straightforward and the topic is usually developed using a deductive method, while the Chinese thought pattern is spiral and the topic is usually developed via an inductive method [Xiao 2001]. Therefore, the question this study addresses is:

Will the formal schemata of EFL (represented by three different patterns) affect the reading comprehension of native Chinese non-English major college students?

3. Method

3.1 Subjects

Fifty-five sophomores from the School of Liberal Arts and Law of X University were selected to participate in this study. They ranged from 17 to 19 years old, and 15 of them were male. Before entering university, these students already had six years of contact with English as a foreign language, with an average of four hours of English classes per week. By the time they entered university, they had learned about 2,000 words, and they could read simplified English texts and write short compositions. As non-English majors at X University, the sophomores took a College English course totaling 4 hours per week.

The 45 participants were selected out of 150 students from three classes in School of Liberal Arts and Law and students from the same class fell into the same group (each group 15 participants). The researcher excluded the top 35 students and poor students and chose those 15 intermediary students in each class on the basis of the final exam of the English course. In addition, a one-way ANOVA indicated no significant differences existed among three groups of subjects.

3.2 Material

Three versions of a passage with identical content but different formal schemata were used (see Appendix A). The three types of formal schemata selected in the study are description, comparison and contrast, and problem-solution. This combination is unique for a couple of reasons: the previously-mentioned studies [Sharp 2002; Foo 1989; Carrell 1984] all studied the first and the last type of schemata while bringing out contradictory results, along with the comparison and contrast type being missed in both studies [Sharp 2002; Foo 1989]. Passage 1 is description, and no clear relationship can be seen among its components. Therefore, it is highly loosely organized. The macrostructure of Passage 2 (comparison and contrast) follows the three-part pattern — introduction, body, and conclusion. In the introduction part, not only are the subjects to be compared and contrasted identified, but also the points made about them

are stated clearly. The body adopts the subject-by-subject pattern. One subject is to be discussed fully, then the next subject. In discussing each subject, some aspects are examined in detail. The conclusion part summarizes the main points. Passage 3 is problem-solution which is arranged into three parts. The introduction introduces the problem, the body expands on the solutions to the problem, and the conclusion is the summary of the solutions to the problem. The discourse signals in Passage 2 and Passage 3 are highlighted in Appendix A.

The three passages are appraised as the same level of difficulty by three English professors in Y University in terms of word length, word choice, and sentence type. The numbers of words in the three passages were 192, 193, and 196, respectively. No uncommon words appeared in any of those passages. There were four complex sentences in each of the three passages.

3.3 Instruments

A considerable number of methods have been used to measure reading behavior and reading comprehension. A text-based cloze procedure and a recall protocol were considered the most appropriate methods for this study. Both methods have been used in reading comprehension investigation extensively, and both methods allow a large number of subjects to be assessed.

3.3.1 Cloze Test

A cloze test was employed in this study. Cloze tests have aroused much discussion and have drawn lots of criticism. However, there is enough evidence to support them as a measure of reading comprehension. Bormouth [1968] concluded that cloze tests seemed to be valid measures of passage difficulty. Cloze tests appear to be valid, reliable language proficiency tests that can be easily constructed and used by ESL teachers [Aitken 1975; Stubbs and Tucker 1974; Oller 1973; Brown 1980]. Besides, both Bachman [1985] and Jonz [1990] reviewed the investigations supporting cloze.

The type of cloze construction adopted in the present study is similar to the one in Sharp's study [2002], based on Farhady and Keramati's study [1996]. Farhady and Keramati's design calculates deletion rates on the basis of noun phrases in a text and they assert that such a design takes better account of the discorsal and linguistic structure of the language used and is a comparatively good test of reading comprehension because of improved reliability and validity. In this design, noun phrase calculation should conform to the following rules: conjoined NPs were regarded as single units; complex NPs (NPs with embedded NPs) were counted as single units and pronouns were ignored. Exact word scoring, which requires the word put in to be the exact word used in the original text, was used. Deletion rates for the text were: *description* every 6th word, 29 deletions; *comparison and contrast* every 7th word, 25 deletions; *problem-solution* every 6th word, 30 deletions. Deletion rate changes between 6 and

7 are not likely to have an effect [Alderson 1979; Porter 1978]. A sample cloze together with calculation is shown in Appendix B.

