CHAPTER 3

RESEARCH METHODOLOGY

3.1 METHODS IN RESEARCH

There are diverse means of eliciting information regarding language processing strategies, such as, those employed by researches in prior research. These may consist of formal and informal observations, interviews, group discussions, questionnaires, and learners' reports (of their own insights about the strategies they use) in the form of diaries, dialogue journals, recollective narratives, and think-aloud protocols (Oxford & Burry-Stock 1995:2). These self-reports include self-observation and self-revelation (Cohen 1987: 32). The most direct insight into actual mental processes that take place when learners process language input and produce language output would comprise self-revelation methods, such as, think-aloud protocols and verbal reports based on stimulated recall. In addition one could also have access to information that was invisible to any observers via the interviews (Cohen 1987:32). Hence, the research methodology in the present study consists of the think-aloud technique, stimulated recall and interviews.

The first part of this chapter gives a description of the subjects and the criteria for the selection. The second justifies the choice of the three techniques employed. The third examines the instrumentation that is utilised for the training session and the trial for the think-aloud technique, the two cloze exercises, and interview questions for the instructors as well as the probing questions for the stimulated recall sessions. The final part reports the procedure undertaken to carry out the whole study.

3.2 THE SAMPLE

The subjects of the present study involved four female Malaysian Chinese students enrolled in a three-year (six-semester) Diploma in Accountancy in the Polytechnic of Port Dickson, Malaysia. They were in their third semester of their course.

It was the intention of this study to focus on a as homogeneous group of subjects as possible so that the numerous factors that may affect or influence the choice of language processing strategies could be minimised. These factors may include age, gender, national origin, proficiency level, outcomes of learning purpose, educational and cultural background. For instance, studies have shown that adult language learners seem to use more elaborate language processing strategies than younger learners whereas female learners used significantly more language processing strategies than male learners and they used them more frequently. (Oxford 1989: 238 & 239)

The subjects, twenty years old, and were of similar educational background and qualification. They each had six years of primary education in a Chinese medium school where the language of instruction was Mandarin. This would imply that they had spent a similar span of time in formal English language learning. They came from non-English speaking families situated in two northern adjacent states, namely, Kedah and Penang. They were first-grade holders of the Malaysian Certificate of Education with their English language grade at an average of C3, that is, the highest credit. This grade was awarded for their overall general proficiency of the English language. Their reading skill at the time of research would match the descriptive band at the intermediate-high level of the ACTFL Proficiency Guidelines as follows.

Generic descriptions - Reading
These guidelines assume all reading texts to be authentic and legible.

Intermediate - High
Able to read consistently with full understanding simple connected texts dealing with basic personal and social needs about which the reader has personal interest and/or knowledge. Can get some main ideas and information from texts at the next higher level featuring description and narration. Structural complexity may interfere with comprehension; for example, basic grammatical relations may be misinterpreted and temporal references may rely primarily on lexical items. Has some difficulty with the cohesive factors in discourse, such as matching pronouns with referents. While texts do not differ significantly from those at the Advanced level, comprehension is less consistent. May have to read material several times for understanding.

ACTFL Proficiency Guidelines cited in Hiple 1987 : 21

The subjects could be considered multilingual as they were equally fluent in two languages, namely, Hokkien (their native language) and Mandarin; a little less proficient in the Malay language as well as comparatively less proficient in the English language. Since the subjects were given the choice to verbalise in any of the mentioned languages except Hokkien (a language quite unfamiliar to the researcher), it was deemed unnecessary to measure their oral proficiency in the English language as it would not be one of the factors affecting the quality of their think-aloud protocols. It was also due to the options of these three languages that the researcher had selected this ethnic group which had the shared knowledge of these languages.

They were selected from the same course so that they would share the same characteristics of the learning environment. For instance, they would be required to read similar materials of the same genre and linguistic register. Furthermore they would be learning the second language for approximately identical reasons, that is, to prepare themselves for the use of the second language in the future workplace.

Since the focus of the study was to vary the type of cloze exercise, subject variables were kept to the minimum. However individual differences, particularly those that were innate, such as, personality, characteristics, aptitude, and affective factors would be inevitable.

3.3 METHODOLOGY

As there is no one research method that is perfect, a combination of methods has been employed to compensate for the shortcomings inherent in each method. For instance, think-aloud protocols may not offer the most detailed information if the subjects in the study do not describe fully their strategies nor verbalise their mental processes. In order to produce convergent identification and validation of language processing strategies, this study adopted the "methodological triangulation" (Grotjahn 1987 cited in Vann & Abraham 1990 : 179). This triangulation comprised three different methods, namely, think-aloud protocols, stimulated recall and oral interviews that were semi-structured.

The first two methods could be regarded as a combination of concurrent and retrospective verbal report data which were aimed at complementing each other. The think-aloud protocols constituted the fundamental data upon which the analysis of the study would be based. In order to improve on the reliability of this data, the second set of data, obtained through stimulated recall, would function as a check on the interpretation of the think-aloud protocols. For instance, differences in background knowledge between the subjects and the researcher may lead to incorrect interpretation. However, this misapprehension could be clarified during the stimulated recall.

Lastly, the researcher conducted an interview with eight English language instructors in the polytechnic on an individual basis. The interview attempted to seek answers to the question whether the subjects practised the language processing strategies taught by their instructors. This would be answered by matching the instructors' expectations of strategies involved in cloze completion with the subjects' actual performance during their think-aloud protocols and explanations during their stimulated recall sessions.

The multiple approaches to data collection in this study would decrease researcher subjectivity and lead to higher validity and reliability of the data and its interpretation. Triangulation which can enhance data quality and the credibility of findings (Patton 1990: 193) was achieved by means of cross-checking data produced by the three different methods undertaken in the study. In addition to providing corroboration of findings, the triangulation of data had helped to alleviate the problem of choosing between methods, making it possible to employ a range of complementary means of appropriate investigation (Smagorinsky 1994: 15).

