A STUDY OF THE READING STRATEGIES OF FIRST YEAR STUDENTS AT A UNIVERSITY COLLEGE IN ETHIOPIA

Solomon Hailu Gessesse

A thesis submitted to

the School of Graduate Studies of Addis Ababa University

in partial fulfilment of the requirements for the Degree of Doctor of Philosophy

in the Department of Foreign Languages and Literature

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SCHOOL OF GRADUATE STUDIES

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Abstract

This study investigates the reading strategies of Ethiopian first year university students who use English as a foreign language and who are at high and low levels of English (the L2) language proficiency. Based on the think-aloud protocols of the students, the study examines individual differences in the types and frequency of use of the strategies, and considers the appropriateness and effectiveness of the strategies for the reading task (reading a passage) and the assigned reading purpose (summarising the passage and taking a short-answer reading comprehension test).

Data were elicited using a three-stage procedure: a pre-reading elicitation of the students' awareness of their own strategies before reading using a metacognitive questionnaire; a during-reading elicitation of strategies based on the think-aloud protocols of the students; and a post-reading assessment of the students' strategies based on the students' reflections about their strategies and reading performance.

The study also consists of a case study which was designed to inspect closely the strategy use of a sample of successful subjects (subjects at high and low levels of English language proficiency who achieved the highest reading comprehension scores) and less successful subjects (subjects at high and low levels of proficiency who achieved the lowest reading comprehension scores).

The results show that the subjects at the high and low language levels were not markedly different in the *number* of strategy types they used and/or the *frequency* with which they used them. The findings demonstrate that the key difference between the students at the high and low levels of English language proficiency is the result of a combination of three interrelated factors: the presence or absence of an awareness of effective strategy use, language ability and processing difficulties.

The study concludes that the key to successful reading does not lie in the mere possession of a repertoire of strategies nor in the frequent use of such strategies; nor does it lie merely in having a high level of linguistic proficiency. Successful reading results from knowing how appropriately and effectively the strategies are used in reading.

The dissertation concludes by suggesting the pedagogical implications of the study.

CHAPTER ONE

BACKGOUND

1.1. Introduction

This thesis presents a study that was carried out to investigate the reading strategies of first year undergraduate university students in Ethiopia. The purpose of the study was to examine the differences and/or similarities of strategies and their use by students with differing levels of English Language (the L2) proficiency (See Chapters Six to Ten for details of the results). Before I provide a detailed account of the study, I will give a brief introduction to the importance of tertiary level reading in Ethiopia and will describe some of the studies carried out in the country to investigate the reading problems of students at that level.

This chapter, therefore, consists of this introduction. It concludes with a formulation of the research questions that are investigated in the present study and gives an overview of the other chapters in this thesis.

English is spoken as a foreign language in Ethiopia and is the medium of instruction in the educational system from junior secondary school to tertiary colleges and universities. The bulk of the teaching and learning materials used in classes is written in English. Therefore, academic reading in English in the Ethiopian educational system is important.

Particular importance is attached to reading at the tertiary level where the ability to read for academic purposes in the content areas is considered crucial. As a result, a high degree of demand is placed on students to read academic texts. In an earlier study which investigated

the English language communicative needs of first year students at Addis Ababa University, Morris (1982) found that all categories of instructors regarded reading text books as far more important than the other academic activities such as writing. In addition, Aberra (1993) emphasised the high degree of importance given to reading by instructors at the first year level and noted that students at that level are expected to undertake substantial amounts of reading. The progress of these students in their academic studies depends to a large extent, therefore, on their success in reading materials written in English. The importance of reading in a foreign and second language for academic studies has already been underlined by various researchers (Alderson and Urquahrt, 1984; McKeown et al., 1992; Grabe, 1991; Allen et al., 1988).

My experience as an English teacher in two higher learning institutions has been that most students in these institutions experience difficulties in reading texts in their studies. My information about this comes partly from my observations of students in my classrooms in 1990 and 1993 and partly from the students' low scores on reading tests and examinations. Furthermore, from the discussions I have had with colleagues from other institutes I have learned that their students too have difficulty reading books in the content areas.

It is difficult for me to specify accurately what the nature of these difficulties is, and how these students read because no one has yet carried out a study into this. However, in 1993 I attempted to elicit information on how first year students in Wondo Genet College of Forestry read their texts in the content areas. The data was obtained from students' retrospective written accounts of the difficulties they experienced and how they set about reading. Looking at the data, rough and ready as it was, I discovered that these subjects made

frequent references to problems of vocabulary and to the length of the passages and that these problems led to a loss of interest in the texts they were reading. At the time my assumption was that language deficiency was the cause of their reading problems. However, when I read the literature on the subject I discovered that none of the strategies which my students reported were 'uncommon'; that is they were similar to those reported in other studies. In deed some studies (e.g. Anderson, 1991; See Chapter Three for a review of the literature) have shown that differences between skilled and less skilled readers are not the result of differences in their use of strategy types and/or the frequency of their use of these strategies; the key characteristic that distinguishes skilled from less skilled readers is that skilled readers monitor or regulate their strategy use (Kletzien, 1991) and seek effective alternatives for their unsuccessful strategies (Vann and Abraham, 1990). On closer inspection of my students' strategies I realised that my students showed neither of this characteristic.

Since the students' accounts were elicited using a rough and ready data elicitation instrument in a situation far removed from an actual reading of a text, it was difficult to learn anything substantive from the data. However, studies carried out elsewhere in other higher learning institutions in Ethiopia can be cited as examples to illustrate what the nature of the reading difficulties is. For example, the study by Aberra (1993) assessed the English language needs of students in the Arts and Science faculties at Addis Ababa University. This study, which, amongst other aspects, examined the study habits of first year students in these faculties, showed that despite the high demands placed on these students by their teachers, "a large number of students may not be reading much …" and that "… books do not occupy a very

important place in the study habits of many students." (p.118)

According to Aberra (1993:129) most of the problems of these students "appear to be related to study skills to do largely with the skills of listening and reading…." It is interesting to see that almost all the students in this study indicated that they experienced no difficulty in reading and understanding their books. They further indicated that they did not experience difficulty in summarising what they read and in identifying main points. However, the findings of the study revealed that these students resorted to memorising what they read. Consequently, Aberra remarked that these students "may not be aware (as seems very likely) of the effectiveness of their ways of study…." (p.194).

It is important to mention here the influence of the Ethiopian cultural educational system on strategy use, particularly on memorisation because it could also explain not only the choice of this particular strategy by the subjects in Aberra's study but also, as will be explained in Section 6.7.1.3, those of the subjects in the present study. Regarding the influence of our culture on the educational system Hailiselassie (1999:5) notes:

> Knowledge was considered sacrosanct and unchanging and thus to be learned as it was. This wrong concept of epistemology affected the pedagogy that emphasized rote learning and memorization was indeed the main methodology in the church school. This practice creeped into the modern system of education and became a prevalent and lingering constraint of the service.

Another study by Gebreselassie (1988) investigated the reading skills of freshmen students reading in English and Amharic. The reading techniques were identified by asking the

subjects to read a passage and fill in, for example, verbs, words with opposite meaning, and affixes from reading tasks in both languages. Reading speed was measured by asking the subjects to time themselves when reading two texts of the same length. The researcher also used a questionnaire to elicit background information about what the subjects knew about their reading.

Using students' scores on the reading techniques tasks, the study identified 'good' and 'poor' readers. The study investigated whether slow reading by 'good' and 'poor' freshmen students was related to a lack of general knowledge of English and to L1 reading techniques used when reading in English. According to this study, poor reading by these students was attributable to their inferior knowledge of English and not to the application of the same techniques they used when reading in Amharic. These results are similar to those of other studies (e.g. Carrell, 1991; Yamashita, 1999; See Chapter Two, Section 2.6) which have shown the effect of insufficient language on reading; that is that readers with poor language ability find it difficult to transfer their reading skills from the L1 (Amharic in Gebreselassie's study) to reading in the L2 (English). Gebreselassie also made a comparison of the reading speed of these students and that of students in other countries and found that the reading speed of the students in question was very slow.