3.3.2 Recall Protocol

This study also used a recall protocol to measure subjects' reading comprehension of the given texts. Employing a recall protocol to test reading comprehension is a common practice in research of this sort. For example, Morrow [1988] and Salvia and Hughes [1990] strongly recommended recall as a method of classroom assessment for instructional and diagnostic purposes. This method requires that the text be divided into idea units. An idea unit, also called a linguistic unit [Bransford and Franks 1971; Carrell 1983] and an information unit [Roller 1990], is the minimal words necessary to express a thought or idea. Therefore, subjects' reading comprehension is measured by the number of idea units recalled, *i.e.* the amount of information recalled. The segmentation of texts in this study was similar to Johnson's [1970] to allow quantitative assessment of recall. Furthermore, to account for qualitative level differences in recall, the researcher followed Sharp's practice [2002]: the idea units were also rated for importance within the text. The quantity and quality of idea units was determined by the agreement reached by eight English professors in Y University and was shown in Table 1 (see Appendix C).

3.4 Data Collection

At the very beginning of the test, subjects were briefly informed that the text was about houses. Since recall protocols allow the possibility of rote learning without real understanding of the text, they were not told that they would be asked to recall and they were asked to fill a questionnaire about personal information (see Appendix D) as a distraction task between the initial reading of the text and the recalling of the text. When the test started, the three texts with different formal schemata were distributed to the three groups of subjects, respectively, and the first sentences of all three texts were the same. Then, they were asked to read the text in five minutes. After three minutes of answering the questionnaire, they were told that that they should take a test in English within ten minutes. Eventually, a ten-minute cloze test was administered.

3.5 Data Analysis

The 45 cloze items (15 descriptions, 15 comparison and contrasts, and 15 problem-solutions) were rated by two raters. They were completely agreeable with each other because cloze requires exact words. In addition, the 45 recall protocols were also sent to these two raters to assess both in terms of quantity and quality on the basis of the templates reached by eight English professors in Y University. For the convenience of comparison, both the quantitative

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score and qualitative score of recall protocols adopted the percentage system. The quantitative score of each recall protocol was calculated according to the following formula: quantitative score = (the idea units recalled / the total idea units in the recalled passage)×100. The qualitative score of each recall protocol were obtained based on another formula: quantitative score = (sum of the importance level of each recalled unit / sum of the importance level of all idea units in the recalled passage)×100. In this study, misspellings and grammatical mistakes did not affect the score of a subject's recall because such mistakes did not mirror readers' understanding of the passage. The reliability of the essay ratings for the two raters was excellent (see Table 2) and the final score of each one was the average of the two scores given by the two raters. Both raters selected for this study were intensive reading teachers of English with more than five years in the English department of Y University, so they were highly competent to fulfill this task.

Table 2. Interrater Reliability for the Two Raters

Reading text	Correlation coefficient 1 (quantity)	Correlation coefficient 2 (quality)
Text 1	0.97	0.94
Text 2	0.88	0.87
Text 3	0.93	0.89

The quantitative and qualitative scores of recall protocols were input in Statistical Package for Social Sciences (SPSS) for descriptive and inferential analysis. The effect of formal schema on reading comprehension was measured through one way ANOVA.

4. Results and Discussion

Research Question:

Will the rhetorical pattern of EFL (represented by three different patterns) affect the reading comprehension of native Chinese non-English major college students?