3.3.1 Think-Aloud Protocol

Concurrent verbal reports or think-aloud protocols are being increasingly implemented as a method of identifying the mental process that readers use to understand the printed word (Anderson 1991: 460). They are a form of self-revelation consisting of "think-aloud" stream-of-consciousness disclosure of thought processes while the information is being attended to (Cohen 1990: 95).

The think-aloud protocol of identifying strategies was adopted since it allowed an insight into:

(a) the thought processes of the subjects who were second language learners ,

(b) the information being attended to by them, and
(c) what they subsequently did with this information.

(Black 1993: 423)

For instance, a cloze item might appear to require intersentential *referencing* to complete it. Even if the subject was to get the correct answer, it would be superficial to presuppose that the subject had utilised *referencing*. It would be possible for the subject to use a quite different strategy to close the gap, one which was based on other clues in the immediate context of the gap; on prior, general knowledge or on a whole range of other strategies (Storey 1997: 215). Hence, a think-aloud protocol that could clarify how the answer was arrived at, would be able to verify the strategy used by the subject.

The protocols were produced when the subjects verbalized their thought processes while completing the two cloze texts. The subjects were encouraged to report very specifically what they were thinking as they were processing the texts and how they arrived at the answer. This verbalization was audiotaped for each individual subject. In order to prevent any form of distractions during the taping of this think-aloud session, there was no immediate contact between the researcher and the subjects. In other words the researcher did not intervene, nor prompt the subjects at any point of time throughout the taping. There was totally no interaction between the researcher and the subjects from the start until the end of the taping of the think-aloud protocols. Besides distributing the cloze text and giving the instructions, the researcher's role was also to set up the necessary equipment in the language laboratory and to ensure that they were functioning properly. In assuming this non-participatory role, the researcher would not interfere nor interrupt the emergence of integrative or generative processes.

3.3.2 Stimulated Recall

The stimulated recall employed in this study was basically a combination of two procedures. These were listening to the audiotaped think-aloud protocols and interviewing the subjects by asking probing questions concerning their mental processes. This method involved a face-to-face oral interview conducted on an individual basis while listening to the audiotaping of the subject's think-aloud protocol. The tape was paused when it was necessary for the subject to explain periods of silence, repetitive reading, and when the process of arriving at an answer was not made known in the think-aloud protocol.

This method leads itself as retrospective verbal-report data since the stimulated recall was conducted a day or two after the completion of each cloze task. The delayed retrospection was inevitable as time was needed for the researcher to listen to all the think-aloud protocols so that questions could be formulated at appropriate junctures. Since the duration of the stimulated recall session was of about an hour for each subject, it took two consecutive days to complete the four stimulus recall sessions. consequently these subjects' capability to remember the mental events involved in the language processing and production may be taxed. This problem could lead to faulty reporting, such as, a decrease in accuracy. Then it would be a challenge for the researcher to tap this information while it was still available (Cohen 1987: 36). In the study this challenge had been taken up. The tape was played so that the subjects could be guided in their recall and would be able to provide explanation on how they processed the texts and produced their answers. In addition, the subjects did not have to depend entirely on their memory to reconstruct the mental processes. This method was adopted because it could provide personalised information on many strategies that otherwise would be unavailable through the sole researcher's interpretation of the

think-aloud protocols. This is because the subjects could have the opportunity to furnish additional data during the interview stimulated by their own audiotaped think-aloud protocols. To tap this rich source of information, the questions formulated were open-ended ones. It was important for the researcher to abstain from voicing her own opinions and the correct answers so that the subjects' report would not be influenced in any way. It was their point of view or explanation that was of utmost significance in this method.

Since the researcher did not intervene in any way during the think-aloud session, the stimulated recall was carried out to complement the verbal reporting to ensure that the required information on the subjects' utilisation of learning strategies was as complete as possible. This would be particularly relevant because the think-aloud protocols produced for instances of automatic answering routines would not probe the cognitive processes underlying subject behaviour (Storey 1997: 222).

Furthermore the stimulated recall was conducted as a means of probing how subjects read when they were not encountering difficulties. The audiotape was paused after an appropriate period of 'non-stop' behaviour (Hosenfeld 1984: 248) when there were no apparent reading problems. For instance, the subject produced the expected answer almost automatically. In other words, the subject uttered the answer without any hesitation and any change in the rate of reading. The tape was paused and the subject was requested to explain how the answer was arrived at. The oral questioning functions as an external stimulus for obtaining data on the learning strategies utilised by the subjects. In addition this approach could assist in identifying reader perspective, that is, specifically what the subjects were thinking about when pauses occurred. It

might also reveal the objectivity with which the subjects approached the text (Swaffar 1988: 6).

The data obtained would be employed to assist in the interpretation of the think-aloud protocols. It would also serve to reduce researcher's subjectivity when identifying the strategies used by the subjects. The data obtained via the stimulated recall was particularly significant when the subjects' mental processes were not verbalised during their think-aloud protocols.

3.3.3 Interview

Interview was the preferred elicitation technique over questionnaire due to a sufficiently small population of eight instructors that made it possible for personal interview session to be realistic. The instructors would be interviewed individually by the researcher to avoid the effect of mutual influence of opinions expressed by the other instructors should they be present. This would allow for richer interactions and more personalised responses (McDonough & McDonough 1997: 184).

The purpose of conducting these face-to-face interviews was two-fold. Firstly, it was to investigate whether they instructed their students in completing cloze texts with/without options and if they did, what their instructions were. Secondly, it was to verify if the language processing strategies taught were actually utilised by the subjects. This would indirectly indicate whether language processing strategies could be taught.

These interviews were semi-structured with just about four to five key questions on the aims of the interviews. The researcher and the interviewees were free to ask supplementary or follow-up questions for clarifications or provide further explanations

to probe more deeply into issues of interest related to the research. This form of interview was employed because it would not only give the researcher a great deal of flexibility but also the interviewee a certain degree of power and control over the course of the interview (Nunan 1992: 150). As the instructors were interviewed by their peer, it was the researcher's intention not to exert too much control nor to be too imposing upon them. The researcher's role was just to stimulate the interviewees' thoughts and focus them upon the key issues in relation to the objectives of the interview. This form of semi-structured interview would allow freer exploration of the interviewee's meanings, practices and expectations. It also provided the opportunity for a two-way interaction to seek clarification and to disambiguate questions and statements made during the interview if necessary.