The study does not establish whether poor reading performance in both languages was indeed related to the application of the techniques identified. Since the reading techniques were identified solely from the structure of the reading tasks the students completed, and hence their use inferred, it is difficult to determine whether or not the subjects in fact used these techniques while reading. One study which attempted to investigate readers' techniques

or strategies was carried out by Gezahegn (1994). He examined the reading strategies of first year students at Addis Ababa University. Using a questionnaire and a guided interview, Gezahegn elicited the strategies which these students said they used. The results of the study indicated that most of these students said that when reading for their studies they re-read a text in order to gain a deeper understanding, read slowly, and copied chunks of text without changing sentences. Interestingly, the findings revealed that only a very small proportion of the students summarised the texts they read, reasoned deductively, took notes or reduced the text into phrases. Gezahegn (1994:34-35) made an almost identical remark to that which was made by Aberra (1993) regarding the students' lack of awareness of their own strategy use. Gezahegn said, "A majority of the students are not aware of using, nor do they seem to employ, a number of cognitive strategies which are believed by researchers likely to lead to more successful reading."

Gezahegn's study speculates on the lack of awareness of and use of effective strategies. As Cohen (1997) has cautioned and as will be shown in this thesis (See Sections 7.3 and 10.3) what students say they do and what they actually do do not always match. Consequently, from the results of Gezaheng's study it is impossible to know whether the strategies cited would indeed be used during an actual reading situation.

Another investigation of reading concerned the reading speed and comprehension of first year students at Addis Ababa University (Jembere, 1987). The study compared the reading speed of the subjects in question with that of students in other countries. The results showed that the subjects under study were very slow readers – reading at a speed of 96 w.p.m. with a comprehension of 64 per cent. According to the study, subjects who read faster were not

substantially different in their reading performance from those who read more slowly. For a review of the literature relating to slow text processing and its relation to our working memory capacity (See studies by Just and Carpenter (1992), Yuill and Oakhill (1991) and Braddeley (1993) in Section 2.3)

It is important to indicate here that the studies which have examined the students' reading at higher learning institutions in Ethiopia are far and few between and that these studies have mainly focussed on the problems of reading speed, reading comprehension and overall English language deficiency. They suggest that the problems are the result of a lack of awareness of how to read efficiently and of the skills required to handle academic tasks. Even though these studies have provided useful insights, they have not looked at whether the way these students read is responsible for the problems they encounter nor have they accounted for the role of language proficiency in the students' reading.

Since students entering tertiary level education in Ethiopia have different levels of language proficiency, it is important to examine the role of language level in the ability of the students to use different reading strategies. Therefore, a number of questions about whether our first year students' reading difficulties relate to overall language proficiency or to the effective utilisation of those strategies which these students already possess need to be examined. The ways in which the problem of reading have been approached and studied by the studies cited above have been product-oriented; they have described the problem by looking at the product of the problem. Such research, particularly when it comes to understanding how readers interact with their texts and what problems they face during reading, remains speculative (Kavale and Schreiner, 1979) and sheds little light on the processes students

engage in during comprehension. As Alderson and Urquhart (1984:xvi) point out:

Knowing what a student has understood does not, of itself, help one decide how he has or has not understood this, and cannot provide information on how the learner might be helped to understand a higher level if he has failed that level.

They further emphasise that "knowing the product does not, of itself, tell us what actually happens when a reader interacts with a text." (p.xix)

Reading is an interactive process between a reader and text and as Goodman (1988:12) explains "There is an essential interaction between language and thought." It is this interactive process of reading by students at the tertiary level in Ethiopia which is not well understood, and which still remains largely unexplored. In order to understand the interactive reading processes of our students better, it is important to examine the students' processes as they read. An important question for examining reading from the cognitive point of view is, according to Cohen et al. (1988:165), "How do learners go about solving problems of reading?" because, as Cohen and his colleagues indicate, such an examination "…provides insight into the cognitive strategies..."

The importance of reading strategies is also noted by Grabe (1991:381) who characterises them as "critical components of reading abilities." This view is further supported by Block (1986:463) who writes: "Comprehension strategies indicate how readers conceive a task, what textual cues they attend to, how they make sense of what they read, and what they do when they do not understand." Carrell (1988:121) also observes that "reading strategies are of interest for what they reveal about the way readers manage their interaction with written

text...". In addition to providing insights into how readers interact with their text and tackle their difficulties, reading strategies also reveal what reading difficulties readers encounter during reading (Vann and Abraham, 1990; Kletzien, 1991).

The various views in the literature strongly suggest that examining the strategies readers employ is a step forward to a better understanding of the reading process, including what problems these readers experience and how they might be helped. So how do first year students in an institute of higher education in Ethiopia read texts in the content areas? What are the strategies they use when reading? This is the central area of enquiry which this study investigates.

1.2. The study

It is against the above-mentioned background, that is the often reported difficulties of students reading content area texts and the lack of investigation into how these subjects read such texts, that this study examines the reading strategies of students reading texts in a higher educational institution. The following questions, which will be discussed in more detail in Chapters Six, Seven, Nine and Ten, are investigated:

- Do students, who enter tertiary level education and who have different levels of English language, use the same strategy types with the same frequency?

- Do these students use their strategies appropriately and effectively when they read?

Chapter Two discusses the relevant research which deals with the theories and models of

reading. Chapter Three reviews research into reading strategies. Chapter Four presents a pre-pilot study, which explored the methodology for investigating strategies, and suggests improvements on the design of the pilot and main studies in Ethiopia based on the insights from the results. Chapter Five presents the methodology of the pilot study in Ethiopia. Chapters Six and Seven analyse the results of the pilot study. Chapter Eight presents the methodology of the main study. Chapters Nine and Ten analyse and interpret the results of the main study. Finally, Chapter Eleven discusses the results of the pilot and main studies, presents some conclusions and finishes by describing the limitations of the present study, by making suggestions for further research and by suggesting pedagogical implications of the study for the Ethiopian education.

CHAPTER TWO

READING COMPREHENSION - Theories and Models

2.1. Introduction

This chapter reviews research on working memory and reading comprehension, the schema-theoretic view of reading, the linguistic threshold and the linguistic interdependence hypotheses. The chapter concludes with a discussion of research into the effects of reading purpose and on reading comprehension and into the making of summaries.

There has been a gradual shift in our understanding of reading from viewing it as "…apprehending a printed message without other contextual support" (Entwisle, 1971:118) to regarding it as an interactive process between the reader, the text and the writer (Grabe, 1988; Goodman, 1988).

Reading is a complex process which is constantly interacting with and being influenced by a number of cognitive, linguistic, psychological, social, cultural and affective factors. Indeed, attempts to capture the complex nature of reading have led researchers to draw implications from disciplines as disparate as psychology, linguistics, sociology, cognition and artificial intelligence. Increased interest in integrating knowledge sources from these fields has also brought about an array of interdisciplinary approaches to reading research, such as psycholinguistic, sociolinguistic, metalinguistic and sociocultural ones.

Although an investigation of reading encompassing all these fields is desirable and can help to capture the complex nature of reading, it is beyond the scope of this chapter to discuss

comprehensively the implications from all these disciplines. Since the focus of this study is on reading strategies from a reading process perspective, this chapter chiefly deals with pertinent theories and models of reading which have attempted to explain the reading comprehension process. The growing amount of research (Barnett, 1988; Carrell, 1989; Carrell et al., 1989; Anderson, 1991; Vann and Abraham, 1990) on the reading process and reading strategies is testimony to the importance given to this perspective.

Interest in the nature of information flow and especially in understanding the workings of the human mind during the reading comprehension process has led to the development of models which have attempted to account for the various components that underlie the reading process. These models have drawn on studies on artificial intelligence, which have attempted to simulate the operations of the human mind using computers. Central to these models are abstract attributes known as memory systems via which information is processed, stored and retrieved during text processing and comprehension. These memory systems also consist of components such as working memory or short-term memory (STM) and long-term memory (LTM). Since working memory plays a critical role in language comprehension as well as in problem solving (Just and Carpenter, 1992), and since working memory is central to these models of reading, the next section deals with working memory and its role in reading comprehension.