Table 3. Cloze, Recall 1 (Quantitative) and Recall 2 (Qualitative) scores for the 3 texts

Text	Cloze Mean	Recall 1 Mean (Quantitative)	Recall 2 Mean (Qualitative)
Text 1	51.0000	39.6667	43.5333
Text 2	53.3333	48.2667	49.9333
Text 3	59.5333	58.4667	62.6667
Overall	54.6222	48.8000	52.0444
F	1.120	8.863	8.373
Sig.	.336	.001	.001

The means of three kinds of score: cloze, recall 1 (quantitative), and recall 2 (qualitative) for the three texts with different formal schemata (description, comparison and contrast, problem-solution) are presented in Table 3. As shown in Table 3, the cloze test did not demonstrate significant differences among the three schematically different texts ($p=0.336>0.05$). However, when it comes to recall protocol, both the quantitative and qualitative scores indicated significant differences among the text types. In terms of quantitative measure the three schematically texts were significantly different at the level of 0.001, with Text 1 (description) scoring the lowest (mean=39.6667) and Text 3 scoring the highest (mean=58.4667). Text 2 scored in between (mean=48.2667). As for qualitative measure, the texts again witnessed significant differences at the level of 0.001. Text 3 (mean=62.6667) still obtained the highest score while Text 1 (mean=43.5333) achieved the lowest and Text 2 was in the middle (mean=49.9333).

This means that, in terms of the cloze test, no significant difference could be found among the three texts with different schemata, but, according to the number and the importance of the idea units recalled, significant differences did exist among them.

In general, the effect of formal schemata on reading comprehension observed in this study is quite similar to the profile documented in many research papers [Meyer and Freedle 1979; Meyer *et al.* 1980; Carrell 1984; Foo 1989; Goh 1990; Talbot *et al.* 1991; Sharp 2002] in that it revealed that formal schemata indeed affects reading comprehension. However, in this study, no significant difference was found in the cloze test among the schematically different texts as opposed to Sharp' study [2002], in which the four text types — description, cause-effect, listing, and problem-solution differed significantly in the cloze score with description scoring the highest. This can be attributed to the teaching and learning style of Chinese teachers and students. In China, especially in mainland China, both English teachers and learners attach great importance to grammar and stress precision, particularly at the sentence level. In addition, a cloze test is an inevitable part of any kind of English test in mainland China, CET-4 and CET-6 in particular, so preparing for such exams requires one to be acquainted with the relevant skills in doing such an exercise. The effect of formal schemata on reading comprehension might be overridden by the effect of those techniques. The differences in teaching systems between Hong Kong and mainland China, together with the difference in the subjects between this study and Sharp's [2002], correspondingly, led to different findings. Hong Kong was a colony of Britain; accordingly, its current teaching system (including the teaching aim, method and strategies) was strongly influenced by Britain. A wide gap exists between the teaching systems (including the policies on educational administration, the language of instruction, the allocation of funds, the examination system, the system of academic awards and the recognition of educational qualifications) of Hong Kong and mainland China [Bray 1997]. For example, English is the medium in class in

Sharp's study [2002] while Chinese is the instruction language in this study except in English class, which inevitably exerted a certain effect on the results of the two studies. Furthermore, the subjects in Sharp's study [2002] were Hong Kong Chinese school children (mean age 14.1) while the subjects in this study are sophomores in a mainland China university. They differ greatly in terms of age, language environment, etc.

However, in the light of recall protocol, both quantitatively and qualitatively, significant differences can be observed among different text types. This result can be explained well by the schemata theory. The last two types of formal schema — comparison and contrast, along with problem-solution — have an additional link of relationship over the descriptive schema. Accordingly, recall of information conveyed by the last two formal schemata, which offer extra linkage, should be better than that of the descriptive schema only if the subjects have a great ability of identifying the formal schemata. This is because Foo's study [1989] suggests that rhetorical structures (formal schemata) which help information recall are not necessarily easy to recognize. The subjects of this study were brought up in mainland China's education system which is exam-oriented, and they are strongly influenced by it. Besides, the majority of important English writing tests in mainland China such as CET-4, which is of vital importance to college students like the subjects in this study, is often exposition/argumentation writing and is seldom description writing. Therefore, both teachers and students take great effort to analyze and to practice the rhetorical patterns of such writings. This can explain why they recall better in comparison and contrast and in problem-solution than in description.