In order to make the interview appear more natural and resemble a conversation between equal participants, the questions were not necessarily asked in any predetermined order. In addition rephrasing of each question was allowed according to what had gone before, what the researcher had already discovered, and according to the interviewee's understanding (Sapsford & Jupp 1996: 96). This was to reduce the effect that the researcher's interactions with the interviewees might have on the data collected. Despite the flexibility allowed, every interviewee had to answer all the key questions to ensure the consistency, validity, and reliability of the data.

The eight interviews were not tape-recorded. The researcher made notes of the key responses. This was considered to be sufficient as the findings were supplementary to this study. Furthermore the presence of a tape recorder might jeopardise the friendly and open atmosphere that the researcher was attempting to create and maintain throughout all the interview sessions.

3.4 DATA COLLECTION

The data for this study was collected via three methods, namely, interview, think-aloud protocol and stimulated recall. The following is a chronological outline of the procedures, rationale and precautions undertaken during the study.

STEP 1: PREPARING INTERVIEW QUESTIONS FOR INSTRUCTORS

Three key questions were set to find out the following:

(a) the frequency and the type of cloze exercises given by the instructors to their students;

(b) the assumptions made by the instructors if they set their own cloze test; and

(c) whether they taught their students any strategies for cloze completion and if so, what these strategies were.

The questions were printed out and sufficient copies were made for all who were involved in the interview.

STEP 2: PREPARING INSTRUCTORS FOR INTERVIEW

The researcher approached all eight English language instructors in the polytechnic concerned and requested for their willingness to be interviewed. The purpose of the interview was also made known to them so that this would increase their motivation to respond openly and in detail. All the instructors responded positively to the request and appointments were made to interview them on an individual basis. They were given the option whether they would like a preview of the interview question before the interview or during the interview. All of them selected the prior options. Hence, they were given a copy of the interview questions to facilitate their contribution during the interview.

STEP 3: INTERVIEWING INSTRUCTORS

The interviews (approximately 20 minutes each) were conducted at the convenience of the instructors within their normal working duration in the polytechnic, that is, between eight o'clock in the morning and fifteen minutes past four in the afternoon. Besides the key questions, follow-up questions were also asked whenever further details were necessary (such as, what the focus of the cloze exercise was). Only questions that were directly related to the issues at hand were raised by the researcher to ensure that the duration of the interview would not be too lengthy. This was done so that the instructors would not feel they were imposed upon.

The researcher was mindful to establish and maintain neutrality and rapport throughout the interview sessions. Neutrality was achieved by not allowing the interviewees to engender either the researcher's favour or disfavour with regard to the content of their response (Patton 1990:317). Simultaneously rapport was built on the researcher's ability to convey empathy and understanding without judgement (Patton 1990:317). As an illustration, questions were neutrally worded to avoid imparting a sense of intimidation and prejudice. Furthermore, the researcher made certain that the interviewees should be the ones who verbalised more as a safeguard against imposing the researcher's opinions upon them.

Only salient points were noted down to minimise the distraction due to the activity of note taking. The interview sessions were not audio-recorded as detailed record of actual language data was not the object for the interview. The eight interviews were conducted within a time frame of two weeks before the actual research with the subjects was conducted. This was to ensure that the researcher's questions would not be influenced by the findings of the research.

STEP4: ANALYSING THE INSTRUCTORS' RESPONSES

The responses were amenable to fairly simple statistics, such as, frequencies and proportions in terms of percentages. This was followed by a qualitative description on the types of strategies taught. For further discussion on the data, please refer to 4.3.4

STEP5: SELECTING THE SUBJECTS

Students from twelve classes were short-listed by adhering to the following criteria:

- Minimal differences in learner variables (for example, students should be of the same age, gender, course in the polytechnic, ethnic group, duration of learning the English language, similar proficiency level and whose native language could be understood well by the researcher).
- Experience in completing cloze texts with and without options.

Based on these criteria, seven Chinese female students from the class, DAT 3 (Diploma in Accounting Semester 3), were selected.

STEP 6: PREPARING TASKS FOR TRAINING IN THINKING ALOUD

Since the focus of the study was on mental processes, it was decided that training tasks should provide practice in solving problems mentally. Hence tasks that require description of psychomotor skills such as tying shoelaces were omitted. As there would be a trial think-aloud for both types of cloze exercises, only mental tasks were devised. The first two tasks were mathematical while the third was language-based. The mathematical tasks consisted of solving two sums and two problems that were of average difficulty. The sums involved direct calculations with figures while the problems involved reading and comprehension before actual calculations could be carried out. The progression from less complex to more complicated mental processing

would help train the subjects in producing their think-aloud protocol. Incidentally the cloze exercises required reading and comprehension as well.

The second type of training technique was the anagram task that was related to letters and words rather than numbers (Nunan 1992:118). An anagram is a word or phrase whose constituent parts have been rearranged, resulting in 'nonsense' words or phrases. The subjects were required to unscramble these to make meaningful words or phrases. According to researchers, the subjects would need to draw on long-term memory to select likely combinations of letters or words (combinations that occur frequently in English) and use these to generate words containing these combinations. Similarly, in order to solve the cloze text without options, the subjects would need to generate suitable words. Two anagrams were devised to provide practice in thinking aloud.

STEP 7: TEXT SELECTION FOR CLOZE

Reading business articles is stipulated as one of the sub-topics in the Malaysian polytechnic English language syllabus for students studying commercial courses. The English Language Unit of the Polytechnic of Port Dickson had listed this topic at the earlier part of the English language scheme of work for Commerce Semester Three students. Hence, the appropriate source to obtain the texts would be from business magazines and journals. The text selected for the study proper was an article on communication taken from the World Executive's Digest (1995). The article "What did we say" written by Dr. Stephanie Jones was selected as it was related to the subject's purpose of learning a language, that is, for communication.