2.2. The Working Memory System

Braddeley (1987:34) describes the working memory as "…a system for the temporary holding and manipulation of information during the performance of a range of cognitive tasks such as comprehension, learning and reasoning." Spear and Riccio (1994:109) also see it as "…memory for very recent episodes that (usually) have occurred only once, a few seconds or

minutes earlier." Similarly, Braddelely (1993:27) regards the working memory as "…a system for storing information over brief intervals of time." According to Braddeley (1993:43), the working memory functions as a "…controller, feeding in new information and selecting particular processes for pulling information out of the long-term memory." Therefore, it plays a critical role in the processing, retrieval and storage of information during reading comprehension.

As the definitions above show, the temporary nature of the information stored is the chief constraint characterising the working memory. Information is kept briefly in the working memory, after which some is stored in long-term memory and some is forgotten or lost. The constraint of the working memory on retention of information has been described as the recency effect in which only the most recently learned or stored information is available and accessible during text processing (Glenberg, 1987; Braddeley, 1987; Braddeley, 1993). This suggests that information stored earlier will disappear more quickly than information just stored. Glenberg (1987:173) notes, "The recency effect is the dramatic improvement in recall for items near the end of a series of to-be-remembered (TBR) elements." As Braddeley (1993:13) notes, recently stored information is "…fragile, disappears after a brief interval…" A number of researchers (Black and Bern, 1981; Fischer and Glanzer, 1986; Daneman and Tardif, 1987) have shown that the constraint of the working memory on information retention can be explained by the limited capacity of the system. Further, Ericsson and Kintsch (1995) noted that the working memory has a limited capacity and that information stored in working memory is only kept temporarily.

Black and Bern (1981) examined the effect of causally (connected in a cause-effect relationship) and temporally (connected in time sequence) related events in stories on the

recall of undergraduate students. They asked their subjects to recall the stories under two conditions; a cued-recall condition in which the subjects were given the first sentence of a pair of sentences they had read earlier and recalled the second sentence after an intervening task; and a free recall condition in which the subjects simply recalled without any cue. The results showed that under the cued condition, recall of the second sentence was higher for the causally related than for the temporally related stories. This suggest that the memory capacity for storing causally related information was superior to that for storing temporally sequenced information. It can be argued that storing information sequentially (temporally), which very much resembles memorisation, is more likely to lead to a loss of that information from memory more quickly than storing information through connections. This implies that subjects who read for meaning are less likely to forget what they have read than subjects who simply cram information sequentially.

Fischer and Glanzer (1986) studied the role of short-term memory storage in reading comprehension, especially in regard to the integration of meaning between sentences. Subjects read independent sentences (sentences not requiring a precedent for their meaning) and dependent sentences (sentences requiring a precedent for their meaning) under two conditions. In one condition subjects read uninterrupted sentences (uninterrupted condition) and in the second condition the subjects read each sentence with a distractor task in between (interrupted condition). The researchers hypothesised that the most recently held information (the independent sentences) will be used to facilitate the interpretation of the new information (dependent sentences) and that when that information is delayed in the working memory by the distractor task, linkage between the independent and dependent sentences fails causing the reader to experience comprehension crises. The subjects' comprehension was measured using a true-false comprehension test immediately after they had read each pair of sentences. The

finding showed that subjects whose working memory was not interrupted read the dependent sentences faster than those whose working memory was interrupted by the distractor task. The study provided evidence that the working memory can retain information only briefly. The findings however found no difference in the mean accuracy of answers to the comprehension test between subjects who read the undisrupted condition and those who read under the distractor condition. It is possible to argue from this that comprehension as opposed to memorising is little affected by time span.

Braddeley (1987) reviewed research on the capacity of the working memory and noted that the working memory is of limited capacity and that it functions for the rapid retrieval and storage of input. He further emphasised that the working memory is central to reading and comprehension. He added, "…an important function of working memory is to maintain earlier information and to integrate it with the new information that is fed into the working memory as reading proceeds." (p.192).

Daneman and Tardif (1987) note that "…reading draws heavily on working memory, a system responsible for the processing and temporary storage of information in the performance of complex cognitive tasks." (p.491) They emphasise that "If recently processed information cannot be stored temporarily, the reader would continuously be backtracking to re-read parts or even whole sentences and passages." (p.492). According to Daneman and Tardif (1987:492), "…fluent reading, like other forms of problem solving, involves a complex and skilful coordination of processing and temporary requirements." They argue that differences in individuals' reading can be explained by the differences in the individuals' processing and the storage capacity of the working memory.

To support their view that processing and storage capacity explained reading differences, Daneman and Tardif (1987) conducted an experiment in which subjects were given a memory-loaded and a non memory-loaded task. The former required the subjects to process and recall while the latter required the subjects only to recall without having to process. Daneman and Tardif explain that in the memory-loaded task the subjects were given a verbal span test in which they were asked to create a new word, for example (p.495) (pardon) from a series of four separate words (par shot don ate). At the same time they were asked to determine whether the new word had a syllable boundary (pardon has a syllable boundary at the link between the two words [par-don]; but donate, has not [do-nate]). The subjects were also asked to study the syllable rule. The subjects then created a new word from an index card while saying out loud which possible combinations of new words in the series conformed or not to the boundary rule; the subjects later had to recall the words. Recall of the new word conforming to the rule was measured at the end of a 45-card word presentation. In the non-memory-loaded task, the subjects were asked simply to recall.

The result showed that the memory load component whether present or absent, did not significantly affect efficiency of processing and the subjects' recall. Daneman and Tardif (1987) concluded that the constraint of memory differences in individuals might be best explained by differences in processes rather than the capacity of memory. They added, "If the 'memory' is simply a by-product of the 'processes', it is the processes themselves and what leads to skilled execution of the process that should be receiving the lion's share of our attention." (p.504) This suggest that how we process is the key factor that determines the capacity of our working memory rather than the design of the working memory. This has an implication for less skilled and or less proficient readers who stretch their working memory capacity by using inefficient processes.

2.3. Working memory and text comprehension

Ericsson and Kintsch (1995) say that text comprehension involves integration of meaning representations via the processes in the working memory in which the representations are kept temporarily and are made accessible during text integration and meaning construction. During text comprehension there is an interaction between linguistic surface structures of a text (stored as surface memory), propositional or semantic components, and the reader's world knowledge (stored as meaning). Further, Ericsson and Kintsch (1995) emphasise that during reading comprehension, the linguistic structures of a sentence, which are stored until that sentence is read, disappear rapidly after the end of that sentence is reached. In contrast, propositional or semantic components of that sentence stay longer and are easily available for retrieval. This suggests that what is memorised (stored as surface memory) decays more quickly than what is comprehended (stored as meaning).

Further, Ericsson and Kintsch (1995) emphasise the fact that comprehension is achieved only when a reader integrates sentences as a coherent representation of the text. For this to occur, previously read information must be made accessible in the working memory and must then be related to information being attended to. If this integration process in the working memory is disrupted due to either processing problems or a secondary difficult or a demanding task, information in the working memory is irretrievably lost causing comprehension crises. Citing research by Glanzer et al. (1984), Ericsson and Kintsch (1995) note that when reading is interrupted by a secondary task, comprehension is not impaired and that the effect of the secondary task affects only reading rate. They add, "Successful comprehension implies that the mental representation of the text is coherent, both at the level of macrostructure and at the local level." (p.229) Fluent reading involves generating successive mental representations in

the working memory by linking these representations to the text and the reader's background knowledge.

The demands placed on the limited storage capacity of the working memory can be alleviated by selection and reduction processes. The former involves selecting only the most central information while the latter involves semantically interpreting each new linguistic component, words, phrases, sentences thus reducing the load on working memory. Inevitably, therefore, non-synthesised or memorised information, which is characterised by a lack of selection and reduction processes, will place undue congestion on the limited capacity of the working system causing comprehension difficulties.