The difference between results from the cloze test and the recall test of the present study can be viewed from another perspective — being attributed to the inherent difference between cloze and recall tests. Some researchers [Alderson 1979; Lado 1986; Markham 1985] claim that the cloze test in general is more a test of linguistic skills (*e. g.*, grammatical and lexical knowledge) than of reading comprehension because cloze items are often based on cues from the immediate environment around the blank rather than on information from the whole text. In contrast, a recall test involving production of information may additionally require the selection and coordination of ideas and impressions, formulation, and ordering of remembered information [Meyer 1984]. The production skills that are required by recall tasks may affect both the quantity and the quality of information students recall [Johnston 1983]. According to Johnston's description of the cognitive requirements of recall tasks, the reader must understand and store the information, must be able to retrieve it on demand, and must decide on a starting point, a path through the information. The above discussion boils down to one point that, in comparison with cloze test, a recall test relies more on text's rhetorical structure, which might be the cause for different results from the cloze and recall tests being obtained.

5. Conclusion

In this thesis, the author has mainly studied the effect of formal schemata on reading comprehension by making a comparison of the reading scores of three schematically different texts by three groups of subjects, respectively. The three text types are description, comparison and contrast, and problem-solution. The results indicate that significant differences do exist among the text types both in terms of the quantity and quality of the recall protocol with the highly structured schema — problem-solution scoring the highest and the loosely controlled schema — description scoring the lowest. However, significant differences are not found among these three types in the cloze test.

This study has called attention to the formal schemata in written communication. Traditionally, teaching of writing emphasizes the instruction of new words and syntactic structures so students are unlikely to create communication problems at the sentence level, while producing many essays described by western scholars as written in a roundabout way, being flashy, and lacking consistence and logic [Coe and Hu 1989]. As this research demonstrates, texts written with clear structure and logical connection yield efficient communication. Therefore, it is the responsibility on the part of English writing teachers to get students acquainted with the practice of embodying the particular formal schema in their specific writing task.

There are several limitations to the present study due to time and other resources. The major limitation of the study was the sample size. In this study, the sample size is not large enough. With the small number of participants, the experiment was conducted in a small scale; the data thus collected may not be large enough for statistically significant generalization. Thus, conclusions are drawn within this context. Another limitation is the text type. The text type studied only includes description, comparison-contrast, and problem-solution. Future research should consider exploring other text types and using larger samples.

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Appendix A: The texts used in the experiment

Passage 1 (Description)

With the rapid expansion of cities, a huge number of people flocked there, and therefore, the demand of houses exceeds the supply of houses. Quite a lot people have no house to live in. Modern science and technology have made it possible for people to build high buildings and to supply water, electricity and elevators for people living in them. It is also proposed that government should open up underground housing area. High buildings can be set up on the vast pieces of land, on which old buildings of one, two or three stories have been pulled down. In this way a great number of people can get released from this trouble. Opening up an underground housing area is unrealistic because it needs much more money and takes a much longer time to carry out. Besides, since workers have to work under streets and other high buildings in order to build underground houses, it is rather dangerous. In the meantime, thousands of people are waiting anxiously, so enhancing the efficiency of their work not only concerns the happy life of many families but also bears upon the establishment of a harmonious society. (192 words)

Passage 2 (Comparison and Contrast)

With the rapid expansion of cities, a huge number of people flocked there, which could not offer enough housing. Building high buildings and opening up underground housing areas are the two suggestions proposed to alleviate housing shortage. **HOWEVER, THE FORMER IS MORE PRACTICAL THAN THE LATTER.**

BUILDING HIGH BUILDINGS IS EASIER TO CARRY OUT AND LESS EXPENSIVE. Modern science and technology have made it possible for people to build high buildings and to supply water, electricity and elevators for people living in them. Furthermore, high buildings can be set up on the vast pieces of land, on which old buildings of one, two or three stories have been pulled down. In this way a great number of people's housing problems can be solved in a relatively short time. **IN CONTRAST,** opening up an underground housing area is unrealistic. It needs much more money and takes a much longer time to carry out. Besides, since workers have to work under streets and other high buildings in order to build underground houses, it is very dangerous.