Although the article was not directly related to business, its genre as well as register was atypical of an effective communication in the business or corporate world. This

would be an asset and interest to the subjects. It was relatively general in terms of its content and lexis since it was not overly dependent on the schemata for business as the occurrence of technical terms was minimal. The topic on effective communication was within their daily experience. Hence they could relate to it. This would benefit the subjects as prior familiarity with the subject matter in the text would enhance language recognition, concept recall, and inferential reasoning (Swaffar 1988:4). In addition the content would be agreeable with the subjects as it did not in any way contradict their belief. This factor was of significance because cloze performance could be impaired as a function of disagreement with the content of the text selected (Salup 1974:12).

Furthermore its appropriateness in terms of difficulty level rendered the article as a suitable text in its authentic linguistic form. Hence there was no adaptation made to the original article except for the clause inserted to reintroduce Nathan Rosenberg in Text 2 (that is, the cloze text without options) and the change of format presentation from columns to normal paragraphs. Simplification was not encouraged as it would decrease the redundancy of more natural English writing (Fotos 1991:323) which was acknowledged as an important factor in solving cloze text. Furthermore the subjects had "the exposure and practice in decoding the message systems of authentic texts" (Swaffar 1985:17) prior to the study. Since the article consisted of approximately 700 words, it was divided into two equal sections. The first half comprising 343 words was used for Text 1 (that is, the cloze text with options). In spite of the split, the halves were still 'self-contained' or complete text that could stand on its own. The length of the two texts would be considered suitable as it should be at least 200 words long, to ensure a reasonable number of deletions and thus fair reliability (Porter 1976:154). The text should not be too long (for example, more than 500 words) so that the task would not

become wearisome and to reassure subjects that "the end is in sight" (Schulz 1983:129).

Furthermore the whole text was used instead of two totally unconnected texts for two reasons as pointed out by Goodman & Goodman 1994:121. Firstly, familiarity with the style and general semantic thrust of the language used in the text could assist the subjects to make successful predictions of the deleted words. This would only be possible when the author's syntactic preferences and the semantic context development were evident over the entire text. Short texts would not provide sufficient cues for the subjects to build a sense of either style or meaning. Secondly, the connected whole text would offer redundant opportunities for the subjects to recover from miscues on meaning and self-correct. By maintaining the use of one text, factors such as differences in author's style (syntactic and lexical preferences), content, and text difficulty that would affect the subjects' performance could be reduced. This would indirectly assist the subjects in solving the latter cloze which was without options, making the task less intimidating. For the first cloze, assistance was given in the form of four options for each blank.

The text was selected by taking into consideration the subjects' age, education level, prior knowledge, interest, and proficiency level of the second language and also text difficulty (some quality inherent in texts which makes some texts absolutely more difficult than others, Klein-Braley 1997:51). Precaution was taken in the choice of text to prevent presupposing linguistic skills and content knowledge that are far beyond the reach of the subjects but yet challenging enough for the subjects to exercise their strategies (Bransford et al. 1985:189).

STEP 8: CLOZE DESIGN

After obtaining the appropriate text, it was divided into two fairly equal halves, Text 1 and Text 2 respectively. The next step was the rational deletion process. Ten functional and ten content words were deleted from each text. For each of the blank in Text 1, four options (1 key and 3 distractors) were given. The number of deletions was doubled as compared to the trial cloze texts in order to provide a sufficient corpus for the study.

STEP 9: PREPARING CLOZE TEXTS FOR TRIAL THINK-ALOUD SESSIONS

Since the trial cloze texts should reflect those of the actual study, they were selected based on the same criteria and similar cloze designs were adopted. An article based on a general topic entitled "Becoming A Peak Performer" by Dr. Gerald Kushel was selected from the same issue of the World Executive Digest. Since the article was quite lengthy, two suitable portions were extracted. The first text comprised three paragraphs with 189 words while the second text consisted of four paragraphs with 200 words. A total of ten words were deleted from each text. In this rational cloze format, deletions consisted of five grammatical words and five content words in each text. For the first text, four options (one key and three distractors) were provided for each deletion. Since these texts were meant as a form of practice, they were of a shorter length and a 50% reduction in the number of deletions for each text.

STEP 10: CONDUCTING TRAINING IN THINKING ALOUD

The training session was viewed as an essential practice for the seven potential subjects because it was necessary for them to familiarise themselves with the task. The training session was held prior to the trial think-aloud for cloze with options. The session was conducted during the lunch hour when the language laboratory was unoccupied.

For the first part of the training, the subjects had to solve mathematical problems. The researcher illustrated on how the think-aloud was to be executed by verbalising each step involved in a multiplication process. For practice, each subject took turns to solve a sum written on the white board just before their turn. This was to ensure that the think-aloud protocol would be concurrent. They verbalised their thinking as they wrote the steps involved in solving the sum on the board. They were given the option to use Mandarin, Malay or English so that the language factor, which could be a barrier to self-expression, might be minimised. After each think-aloud performance, there was a debriefing on the strengths and possible alternative ways of making the think-aloud protocol more complete and informative as far as the mental processes were concerned.

There was no taping for the first of the mathematical task so that the potential subjects could concentrate on the think-aloud process and know what was expected of them to say. However for the second part of the mathematical task, they were required to audiotape their verbalisation of their mental processes by utilising the headset and built-in tape recorder available at the booth where each of them was sitting. They were taught how to operate the equipment that was necessary for them to record what they were saying. In other words, they were shown how to use the headset and the tape recorder. Each of the potential subjects was provided with a blank 60-minute audiotape with their name on it.