Yuill and Oakhill (1991) note that inside readers' limited capacity, where processes compete, an efficient comprehension depends on quicker and automatic word recognition. They go on to emphasise that if readers allocate most of their processing storage or resources to recognising words and accessing their meaning (less important processes), they will have insufficient capacity to carry out the more important processes required to comprehend a text. Similarly, Just and Carpenter (1992) argue that the capacity of an individual's working memory determines the speed and accuracy of the language comprehension of the individual. They conducted an experiment in which high span subjects (subjects who can recall greater numbers of the final words of two unrelated sentences) and low span (those who can recall fewer final words) read cognitively demanding sentences. The sentences contained difficult or ambiguous grammatical structures or forms. For example, "The reporter that the senator attacked admitted the error." (p.128) The results showed that the high span subjects took less time to read the sentences and also accurately interpreted the sentences, that is the subjects had highly accurate comprehension. In contrast, the low span subjects took longer to process

the sentences and had inaccurate comprehension as measured in the true-false test. This study suggests that the memory capacity differences of individuals affect processing time and accurate comprehension. However, it should be noted that any linguistic or background knowledge differences of the subjects could also have contributed to the difference in the comprehension scores.

Braddeley (1993) points out that the working memory is a component of our memory which is involved in comprehension, reasoning and reading. He conducted an experiment in which subjects were asked to read aloud a six-digit number while at the same time answering a true-false comprehension test on a series of sentences which described the order of two letters. For example, A follows B – AB; or A is not preceded by B – BA. The results also showed that reasoning slowed down when subjects were processing the two tasks. The study showed that the percentage of recall for long syllable (difficult) words decreased but the percentage of recall for the short syllable (easy) words increased. Braddeley (1993) notes that the working memory is a system that permits the retention as well as the interrelation of pieces of information. He further underlines the fact that "…a crucial factor in deciding whether something will be learnt and remembered is its meaningfulness to the learner." (p.84)

As the studies above have shown, the working memory is the most central intersection point for information processing, integration, eventual meaning construction and retrieval of information from various sources – written symbol, syntactic and semantic structures and prior knowledge. How these sources are processed in reading comprehension is explained (See Section 2.4) by different reading models.

2.4. Reading models

Various models of reading have been proposed to explain the workings of the mind during text processing. The models have usually derived their name – bottom-up, top-down and interactive – from the direction of information flow they advocate. First some bottom-up models are described.

2.4.1. Bottom-up models

The most salient feature of these models is that reading is perceived as a serial progression of text processing beginning with the written symbol and ending with a semantic representation. A number of models have been suggested to account for the processes involved (Geyer, 1970; Ruddell, 1971; Carroll, 1971). For example, Ruddell (1971) regards the reading process as one progressing serially from a morphophonemic level through a syntactic and then eventually to a semantic level. He maintains that meaning ambiguities at the semantic level are resolved by returning to the morphophonemic and syntactic levels in order to verify the semantic ambiguity. Carroll (1971) also advocates the essentiality of deriving meaning from the printed input.

Similarly, Gough (1972) proposed his own bottom-up model which depicts reading as a progression of linear stages beginning with the visual in-put and ending with the semantic out-put. Gough himself admits, "In the model I have outlined, the Reader is not a guesser. From the outside, he appears to go from point to meaning as if by magic." (p.354) Brewer (1972:361) criticised Gough's model as "a serial processing theory" and said that it failed to "allow any higher-order processing components to interact with the letter readout level…" LaBerge and Samuels (1974) also devised a reading model in which reading proceeds serially from visual input to a semantic level. Their model does not provide for an interaction of

bottom-up and top-down processes. Indeed, LaBerge and Samuels themselves note, "On the basis of this model, therefore, we view reading acquisition as a series of skills…" (p.318)

Kintsch (1988) proposed a Construction-Integration (CI) model of reading comprehension in which the reading process consists of two stages. Meaning representations are first constructed from linguistic input (bottom-up or local components) in line with a reader's background knowledge and are then integrated to create a coherent whole or text representation. Kintsch (1988) argues that the initial processing in reading is essentially bottom-up.

Despite their insight into information processing during reading, bottom-up models have been criticised for failing to take account of the role of higher level or top-down processing. A number of researchers (Kolers, 1972; West et al., 1983; Chabot et al.; 1984; Briggs et al., 1984; Fischler, 1985) have produced evidence showing that meaning making is not entirely a function of bottom-up processes and that it is also guided by top-down processes which act on bottom-up processes. For example, Kolers (1972) found that readers who were shown one letter of a word at a time in a motion-picture projector identified the words much faster when the words were presented as a group than when they were presented in a serial sequence. Kolers concluded that "Processing a word in a sequence of letters involves something more: a meaningful bonding or grouping of letters." (p.84) This bonding of words suggests a contribution of the reader's bottom-up and top-down processes.

West et al. (1983) examined the reaction time of second and sixth grade children to identify target words under congruous, neutral and incongruous context conditions. They found a significant facilitative effect of context on the identification of the target words. The result

also showed that the second grade children, who were less proficient in their word decoding skills, relied on context more than the sixth grade children. The fact that deficiency in word decoding was compensated for by the use of context suggests that when there a deficiency in one level of processing this deficiency is compensated for by another level of processing. A similar study by Chabot et al. (1984) on skilled and less skilled college level students found that subjects named highly typical or familiar words more quickly than they named less familiar words.

Briggs et al. (1984) investigated the word identification skills of good and poor readers who were asked to identify target words (nouns) and pseudo homophones (phonologically similar but graphemically different from the target words). They found that poor readers benefited from context in identifying the target words but that the good readers' word identification was not facilitated by the provision of context. The result for the poor readers, which showed that the presence of context did facilitate word recognition, supported evidence for the top-down view of reading, whereas, the finding for the skilled readers, who had already acquired automaticity in word recognition, appears to refute the interactive model of reading proposed by Stanovich (1980) (See Section 2.4.3). A study by Fischler (1985) also showed that a word was supplied faster when a context sentence preceded it.

2.4.2. Top-down models

From the above counter evidence emerged a second theory of reading which postulated that meaning construction is also guided by higher level processes. Goodman (1971), a proponent of this theory, in his famous definition of reading as "a psycholinguistic guessing game" emphasised the concept of selectivity in reading where a reader, based on his/her expectations, selects only the most plausible interpretations from available cues in the

linguistic input. Goodman (1971:260) observes, "…efficient reading does not result from precise perception and identification of all elements, but from skill in selecting the fewest, most productive cues necessary…" However, his top-down view has a limitation in that it ignores the simultaneous bi-directional interactions of lower and higher level processes.

Levin and Kaplan (1970) emphasise that tentative interpretations are assigned to the visual input during the reading process and that these interpretations are constantly checked using higher level processes. Hochberg (1970:77) also maintains that skilled reading is more concerned with sampling the text and "...expectancy-testing than decoding a string of symbols." Smith (1973) emphasises two important points that are critical to reading from a psycholinguistics point of view. The first that there is a trade-off between the visual or printed input (bottom level) and the non-visual or what Smith called "behind the eyeball" or background knowledge (top level) input. He cautions against too much reliance on the visual input at the expense of the non-visual, which, he argues not only overloads the visual system but also causes meaning loss. Here Smith appears to advocate a balance between the bottom-up and top-down processing, a concept of the compensatory hypothesis (SeeSection 2.4.3). The second concern which Smith raises relates to the limitations of the working memory and the danger of stretching the system by unduly loading the visual input. A fluent reader, Smith (1973) contends, is one who is less dependent on the visual input. Smith (1988) has argued that non-visual information or what he (Smith, 1973) calls "behind the eye ball" information is a prerequisite for reading comprehension and for understanding the visual input.

Carpenter and Just (1977) proposed an integrative processing concept which stated that comprehension involves relating those linguistic features that are being attended to to a "discourse pointer" which is a mental meaning representation of related topics which these

linguistic features express. The discourse pointer, when set or activated by the linguistic features, seeks related ideas in the working memory in order to integrate the reading processes. Carpenter and Just point out that "… the search seems to begin at the contents of the discourse pointer." (p.239). However, their model was criticised by Mitchell (1982) who said that it lacked coverage of all the processes involved in reading comprehension, and excluded eye movement. He further noted that the model failed to account for individual readers' strategy use variations (SeeMichell 1982 for a review on reading models).

However, the top-down models have been criticised because they ignore the role of bottom-up processes when top-down processing fails. For example, Afflerbach (1990) showed that subjects reading unfamiliar and difficult texts called up micro level or bottom-up processing when top-down processes or background knowledge failed. This study provided evidence against the contention of the advocates of top-down models that concept-driven text processing guides meaning construction at the bottom-up level. In their research Briggs et al (1984) also provided evidence that proficient readers who had attained automaticity in their word recognition skills did not benefit from top-down processes.