Though both methods can fulfill the task, **BUILDING HIGH BUILDINGS IS MORE PRACTICAL THAN OPENING UP UNDERGROUND HOUSING AREAS.** (193 words)

Passage 3 (Problem-solution)

With the rapid expansion of cities, a huge number of people flocked there, and **THE HOUSING PROBLEM** in big cities became one of the most serious of all the great problems which face us at the present time. And it is very urgent for us to take effective steps **TO**

SOLVE THIS PROBLEM.

THERE IS MORE THAN ONE WAY THAT PEOPLE SUGGEST TO SOLVE THIS PROBLEM. We could build high buildings. Modern science and technology have made it possible for people to build high buildings and to supply water, electricity and elevators for people living in them. Furthermore, high buildings can be set up on the vast pieces of land, on which old buildings of one, two or three stories have been pulled down. IN THIS WAY A GREAT NUMBER OF PEOPLE'S HOUSING PROBLEMS CAN BE SOLVED IN A RELATIVELY SHORT TIME. ANOTHER SOLUTION TO THIS PROBLEM is to open up an underground housing area. This method demands more money and a much longer time. Besides, workers have to work under streets and other high buildings in order to build underground houses.

If the two methods are adopted, THE HOUSING PROBLEM IS SURE TO BE SOLVED.
(196 words)

Note: The capitalized words explicitly signal the discourse type of each passage. The interrelationship of the components is unstructured in the description text, with no clear relationships being evident and therefore, there is no clear textual signals in that text.

Appendix B: Sample Cloze (based on 6th word deletion)

Problem-solution

With the rapid expansion of cities, a huge number of people flocked there, and the housing problem in 1. _____ (big) cities became one of the 2. _____ (most) serious of all the great 3. _____ (problems) which face us at the 4. _____ (present) time. And it is very 5. _____ (urgent) for us to take effective 6. _____ (steps) to solve this problem.

There 7. _____ (is) more than one way that 8. _____ (people) suggest to solve this problem. 9. _____ (We) could build high buildings. Modern 10. _____ (science) and technology have made it 11. _____ (possible) for people to build high 12. _____ (buildings) and to supply water, electricity 13. _____ (and) elevators for people living in 14. _____ (them). Furthermore, high buildings can be 15. _____ (set) up on the vast pieces 16. _____ (of) land, on which old buildings 17. _____ (of) one, two or three stories 18. _____ (have) been pulled down. In this 19. _____ (way) a great number of people's 20. _____ (housing) problems can be solved in 21. _____ (a) relatively short time. Another solution 22. _____ (to) this problem is to open 23. _____ (up) an underground housing area. This 24. _____ (method) demands more money and a 25. _____ (much) longer time. Besides, workers have 26. _____ (to) work under streets and other 27. _____ (high) buildings in order to build 28. _____ (underground) houses.

If the two methods 29. _____ (are) adopted, the housing problem is 30. _____ (sure) to be solved.

Appendix C

Table 1. Idea Units and Their Hierarchical Arrangement of the Problem-solution Text

Level of importance	Idea unit
1	With the rapid expansion of cities, a huge number of people flocked there,
3	and the housing problem in big cities became one of the most serious of all the great problems which face us at the present time.
3	And it is very urgent for us to take effective steps to solve this problem.
3	There is more than one way that people suggest to solve this problem.
2	We could build high buildings.
1	Modern science and technology have made it possible for people to build high buildings and to supply water,
1	electricity
1	and elevators for people living in them.
1	Furthermore, high buildings can be set up on the vast pieces of land,
1	on which old buildings of one, two or three stories have been pulled down.
2	In this way a great number of people's housing problems can be solved in a relatively short time.
2	Another solution to this problem is to open up an underground housing area.
1	This method demands more money
1	and a much longer time.
1	Besides, workers have to work under streets
1	and other high buildings in order to build underground houses.
3	If the two methods are adopted,
3	the housing problem is sure to be solved.

Note. Level of importance: 3=main generalization; 2=supporting generalization; 1=supporting detail.

Appendix D

Questionnaire

Name: _____ Age: _____ Sex: _____

Hometown: _____

Major: _____

Employment Objective: _____

Employment Experiences: _____