Then the two mathematical problems printed on a handout were given to each potential subject. They were instructed to verbalise and record their thinking as they were solving the problem. When they had solved both the problems, they stopped the recording and rewound the tape. Due to time constraint, only the taped think-aloud protocol of the first and the last subject to complete the task were selected to be played

for everyone to listen. The first was selected as it might be too brief and necessary details of the mental processes would not be mentioned. Conversely, the last might contain the necessary details required since the duration of the taping was the longest. Comparisons were made between the two recordings regarding the amount and quality of the information on the mental processes. The potential subjects were encouraged to follow the strengths and to avoid the shortcomings in their future think-aloud recording. The last part of the training involved solving two anagrams printed on another handout to enhance concurrent think-aloud. It was conducted in the same manner as the second part of the mathematical task. After the training session concluded, the subjects appeared to be confident in their think-aloud protocol. The duration of the session was approximately forty minutes.

STEP 11: CONDUCTING TRIAL FOR CLOZE WITH OPTIONS FOLLOWED BY DEBRIEFING

The trial think-aloud session was conducted immediately after the training session in the language laboratory. This would enable the potential subjects to put into practice the pointers they had just gleaned from their training.

The cloze exercise, which comprised a short text with ten deletions and forty options, was distributed to the subjects. The following instructions were given.

1. Please complete the cloze text in the way you usually do it. Fill in each blank with the most suitable word; one which would fit best in the text by selecting one of the four options given. Do not spend too much time on one of the blanks if you do not know the answer. Leave it and go back to it later. If you want to change your answer do not erase it. Just cancelled it. Then circle the letter for the new answer.

2. The only difference from the normal way you solve the cloze task is that you have to say aloud what you are thinking. It is important that you let me know how you get the answer. You can use Mandarin, Malay or English to say what you are thinking at the same time while you are doing the cloze exercise.
3. You can take as much time as you like to do the exercise. When you feel that you are satisfied with your answers, that is, you don't want to change your answers anymore, you can stop the recording. Remove the tape and return it to me. You can leave after that.

Questions raised by the potential subjects were clarified to make sure the potential subjects understood what they were expected to do. The cloze exercise was distributed to them with the reminder not to start reading until instructed to do so. When all of them were ready, the subjects were told to switch on the tape recorder and were reminded not to switch it off until they had finished. Once the tape recorder was switched on and they had put on the headset, they started reading aloud and verbalising their thoughts. The researcher did not intervene in any way. The recording lasted for an average of 15 minutes. There was no time limit stipulated so that the potential subjects would not need to complete the task within a time constraint.

The tapes were collected and listened to by the researcher to identify the strengths and shortcomings of the think-aloud protocols. These were noted as follows:

(1) Strengths

- Verbalising thoughts after reading a portion of the text
- No lapses of silence
- Verbalisation of how an answer an answer was arrived at

(2) Short-comings

- Mumbling, that is, the voice was too soft to be audible
- Significant pauses of silence
- Just reading aloud the text and substituting the options without verbalising the

thinking process
- No verbalisation of how an answer was arrived at
- No recording at all due to some technical error

It was decided that three of the seven potential subjects would not be included in the study due to poor verbalization and unclear pronunciation.

The following day a 20-minute discussion was held in the language laboratory during the lunch hour with the remaining four subjects. Selected portions of the tapes regarding the strengths (as an example) and shortcomings (as an avoidance or improvement) were played. This was done to ensure that the actual think-aloud protocols could attain a certain quality that could be utilised as valid data.

STEP 12: CONDUCTING THINK-ALOUD FOR CLOZE WITH OPTIONS

The think-aloud session for the cloze with options was conducted immediately after the discussions on the trial run so that the subjects could remember and practice the pointers on what was expected of a high quality protocol. The same procedure for the trial run was repeated with a reminder to subjects that they need to verbalise their thoughts and not just to read the text and options aloud. They were also requested to test their recording equipment before they actually started on their think-aloud protocol to ensure that the equipment was in working condition and their verbalisation was recorded. They were instructed to use the reverse side of the tape if necessary.

Each protocol lasted for an average of 30 minutes. When the subjects had completed the cloze task, they handed the tape, the task sheet, and the answer script to the researcher.

STEP 13: LISTENING TO THINK-ALOUD PROTOCOL FOR CLOZE WITH OPTIONS

The researcher listened to each of the four tapes in turn. While listening, the researcher noted down the part of the protocol that would require the subjects to provide further information regarding their mental processes. This was done by taking note of the counter-number. Questions were formulated so that the researcher could pinpoint the lack of information during the stimulated recall session with each subject.

STEP 14: CONDUCTING STIMULATED RECALL

The stimulated recall session was conducted for two consecutive days after the think-aloud protocol. This was carried out on an individual basis. The duration for each session was about an hour on the average. It was arranged at a convenient time after a quarter past four in the afternoon at the researcher's residence. The taping of the subject's think-aloud protocol was played from the beginning to the end. Both the subject and the researcher were given the liberty to pause the tape so that request for further clarification or provision of additional could be made by both parties in Mandarin, Malay or English. The cloze exercise and the subject's responses were available for reference.

Short notes regarding the key points were taken down by the researcher when the subjects responded orally. This session was not taped. This was to put the subjects at ease so that they could concentrate fully in listening to their own think-aloud protocol and in providing the necessary explanation or description of how they arrived at their answers.

STEP 15: CONDUCTING TRIAL THINK-ALOUD FOR CLOZE WITHOUT OPTIONS FOLLOWED BY DEBRIEFING

STEP 16: CONDUCTING THINK-ALOUD FOR CLOZE WITHOUT OPTIONS

STEP 17: LISTENING TO THINK-ALOUD PROTOCOL

STEP 18: CONDUCTING STIMULATED RECALL

STEP 15 to STEP 18 were a similar repetition to STEP 11 to STEP 14. Since the subjects were quite familiar with the think-aloud taping and stimulated recall, the duration for each step was relatively reduced by five to ten minutes.

STEP 19: TRANSCRIBING THINK-ALOUD PROTOCOLS

The initial stage was listening to and transcribing the audio taping of the four subjects' think-aloud sessions as they completed the two cloze tasks. The subjects utilised three languages as they thought aloud, namely, the English, Malay and Chinese (Mandarin) languages. The first two languages were retained in their original form with no alterations or corrections. The third language was translated into the most appropriate equivalent in the English language with the meaning in tact. The eight think-aloud protocols were transcribed as naturally as possible with no editing at all. For example, miscues were also transcribed. Subjects' words were differentiated from the words in the text or options by using italic.