Despite their limitations, the top-down models explain, though only partially, some of the processes involved in reading comprehension. Indeed, as Whitney et al (1995) remarked in their article "On Babies, Bath Water, and Schemata"; top-down models should not be neglected; they could be made more flexible and adaptive to the nature of reading, its purpose and readers' abilities.

2.4.3. The Interactive model

In response to the criticisms levelled against the bottom-up and top-down models a third theory of reading – the interactive model – was postulated. As its name indicates, this model essentially considers the reading process to be an interaction of bottom-up and top-down processes. This model presents a more balanced view of the reading process than do the two earlier models because it combines both levels of processes. Hence it not only overcomes the shortcomings of these models but can also be regarded as consisting of a more complete explanation of the reading process.

Rumelhart (1975), who was influential in this field, devised an interactive model of reading which allows for the various knowledge sources to interact inside what is called a "pattern synthesizer". He explains that in his model "…all the various sources of knowledge, sensory and nonsensory, come together at one place and the reading process is the product of the simultaneous joint application of all the knowledge sources." (p.588). His model accounts for the relative independence of the bottom-up and top-down processes. The model suggests that a lack of or reliance on one source of knowledge at the expense of the other can affect effective reading because the interactive contribution of the sources is lost. A similar concept is explained by Stanovich's 'Interactive model' of reading (1980) which treats the reading process as neither strictly bottom-up nor top-down. According to his model, the reading process constitutes a simultaneous synthesis of information from a number of sources both at the bottom-up and top-down levels. An important component of Stanovich's model is the 'compensation hypothesis' which states that a reader who is weak in one area of processing, such as word identification (lower level processing), compensates for this deficiency by relying more on another level of processing, for example, background knowledge (higher level processing).

Further, Stanovich argues that a skilled reader, because of his/her highly automated lower level processing, depends more on higher level processing to comprehend a text. A study by Kim and Goetz (1994) showed that good and poor readers who read easy and difficult texts under full and limited-context conditions demonstrated flexible word recognition skills using both semantic, contextual information and orthographic cues. The finding showed that poor readers who were weak in word recognition skills used semantic cues to identify words whereas the good readers who had attained automatic skills often relied on orthographic cues to identify words. The results supported the interactive compensatory hypothesis proposed by Stanovich. Although these models represent the various knowledge sources flowing interactively in a hierarchical manner, Waltz and Pollack (1985) remind us that these processes also operate in parallel.

As explained in the three models, the reading process involves the interaction and mutual influence of various knowledge and textual sources. One knowledge source, which plays a key role in reading comprehension, is the reader's background knowledge. Theorists have attempted to account for the effect of background knowledge using the schema theory of reading. The next section describes the schema theory and cites research into how background knowledge influences reading comprehension.

2.5. A Schema-theoretic view of reading

Before presenting the schema-theoretic view, it is important to explain the term schema. Schema is a theory about knowledge and how representations of that knowledge affect the use of that knowledge (Rumelhart, 1980). All forms of knowledge are placed into conceptual units called schemata – organised structures of a network of interrelated knowledge of basic or generic concepts representing events, situations, and so on (Rumelhart, 1980; Anderson

and Pearson, 1988). As Stahl et al. (1989:29) figuratively put it, the schemata function as "…scaffolding to aid in encoding information from the text."

According to the schema-theoretic view, a reader comprehends a text when the prior knowledge he or she brings to bear on the text corresponds to the events and structure of the text (Carrell and Eisterhold, 1988). Schemata play a central role in language processing and comprehension (Rumelhart, 1980) and an appropriate activation of schemata is regarded as an important aspect of effective reading (Carrell, 1983; Carrell, 1988). Carrell (1988) says two types of schemata exist: *formal schemata* refer to our knowledge of the rhetorical and organisational structures of texts, and *content schemata* refer to our knowledge of the subject matter of a particular topic (Carrell, 1988). Carrell emphasises that readers who lack sufficient *content* schema will be forced to rely heavily on the formal structures of a text, while readers without sufficient *formal* schemata will "substitute the closest schema they posses and will try to relate the incoming information to that schema, resulting in schema interference." (p.105) It can be argued, therefore, that a reliance on content schema (because of a lack of sufficient formal schema) is likely to cause difficulties to readers with low language proficiency, because these subjects will not have a sufficient knowledge of the language to make use of and to check whether their interpretations of the text agrees with their background knowledge.

A number of researchers have demonstrated that readers with background knowledge are able to understand a text better than those with less prior knowledge (Steffensen et al., 1979; Freebody and Anderson, 1983; Baldwin et al., 1985; Stahl et al., 1989; Afflerbach, 1990). Others have shown that activating the appropriate schemata aids reading comprehension (Alverman et al., 1985; Brown, 1997). For example, Steffensen and her colleagues (1979)

studied the effect of background knowledge on the recall, reading rate and interpretation of American and Indian students who read two letters describing a wedding from their respective cultures. Recall analyses revealed that subjects who read the letter from the other culture often introduced incorrect elaborations and also made distortions based on their own cultural perspectives. The study also showed that reading recall and rate were higher for the subjects who read the letter from their own culture.

An investigation by Freebody and Anderson (1983) of skilled and less skilled readers who read familiar and unfamiliar texts written using easy or difficult words found that background effect had a significant effect on the recall of subjects who read the familiar text. However, there was no interaction between difficult vocabulary and background knowledge; that is vocabulary difficulty was not alleviated by the familiarity of the text. This suggests that deficiency of vocabulary was not compensated for by availability of background knowledge.

In addition to measuring background knowledge effect using text content familiarity, other studies (Baldwin et al., 1985) have measured prior knowledge before reading and have examined its effect on reading comprehension. Baldwin and his colleagues found that the students with high background knowledge performed better in reading comprehension than did those with low background knowledge.

Further, the effect of background knowledge on texts of varying difficulty has also been studied (Stahl et al., 1989). Stahl et al investigated the effect of prior knowledge and vocabulary on the reading comprehension of sixth grade students who were given relevant and irrelevant background information before reading texts with easy and difficult vocabulary. The finding showed that background knowledge had a significant effect on the

recall of the students who read the texts with the relevant information. The finding also showed that the subjects who were given the relevant background knowledge and read the difficult vocabulary text recalled more central points than subjects who were not given the relevant background knowledge.

Research into the effect of background knowledge on reading comprehension is not only confined to young readers; it has also been carried out on adult skilled readers. One study that has examined adult readers is Afflerbach (1990). Afflerbach studied the effect of prior knowledge on the strategies which expert readers (doctoral students) use to construct main ideas from familiar and unfamiliar texts. He found that subjects reading the familiar text were able to construct main ideas automatically whereas those who read the unfamiliar text resorted to what he called draft-and-revision strategies. The study provided evidence that prior knowledge influences text processing.

The focus of the studies above was on the effect on reading comprehension of one of the two types of schemata - content schemata (See Carrell, 1988). However, the effect of formal schemata (the second type of schemata) has also been studied by Carrell (1992). Carrell (1992) investigated the effect of formal schemata on the recall of higher-intermediate proficiency level ESL university students. The subjects' knowledge of the structure of two texts was elicited based on recall analysis and open-ended questions. The findings showed that the subjects' prior knowledge of text structure had a quantitative and qualitative effect on recall. For example, Carrell found that subjects who structured their recalls in accordance with the structure used in the text recalled significantly more total ideas and more important main ideas than those who did not.

As Carrell (1988) pointed out, activating appropriate schemata plays a role in improving reading comprehension. Several studies (for example, Alverman et al. 1985; Brown, 1997) have investigated the influence of activating background knowledge before reading. Alverman et al (1985) investigated the effect of activating prior knowledge on the comprehension of sixth grade students who read texts with topics which were compatible or incompatible with the students' prior knowledge. They found that subjects' prior knowledge, which was activated before reading, interfered with their interpretation of the text that contained information incompatible to their prior knowledge. The result shows that the subjects used their background knowledge to override the conflicting information in the text. This suggests that inappropriate background knowledge interferes with and distorts text comprehension.

Another study by Brown (1997) investigated the effects of pre-reading schema activation on the reading comprehension/recall of lower-intermediate language level EFL college students. Subjects were grouped into three, each group reading three texts in three reading conditions. The first condition consisted of a Reading Schema Activation (RSA) task in which subjects read a text thematically related but containing no repeated content in the target text. The second condition comprised of a Writing Schema Activation (WSA) task in which the subjects wrote down their ideas in answers to prompt questions that mirrored the topic of each target text. For example, a prompt question for the text on the topic of 'cross-cultural marriage' was "Would you like to marry a person from a foreign country? Why or why not?" (p.88) The third condition required the subjects to read the target texts twice without either of the schema activation tasks. The schema activation tasks were completed before the subjects read the target texts.

The findings showed that there was no significant effect of the pre-reading schema activation tasks on the subjects' recall of the target texts. The investigator speculated that the lack of effect might have been the result of the subjects' own reading goals, that is the subjects might have transferred their previous pre-reading schema activation experience before reading to their reading of the control texts (texts without the pre-reading schema activation task). Brown noted that if this transference was possible, then "…the Control Condition was simply another sort of pre-reading condition." (p.95). It should be pointed out that asking the subjects (specialising in cross-cultural studies or international studies) to read a text on a cross-cultural theme might also have neutralised the schema activation task. Perhaps a neutral or unfamiliar text would have yielded a different result.

In addition to the models above, a number of other theories and hypotheses of reading have also been postulated to explain the interrelationship of L1, L2 reading skills and L2 proficiency in EFL/ESL reading comprehension. Since my study is concerned with EFL readers in Ethiopia reading in the L2 (English) at different L2 proficiency levels, it will be relevant to present those theories and hypotheses which try to explain the relationship of L1, L2 reading skills and L2 proficiency. Two of the most widely known theories or hypotheses are: the linguistic threshold hypothesis and the linguistic interdependence hypothesis. The linguistic threshold hypothesis is presented first.

2.6. The linguistic threshold hypothesis

According to the threshold hypothesis, the acquisition of a certain threshold level of L2 proficiency must be reached before L1 reading skills can transfer to L2 reading. As Alderson (1984) explains, at a low language proficiency level reading becomes a language problem and at a higher language proficiency level it becomes a reading problem. A number of researchers

have examined the interrelationship of L1 and L2 reading and L2 proficiency (Cziko, 1980; Cummins, 1980; Carrell, 1991; Donnin and Silva, 1993; Yamashita, 1999).

Cziko (1980) studied the relationship between L1 and L2 reading and L2 proficiency using miscue analysis of the oral reading errors of native French speakers and of native English speakers who were enrolled at intermediate and advanced levels in a French immersion programme. Cziko found that the intermediate group relied heavily on graphic information, whereas the advanced level and the native French speakers depended more on contextual information. Cziko argued that at the higher level of language proficiency L1 reading ability seems to be an important predictor of L2 reading success. However, it should be pointed out that Cziko did not measure L1 reading ability using L1 texts for both groups. Hence, it is difficult to conclude that both the L1 and L2 groups were matched according to their L1 reading ability or to say that L1 was a predictor of success in the study. The intermediate or low level L2 group made significantly more errors than did the advanced and native French speakers, which suggests interference from the L2 for the low proficiency group.

A review of research by Cummins (1980) on the transfer of L1 reading ability to L2 reading showed that bilingual anglophone children in French immersion programmes did better in their L2 reading than children who learned English as a medium of instruction. Cummins noted that "This transfer is clearly what would be predicted on the basis of the interdependence hypothesis." (p.184)

Carrell (1991) examined whether L1 reading and/or L2 language proficiency significantly predicted success in L2 reading for Spanish (ESL) and Native English (EFL) speakers at three instructional levels (low, intermediate and high) who read texts in the L1 and the L2.

She found that although both L1 reading ability and L2 proficiency significantly contributed to L2 reading, both variables had varying effects. For example, at the higher L2 level (the Spanish speakers with higher English proficiency) success in the L2 was accounted for more by L1 reading ability than by L2 proficiency. However, for the less proficient EFL speakers L2 proficiency rather than L1 reading ability was a stronger predictor of success. This study provided evidence supporting the threshold hypothesis.

Carrell attributed the differential effects to a number of factors. For example, she argued that the availability of the L2 for the ESL speakers and lack of it for the EFL native English speakers might have contributed to such effects. Carrrell also noted that observed effects might have been due to what she called "directionality of learning" (p.168). She contended that moving from English as an L1 to Spanish as an L2 was easier than moving from Spanish as an L1 to English as an L2. Carrell also noted that differences in difficulty between the Spanish and English texts could have been responsible.

One study which has measured text effect in L1, L2 reading is that of (Taillefer, 1996). Taillefer investigated the effect of the L2 proficiency threshold on the transfer of L1 reading ability to L2 reading. He used high and low L1 and L2 proficiency French university students who completed easy (scanning) and complex (reading for meaning) tasks in the L1 and the L2. The study found that L1 reading ability and L2 proficiency were significant predictors of L2 reading success to varying degrees for cognitively different reading styles. For example, the study found that for the easy task, L1 reading ability rather than L2 proficiency made a significant contribution to L2 reading. For the complex task, L2 proficiency more than L1 reading ability was a better predictor of L2 reading. The study provided support to the

threshold hypothesis by showing that L1 reading ability transfers to L2 reading when L2 proficiency is above the threshold level.

Donnin and Silva (1993) investigated the relationship between first and second language reading comprehension of native speakers of English (L1) at low and high levels of French (L2) language proficiency who read and interpreted three texts in both languages. No significant differences were found between the high and low proficiency levels in the interpretations and inferences they made from the texts in both languages. However, the high level subjects made more inferences when reading in the L2 and interpreting in the L2 than did the low level subjects. Further, both the high and low level subjects tended to be highly literal in their interpretations and produced more low level inferences in the L2 than in the L1. Fewer inferences and more lexical content of the text were produced when the subjects produced interpretations in the L2 than when they did in the L1. The findings showed that subjects' comprehension (as measured by the number of propositions recalled) was higher when they read and interpreted the L1 text in their L1 than when they did so in their L2. Reading rate was faster when the subjects read in their L1 than in their L2. Subjects' inferences were similar to those they made when they read in the L2 and interpreted in the L1 and when they read in the L1 and interpreted in the L1. The results suggest that subjects did not transfer their L1 skills to L2 reading because of their low level of L2 proficiency. The low L2 proficiency level appears to have interfered with the transference of L1 reading skills to L2 reading especially for the less proficient subjects.

Ridgway (1997) investigated the effect of background knowledge threshold on the comprehension of EFL undergraduate students. The study examined the hypothesis that below a certain linguistic proficiency level, background knowledge would be used to

compensate for the deficiency in the language and that below a lower level the compensatory effect of background knowledge would not be functional, that is it would have no effect. Ridgway argues that at a high language proficiency level in relation to a text, that is above this high threshold level, the readers' competence in the language will enable them to process the text and thus limit the use of background knowledge to compensate for any language deficiency.

Two groups of subjects (specialising in Business and Building Engineering) who had high and low proficiency levels read three texts of similar difficulty. Each group read a text taken from their respective specialisation, a second text from the other group's specialisation and a third text which was on a topic familiar to both groups. In order to counter background effect the subjects were selected on the basis of their comprehension scores on the third "equidistant" text.

The findings showed that the scores on the familiar "equidistant text" and the subjects' own subject areas texts were higher than the scores on the more difficult and unfamiliar text for each group. The result from the more difficult and unfamiliar text confirmed the lower threshold hypothesis, that background effect cannot be detected at a low language level. The subjects with poor linguistic proficiency could not bring their specialised-text knowledge to bear on the text. However, a significant background effect was observed for the high level subjects who read the familiar specialised-text.

Ridgway's (1997) finding that below a low language level background knowledge fails to have an effect on reading is also supported by Clapham's study (1996). Clapham proposed two thresholds: a threshold for readers at a low language level below which her subjects

failed to make use of their prior knowledge; and a threshold for readers at high language level above which her readers were able to bring their background knowledge to bear on a text. A similar threshold effect is also reported by Yamashita (1999) in her investigation of the interrelationship of L1, L2 reading and L2 proficiency for Japanese readers.