STEP 20: SCORING THE ANSWERS TO THE TWO CLOZE TASKS

The scoring of the subjects' performance in the cloze tasks was carried out after the stimulated recall sessions so that the researcher-cum-interviewer would be able to maintain a neutral attitude towards the subjects throughout these sessions. The answers for the cloze with options were scored using the exact word method. This meant that the word deleted was the key among the four options and the remaining three distractors, were not accepted. Due to this objectivity in identifying the answers, scoring had become less time-consuming and made simple.

The scoring of answers for the cloze without options was based on the acceptable word, that is, any responses that were judged to be grammatically and semantically appropriate alternatives to the original elements omitted from the text would be acceptable as correct responses (Sciarone and Schoorl 1989:419). The easiest possible scoring method would be to count incorrect any word besides the exact word deleted since the scorer only had to check each response for a match with the corresponding item on the list of the original words deleted from the passage (Oller , Jr. 1973:108). The ability to replace the original word could imply that the subjects were able to use the graphophonic, grammatical and semantic cues available in print, as well as knowledge of the language and subject matter to process the text (Goodman 1973, Hurtado 1985:75). Therefore this exact word scoring criterion might create a cloze exercise that could be simply too difficult for non-native speakers of the English language even though it might not be for the natives (Oller Jr. 1972: 151&152). The reason for this difficulty to surface could be that non-native speakers, for instance, the subjects involved in the study, would lack the knowledge of form and redundancy to respond as a native might (Medley Jr. 1977:40). Despite the ease of scoring in utilising the exact word criterion, the acceptable word criteria should also be considered

particularly with non-natives of the English language. The criteria for the acceptable word scoring were kept simple yet precise so that marking would not appear to be too complicated. These criteria are as follows:

1. Misspelling would be accepted if the intention was clear.
2. Answers which were more than one word would not be accepted since it was stipulated in the instructions that only one word was allowed for each blank.
3. Alternatives must be grammatically and semantically correct.
   for example, Word deleted: silence
   Alternatives: a) stillness / quietness
   Accepted (grammatically and semantically correct)
   b) silent
   Not accepted (grammatically incorrect although semantically correct)

STEP 21: TABULATING DATA FOR ANALYSIS

The data collected via the triangulation approach was tabulated for analysis to be done. The data from the think-aloud protocols was merged with corresponding data collected via the stimulated recall to obtain a more accurate picture of the strategies employed by the subjects. For further discussion on the data, please refer to Sections 4.3.1 to 4.3.3.

3.5 INSTRUMENTATION

The instrumentation for the study comprised basically of three main types, namely three tasks for training in think-aloud technique, two cloze texts and questions for interviews and stimulated recall sessions. Based on two types of cloze design (with and without options), four different sets of cloze were devised; two sets of each cloze design: one for the trial and another for the study proper. There was one set of interview questions for the English language instructors. Questions were also framed for the eight stimulated recall sessions with the subjects.

The rational and details of these three main types of instrument would be discussed in further depth in the following sections.

3.5.1 Tasks For Training In Think-Aloud Technique

There were three tasks devised; two were mathematical in nature and one was language-based. These mathematical tasks were preferred as they lent themselves quite naturally to the think-aloud technique. Since it was the intention to expose the potential subjects to the think-aloud technique of verbalising their thoughts, the mathematical sums in the first task dealt only with figures that involved direct mechanical calculations. Although the second task was also mathematical in nature, it required reading and comprehension in the second language prior to solving them. This would serve as a lead-in for the cloze completion that required reading skills as well. The third task was devised to provide the opportunity for the subjects to practise their vocabulary skills which they would also require during the completion of the cloze text.

TASK 1

The following seven sums were written on the white board one at a time for each subject when it was their turn. Subjects were reminded to voice their thoughts as they solved the sums given.

1. 74	2. 185	3. 67	4. 403
+ 96	+218	-59	-324

5. 83	6. 52	7. 8. $120 \div 8$
$\times$ 6	$\times$ 49	

Answers:

1. 170	2. 403	3. 8	4. 79
5. 498	6. 2548	7. 15	

TASK 2

Solve the two mathematical problems. Please remember to say your thoughts aloud.

1. A total of 114 oranges were to be shared equally among 3 friends. How many oranges did each person get?

2. Chan went shopping with RM150 in his wallet. He bought two items; a shirt for RM82.25 and a leather belt for RM39.90. How much money did he have left?

Answers:

1. 38 oranges 2. RM 27.85

TASK 3

INSTRUCTIONS: Unscramble the letters to form an English word.

The first letter of the word is given.

Please remember to say your thoughts aloud.

1. paenph h_____

2. albestin s_____

Answers:

1. happen 2. suitable

3.5.2 Cloze Texts Without Options

The construction process of rational cloze texts without options for both the study and the trial was relatively simple and less time-consuming as compared with the cloze options. After having selected a suitable text, which was authentic, non-literary, and

with a subject matter that was familiar and of interest to the subjects, the only remaining part of the task was to delete certain words from the text based on particular rationale held by the researcher. Refer to Appendices E and F, pp. 234-254. The rationale for the deletions is discussed in detail. This is followed by a review of the deletion rate and the layout or format of the cloze text.

There were no deletions made in the first two sentences so that they would act as a natural lead-in and to allow the theme of the text to become established. The deletions were focused on content words and function words. The content words deleted in the study were nouns, verbs and adjectives while the function words deleted consisted of prepositions, pronouns, conjunctions, auxiliaries, determiners and demonstratives. Content words contain the message or idea, whereas function words connect the ideas cohesively in a larger context (Sim & Bensoussan 1979:36). In other words, just as concepts resulting from content words would assist in comprehension, function words would be essential in identifying cohesion in texts (Ulijn 1984 cited in Swaffar 1988:13). Decoding or producing function words would not be less important a lexical skill than content-word interpretation or production. Hence, the significance of these two categories of words should not be undermined in reading comprehension.