In examining whether L1 reading ability or L2 proficiency was a stronger predictor of L2 reading, Yamashita (1999) found that at higher L2 proficiency levels (intermediate and high) L2 reading ability was explained by L1 reading ability. Her results also showed that for the low proficiency subjects, L2 proficiency was a stronger predictor of success in L2 reading. Protocol analyses of the subjects showed that the subjects tended to focus more on local strategies (focussing on vocabulary and grammar, and sentence level processing) when reading in the L2 than in the L1. Yamashita (1999) further noted that L2 reading deficiency caused by weak L2 proficiency was responsible for re-reading of text parts in reading. It appears that strategy choice or use could, to some extent, be a product or by-product of L2 proficiency weakness. Yamashita also pointed out that low proficiency subjects lacked knowledge of the structure of the L2 (the target language) and that this made them unable to verify, check or monitor their grammatically incorrect answers.

Further evidence that readers who are proficient in the L2 make use of their background knowledge was obtained from the study by Peretz and Shoham (1990). They investigated the effect of topic familiarity and perceived difficulty of a text on the reading comprehension of advanced level first year EFL university students. They found that some of the subjects who read a text in a familiar subject scored higher on the associated tests than they did on unfamiliar texts. However, other subjects did not show significant differences in their scores in the tests. Although the result was inconclusive, it appears that at an advanced level the

effect of background knowledge disappears. This result is consistent with the threshold hypothesis. That is, subjects who were proficient in their L2 were able to bring their prior knowledge to bear on the text.

2.7. The linguistic interdependence hypothesis

The interdependence hypothesis holds that there is an automatic transference of L1 reading ability to L2 reading and that a reader might not need to learn reading in the L2 if he or she has already attained a certain level in L1 reading. Geva and Ryan (1993) examined the relationships between cognitive components (intelligence, memory span, processing efficiency) and linguistic skills in L1 (English), L2 (Hebrew) of fifth, sixth and seventh grade bilingual (English and Hebrew) students in the USA. The study showed that the subjects transferred their L1 reading skills to L2 reading as evidenced in their correlated performances on measures on the language tasks. The findings showed that memory measures for L1 and L2 correlated with the linguistic measures. The researchers argued that similar cognitive operations underlined the two languages. The study also showed that L2 proficiency was a significant predictor of L2 reading. The results showed that increased processing capacity and higher L2 proficiency had a facilitative effect on the storage capacity of the working memory. This shows that working memory capacity operations are facilitated by higher L2 proficiency as processing demands associated with the linguistic input are alleviated as a result of sufficient language ability or linguistic knowledge or achievement. Geva and Ryan (1993:33) noted, "With this increase in storage capacity, higher level cognitive processes involved in cognitively demanding linguistic tasks such as reading … in academic settings are facilitated."

Zwaan and Brown (1996) investigated the effect of language proficiency and reading skills on the explanatory inferences and text integration of college level skilled and less skilled sophomore students (who were considered less proficient in French - the L2) who read unfamiliar texts in L1 (English) and L2 (French). The stories (fables) were French stories which were not familiar to the American students. The findings showed that less skilled readers reading in the L2 often processed the texts at the surface structures level and incorrectly translated the text before they could integrate textual information. They also made irrelevant associations when reading in the L2. More accurate paraphrases were made when the skilled and less skilled readers read the L1 text than the L2 text. However, the skilled readers made more accurate paraphrases than did the less skilled readers when reading the L2 text. They also generated more elaboration, explanations and made more accurate predictions when reading in the L1 text than the L2 text. The influence of language deficiency was clearly observed: more explanatory inferences, integration of information and construction of a framework for the development of the story were made in the L1 than the L2 text. These results support the linguistic interdependence hypothesis.

In what follows, research findings on the effect of purpose on comprehension and on summarisation (the reading purpose assigned in the present study) are presented.

2.8. Effect of purpose

Research has shown that reading purpose has an effect on reading comprehension (Fransson, 1984; Birmire, 1985). For example, Fransson (1984) investigated the effect of intrinsic (reading a text for its content) and extrinsic (reading a text for an instrumental purpose – such as an exam) motivation on subjects' text processing and reading performance of subjects. He found that the perceived purpose of a test affected his readers. For example, some subjects

who were informed that they would be asked to summarise main ideas and to do a factual knowledge test read the text as if they were reading for the sake of an exam and processed the text at a surface level. The study showed that subjects tended to memorise or engage in surface level processing of the text when the reading purpose was instrumental, for example reading for a test. The study showed that surface level processing of a text was induced when the subject's motivation for reading was extrinsically strong (reading for the test) and when their intrinsic motivation (interest in reading the content of the text) was low.

However, deep level processing was chosen by subjects who had high intrinsic motivation (interest in reading the content). The results also showed that the deep level processing subjects scored higher on the factual knowledge short answer reading comprehension test than those who memorised the text. Fransson noted "…memorizing is a more tiresome and less effective way of organising and storing large amounts of information than deep level processing…" (p.105). Fransson also pointed out that surface-level processing subjects often forgot or could not remember what they read, whereas those who read for meaning (deep level processing) not only understood the meaning but also remembered the text.

2.9. Reading Comprehension: summarisation

Summarisation has been considered to constitute one of the most critical components of comprehension and is considered to give us a useful insight into the comprehension abilities of a reader (Kintch and van Dijk, 1978). Main idea construction from a text has also been considered a critical component in the summarisation process (Johnston and Afflerbach, 1985). A number of studies (Johns, 1985; Johnston and Afflerbach, 1985; Garner, 1985; Garner, 1982; Brown and Day, 1983; Tweissi, 1998) have examined the summary-making processes of readers at college and university levels. Johns (1985) examined the summary

making processes of university students. She examined the summary protocols of subjects at three levels, "underprepared" students who had low grade average points in high schools and at their university entrance examination, "mainstreamed" or "adept" students, who had attained passing scores at freshman-level entrance examinations, and fluent adult prospective ESL teachers in advanced linguistic classes. The findings showed that 76% of the fluent adult students' summaries contained most of the important ideas that were present in the experts' summary protocols whereas only 25% of the "mainstreamed" students' and 6% of the "underprepared" students' summaries contained two-thirds of the experts' summary protocols.

The study also showed that the summaries of the "underprepared" students contained incomplete ideas, that is some only had summaries of the first or last parts of the text and not others. Johns (1985:503) concluded, " … some of the underprepared students have difficulty distributing idea units appropriately." She also discovered that a high proportion (89%) of the "underprepared" students' summaries contained reproductions (directly copied) from the text without any transformation but that the figures for the other groups were 70% or less. Further, the study revealed that a very high percentage of the adults (94.1%) and of the "mainstreamed" students' summary protocols consisted of combinations, that is transformations in which two or more sentences in the original text were combined into a single summary statement. The findings also showed that the "underprepared" students failed to combine ideas and transform them into macro-propositions and that their summaries contained significantly more directly copied idea units. These results support the argument forwarded by Yuill and Oakhill (1991) that poor readers experience difficulty at the level of text information integration.

While some studies investigated the summaries of subjects who were allowed to look at the text during the summarisation, others (for example, Hidi and Andserson, 1986) have examined the effect of summarising with and without the presence of a text. Hidi and Anderson identify two aspects that influence the cognitive operations involved in summarisation: summarising with and without a text. The first aspect, summarising in the presence of the text, has the advantage of allowing repeated or frequent scanning to occur while the target text is being summarised thus reducing the task's direct load on memory. However, Hidi and Anderson (1986:477) caution that despite its usefulness it not only severely limits active cognitive processing of the text but also encourages a direct copying from the text. The second aspect, summarising without the text, allows for more active processing, that is re-organising the text content, replacing exact text elements with rephrased forms, and allowing text chunks to be formed. It also encourages the retrieval and recreation of schemata. More importantly, this aspect is said to aid a more active processing of the text and long-term retention. On the negative side, summarising without the text could increase the cognitive demand of the task on memory.