In addition, the rationale for deleting content words stemmed from the fact that an impoverished knowledge of content words would be a hindrance in processing and producing the second language, especially in the area of reading comprehension. The requisite of completing the cloze text using content words would be a challenging activity of language comprehension executed through thought processes for the subjects. Furthermore the rational for the function-word deletion was based on common grammatical problems faced by ESL students in the polytechnic. To a certain extent,

these problems may also probably be points of uncertainty among the subjects, depending on their proficiency level of the second language. The grammatical problems that were focused upon in the study of the second language are as follows:

I. subject-verb agreement (deletion of auxiliaries)
II. prepositional phrases (deletion of prepositions)
III. linking sentences and ideas (deletion of conjunctions or link-words)
IV. referencing (deletion of pronouns, demonstratives)
V. determiner (deletion of articles)

In this manner the rational cloze in the study might reflect a discrete-point item in which accurate grammatical knowledge of the second language would be the prerequisite. For instance, the subjects would be required to know that a third-person pronoun verb in the present tense would necessarily utilised a third-person-singular verb in the present tense. The primary advantage of such an item would be its utility in identifying the problematic area should an inappropriate answer be given. In other words, the instructor might presume to know where and what the problems were when designing the cloze task (Oller & Conrad 1971:186). On the other hand, it would be essential to know what words like 'this, that, these, those, it, and them' referred to in order to understand a text. The selection of the wrong referent for these pronouns and determiners might lead to a grave misinterpretation of what the writer had said (Mackay & Mountford 1979: 125).

Since this was a rational cloze design, there was no compulsion to fix a regular deletion rate, that is, the number of words between two consecutive blanks. The cloze text had a mean deletion rate of 16 words and ranged from a minimum of 1 word to a maximum of 33 words. This wide range would enable the researcher to detect if different strategies were employed at the extreme end of the range. Simultaneously the researcher could also examine the effects of differing deletion rate and the quantity of the context on the strategies utilised by the subjects. The blanks were numbered and

had a standard length of 3 cm with sufficient space between the lines for the subjects to write their answers. The blanks were indicated by a line of standard length as different lengths would be a clue to the length of the word deleted. The entire cloze design was on a single sheet of paper.

3.5.2.1 Deletions in cloze text without options for the study

From the total of twenty deletions, ten were content words and ten were function words. Refer to Table 3.1, p. 242. The content words consisted of seven nouns and three verbs. The deletions did not involve other word classes such as adjectives and adverbs because these words would lend themselves to a wide variety of choices which may be suitable answers. Since the scoring would be based on exact words as well as other grammatically and semantically correct words, it would mean that scoring could become very subjective. Another reason for avoiding these two word classes was that there might be insufficient cue for the subjects to know the exact word. Hence, it could result in testing more of the style instead of general proficiency of the subjects.

The ten function words included three prepositions, two conjunctions, two pronouns and a determiner, a demonstrative and an auxiliary.

3.5.2.2 Deletions in trial cloze text without options

The ten words deleted belong to the same word classes as those deleted for the study except that there was no demonstratives. This was because the trial text did not contain any demonstratives after the first two sentences from which no deletions were to be made. There were five content words; two were nouns and three were verbs. The rest were five function words from five different word classes, namely, auxiliary, conjunction, determiner, preposition and pronoun.

3.5.3 Cloze Texts With Options

The rational and the purpose for the deletion of content and function words would be similar to those mentioned for cloze texts without options. The only difference in this cloze design was the provision of multiple-choice options for each blank. Refer to Appendices G and H, pp. 237-241. With these options the range of possible answers was reduced to the four stipulated by the researcher. Hence there was a certain degree of control exerted by the researcher over the particular aspect of the second language to be focused upon. For instance, if the word deleted was a preposition, the three distractors would also be different prepositions. Therefore the distractors would reflect the word class of the item deleted as far as the deletion of function words were concerned. On the other hand, the distractors for the content words deleted belonged to one of these categories as follows:-

a) different words of the same word class
   For example, word deleted : rejected (adj.)
   distractors : offended (adj.), pitiful (adj.), and disappointed (adj.)

   Note : Fine semantic distinctions among options could not be avoided at times since distractors that were too obvious would only assist the subjects to arrive at the appropriate answer through the elimination process instead of employing other strategies. For example, the subjects would be expected to decide on their choice of the most suitable word based on word collocation and the context at the intrasentential level or intersentential level within a paragraph or between paragraphs.

b) different forms of the word deleted but belonging to the same word class (inflections consisting of bound morphemes and affixes that indicate person, and number in nouns as well as tense in verbs)
   For example, word deleted : said (v)
   distractors : say (v), says (v) , are saying (v)

   Note : The rational for providing options of the same word class was to check if students would be able to recognise meaningful grammatical units, predict what would follow from incomplete linguistic input, and be selective in the perception of what elements were most important to meaning (Saville-Troike 1979:31). This would help inculcate strategies that would contribute towards good reading skills.

To a significant extent, the distractors offered were presumably answers that presented organizations that the subjects once accepted but now believed to be wrong or might still remained as right if no alterations had been made in their semantic memory (which is the memory necessary for the use of language) (Kimble 1979:102&103) as evidenced by the errors made. In other words there was provision for them to make the mistake through their choice of an incorrect alternatives. In this sense, the cloze items would be concerned with defects in language-productive ability, and as such not directly concerned in comprehension (Porter 1975:154). Hence, this would contribute towards the accuracy part of the cloze design where grammatical knowledge of the second language system would prove to be beneficial.

In addition, the choice of distractors should vary according to the depth of linguistic attainment and fineness of stylistic discriminations of the subjects (Porter 1975:154). Since the subjects' proficiency level in relation to reading was judged to be intermediate-high, grammatically and semantically incorrect options were not offered as distractors because selecting any of such distractors would mean producing some very peculiar English (Klein-Braley 1997:60). Hence, distractors might be grammatically but not semantically appropriate, or vice versa (Porter 1975:154). The subjects were also required to make quite sophisticated choices among vocabulary items when distractors offered were both grammatically and semantically correct, but which vary in probability in the particular register of the text or its context. Since the subjects were non-natives of the second language, synonymous or multiple acceptable distractors were excluded. There was clearly something quite inappropriate to offer these choices and scoring only one as correct (Jonz 1976:258).

The mean deletion rate of the cloze text was 14 words between two consecutive words with a range from a minimum of 3 words to a maximum of 26 words. The blanks were numbered and had a standard length of 3 cm. The options were on a separate sheet from the cloze text. With the two sheets of paper side by side, it would be more convenient for the subjects to read the text and refer to the options. The options were not included in the cloze text to avoid distracting the subjects' attention as they processed the text. This would also encourage more substitution on the part of the subjects and in turn would affect the data analysis on the strategies employed. The format of having both the cloze text and the options side by side on a single sheet of paper as advocated by Jonz (1976:259), was not adopted as the length of the cloze text would need two or more sheets of paper.

3.5.3.1 Deletions in cloze text with options for the study

There were twenty deletions; ten were content words and ten were function words. Refer to Table 3.1, p.242. The content words comprised three word classes, namely, four nouns, two verbs and four adjectives. Adjectives were included because options were given to limit the possible choices. The function words consist of an auxiliary, a determiner, two pronouns, three prepositions and three conjunctions. Refer to Appendix G, pp.237-238.

3.5.3.2 Deletions in trial cloze text with options

A total of ten deletions were made. The words deleted were of the same classes as those for the study. There were five content words deleted; two nouns, two verbs and an adjective. The five function words deleted comprised one word from each of the following word classes, that is, auxiliary, conjunction, determiner, preposition and pronoun. Refer to Appendix H, pp.239-241.

3.5.4 Interview Questions For Language Instructors

Although the interviews for the instructors were semi-structured, key questions provided the framework necessary for a more focused interview. Majority of the questions were open-ended which allowed for "response flexibility" (Mc Donough & Mc Donough 1997:183). The purpose of open-ended interviewing was to allow the researcher to enter into the interviewees' perspective, particularly that which could not be directly observed. The assumption made was that the perspective of others could be meaningful, knowable, and able to be made explicit (Patton 1990:278).

At times a dichotomous inquiry was made to check out the relevance of a question (Patton 1990:305). This would be more comfortable and appropriate than making a false presupposition about the interviewee that might cause embarrassment or offence. These dichotomous yes/no questions were followed by further probing wh-questions (for example, how and why) to obtain more detailed elaboration or clarity. Whenever it was appropriate, probes and follow-up questions were asked spontaneously during the interviews to deepen the response to a question, to increase the richness of the data being obtained, and to give cues to the interviewees about the level of response that was desired (Patton 1990:324). However precaution was taken to ensure that each question contained only one idea, that, is each item must be singular. Given multiple stimuli, the interviewees who were uncertain of the focus of the question would be free to go off in any direction, including providing irrelevant information (Patton 1990:309). Hence, it was helpful to prepare highly focused questions that elicit genuine and relevant responses to make the best use of the interview time (Patton 1990:309).

Since the wording of questions would affect the nature and quality of responses received, careful consideration was made in the choice of appropriate words depending

on language proficiency level and schemata. The researcher would attempt to use words that made sense to the interviewees so that the questions would be clear to them. For instance, labels or linguistic terms were avoided and if used, they would be accompanied by further explanation. When asking "Why?" questions, the researcher had to find wording that conveyed an interest in understanding the interviewees' perspective rather than questioning the validity of the perspective (Patton 1990:315). "Leading" questions were also avoided so that the interviewee would not be led into acquiescence with the researcher's point of view (Patton 1990:318). Hence there was a concerted effort in formulation good questions that should, at a minimum, be open-ended, neutral, singular, and clear. There were three key questions that were of the dichotomous yes-no type. The purpose of employing this question type was not to sound too presumptuous which might in turn offend or even embarrass the interviewees. These starters were followed with requests for elaboration in the case of positive answers and justification if the answers were negative.

There were two sections to the interview. The first section sought to disclose whether instructors assigned cloze tasks to their students. Other related questions were concerned with the frequency, when and the purpose which cloze tasks were given. The type of cloze, its focus and rationale for utilising a certain cloze design were also inquired. The questions for the first section of the interview are as follows:

Q 1: Do you give cloze exercises to your students?
•How often? •When? •Why?
•What type? •What is the focus? •Why?

The second section was regarding the teaching of strategies in cloze completion for the two types of cloze designs. The information would be matched against the strategies identified in the think-aloud protocol in order to verify the effectiveness of strategy teaching. The questions for the second section of the interview are as follows:

Q 2: Do you teach your students any strategies in solving the cloze?
- If yes, when?
- What are these strategies?
  * For cloze with options
  * For cloze without options

Even though the interview questions appeared to be brief, they were specially set to focus only on the pertinent issues related to the study. Refer to Appendix J, p. 243.

3.5.5 Questions For Stimulated Recall

These questions were open-ended to probe the language processing strategies involved in completing the two types of cloze, particularly those processes that were not revealed in the think-aloud protocol. Basically there were a few key questions asked repetitively due to reoccurring circumstances such as phases of silence, reiterated reading, spontaneous answers and selection or production of answers. The sequence of questions depended on the situation arising from the think-aloud protocol. Wordings were varied to reduce the formality of the interview sessions. For example, "What were you thinking of" could be worded as "What was on your mind". Although the questions were determined prior to the interview sessions, other follow-up questions were improvised as and when the need arose.

Sample questions for the stimulated recall sessions are as follows:

1. What were you thinking of during this silent period?
2. Why did you read this section of the paragraph a few times?
3. What were you thinking of when you substituted the four given answers one by one?
4. How did you arrive at this answer? It seems to me you did that *automatically / without any hesitation / without having to pause.*
5. What made you choose this answer? (for cloze with options)
6. How did you come up with that answer? (for cloze without options)

The above questions were general ones. The specific questions would be related to particular deletions or sections of the texts.