Hidi and Anderson (1986) note that poor summary formation is not caused by a lack of language competence and a need to search the memory frequently for background knowledge relevant to the new text content. Indeed, they emphasise (1986:474) that "… inadequate summarization is more likely to result from writers making inappropriate choices as to what is important in the original text, and from their inability to coordinate and integrate different parts of discourse." They also stress the fact that summarising involves a purposeful selection and identification of main ideas. They identify two cognitive operations that occur during summarisation: a process of selection and reduction; with the former consisting of deliberate judgements being made during the process, while the latter involves conscious

condensing of the ideas in the text using higher order transformations. Subjects who summarised without the presence of a text recalled significantly more ideas than subjects who summarised with the presence of a text (Hidi, 1984 in Hidi and Anderson,1886). The findings of these studies also showed that the subjects were engaged in more cognitive processing and retained an increased number of propositions in their long-term memory. Hayes-Roth and Walker (1977), in Hidi and Anderson (1986), caution against summarising with the text present.

Hidi and Anderson (1986) distinguish between two types of summary: writer-based and reader-based summaries. The former is essentially written as an external record of a summariser's own comprehension of important ideas in a text. It tends to be less constricted in terms of adherence to grammatical rules and cohesion of sentences and is less constrained by time limit. In contrast, it is argued that the reader-based summary, which is audience-targeted (a school teacher or university professor), involves conformity to grammatical rules, cohesion of sentences and may result in planning and the use of a "polishing strategy". Hidi and Anderson (1986) note that reader-based summaries are not only qualitatively and quantitatively different but also more complex than writer-based summaries.

Pre-requisite cognitive operations central to summarisation, according to Hidi and Anderson (1986:480) involve "comprehending individual propositions, establishing connections between them, identifying the structure of the text, and remembering the content…"; and "… selecting the information to be included in the summary and formulating a concise and coherent verbal representation" are considered to be central to the summarisation process.

Winograd's study (1984) showed that forming mental representations in summary formation was a requisite for comprehension and that evaluating the relative importance of elements in the representations is a necessary component of summarisation.

Awareness of task demands, that is awareness of what summarisation is or involves has been one of the problems associated with producing a good summary (Hidi and Anderson, 1986). They emphasise that even amongst school-age children there is an awareness that summarising involves main ideas, elimination of some text parts, and a written form that is shorter than the original text. Hidi and Anderson go on to stress that at college level "students go beyond knowing what a summary is supposed to be like and are able to produce it." (p. 482)

Johnston and Afflerbach (1985) investigated the process of main idea construction by expert readers. Basing their research on the think-aloud protocols of the subjects while summarising, the researchers describe the strategies used to construct main ideas, assign importance to textual parts, and manage cognitive resources. The study showed that the expert readers constructed main ideas in three temporal stages: before, during and after reading. Hypothesising a main idea and verifying or refining it afterwards were the strategies used during the pre-reading stage. During reading, the expert readers employed what Johnston and Afflerbach called a "Crunching" strategy, that is the subject's paused, which stopped input from the text, and reflected over information already in working memory. After reading and when a statable main idea did not form, the readers employed the crunching strategy and skimmed the text by selecting and listing the important bits in the text. The expert readers also revised a text part when they felt dissatisfied with the idea they had gathered and continued the process "until the main idea statement 'felt right'" (p.214). These strategies

helped to simplify the complex task of main idea construction. The expert readers also used contextual knowledge-based (relating known textual elements to background knowledge) and text-based (overlapping concepts in the text) cues to organise and assign importance to textual propositions. The expert readers also employed what Johnston and Afflerbach (1985) referred to as an 'executive management process' to monitor their progress and take appropriate action when the need arose. Examples included monitoring strategy effectiveness and consolidating or reviewing to "firm it up". Wagoner (1982) also stresses that comprehension monitoring, which is a metacognitive process, is an essential element for competent reading and guides a reader's cognitive processes as the reader makes sense of the text. Further, Wagoner points out that "knowing about comprehension" which is a conscious process, involves a recognition by the reader that failure to understand the text has occurred.

Garner (1985) investigated whether text summarisation deficiencies were the result of the lack of awareness of task demand or the lack of an ability to produce summaries. The subjects were from three levels: ninth and twelve graders at high school, and undergraduate college students. The findings showed that although most of the subjects at the three grade levels were aware that important idea inclusion was important for summarisation, the college level subjects showed significantly more awareness of important propositions than the high school subjects. The results also showed that the college level subjects' awareness of what summarisation involves and their summaries were matched, whereas those of the high school, especially of ninth grade students, showed only a limited level of correspondence. The study also showed that the college level students were significantly better at integrating information in the summaries than were the high school subjects. The study concluded that the differences between the subjects at the three levels pertained to the ability to identify central ideas and

produce them in a summary form rather than to a lack of awareness of what a summarisation should comprise. Taylor (1983) also shows that college students are able to summarise.

Another study, by Garner (1982), investigated the efficient text summarisation (as measured by the proportion of the number of main propositions to the total number of words in a summary) of undergraduate college students. The subjects read a text and summarised it and five days later completed two tasks. The first was a sentence recognition task in which the subjects judged whether a sentence was in the original text or not). The second was a successful summary writing component awareness task which asked the subjects to list the rules which they considered to be necessary for the production of a good summary. On the basis of the highest and lowest proportions scored, high-efficient and low-efficient subjects were identified.

The result of the sentence identification task showed that the high-efficient subjects recognised more of the important propositions that were rephrased than did the low-efficient subjects. Further, the high-efficient subjects identified more of the efficient summary writing rules than did the low-efficient subjects. The findings also showed a marked difference between the subjects: the high-efficient subjects' summaries consisted of most of the important propositions, whereas those of the low-efficient readers contained fewer of the important propositions. The investigator concluded "… that high efficient summarizers also process and store information efficiently. They integrate important pieces of information into semantic wholes (and thus "recognize" true-to-text synthesis statements never in the original paragraph…" (p.279). Garner (1982) postulated that the high-efficient summarisers would be at a greater advantage if a main idea recall task was given than if a detail recall task was given.

Brown and Day (1983) examined the macro-rules (deleting unimportant ideas, deleting redundancies, superordination or substitution of a category for its examples, selecting a topic sentence, and the construction of a topic sentence) used for summarising a text by fifth, seventh and tenth grade students, freshman university students and expert college rhetoric teachers. Three studies were carried out. The first examined the summaries of the high school and the freshman college students. The second investigated the summaries of the expert teachers. The third studied the summaries of novice freshman college students. All the students were described as having no "discernible reading problems" (p.3).

The findings showed that there no significant differences between the subjects as far as deleting unimportant ideas and redundancies were concerned. However, the high school and college students in studies one and two not only used more complex rules for condensing text information but also produced better superordinate ideas than did the younger students. The results of study two showed that the experts outperformed the tenth graders and the college students not only in the use of superordination rules in their summaries but also in their invention of topic sentences. August et al., (1984) who studied the comprehension monitoring of young (fifth grade) readers found that the young less skilled readers failed to detect inconsistencies in their reading, and failed to integrate information in a text and to construct a coherent representation of the entire text.

An interesting finding of the study was that the experts' pre-summary awareness of what constituted rules for a good summary were not reflected in the actual summaries they produced. However, the think-aloud protocols of the experts revealed that the experts mentioned explicitly the basic summary rules while producing their summaries. The novice freshmen students experienced particular difficulty in selecting and inventing rules. The study

revealed that the novice students were similar to the seventh and tenth grade students, and less efficient than the university students in the use of superordination, selection, and invention, and used poor invention and poor strategies for synthesising or transforming topic sentence rules. The major difference between the experts and the high school and college students was that the experts were more efficient at combining information across paragraphs and producing a synopsis of a paragraph for which there was no explicitly stated topic sentence.

A recent study (Tweissi, 1998) examined the effect of text simplification on the reading comprehension of EFL college students who read five versions of a text (the authentic or original version, other versions which were fully-, semi-, lexically and syntactically simplified) and answered a multiple-choice reading comprehension test. The results showed that subjects who read the lexically simplified text achieved the highest mean test score, followed in order by those who read the syntactically, semi- and fully simplified versions. The lowest scores were achieved by those who read the authentic or original text. Differential effects on reading comprehension were observed between the fully-simplified and lexically-simplified texts in favour of the latter. The investigator hypothesised that 'too much' simplification might have rendered the fully-simplified text significantly different in the areas of information distribution and organisation from a text written in normal English and that this impeded comprehension.

Chapter Three reviews research into the reading strategies of ESL/EFL readers and concludes with a formulation of the research questions to be investigated in the present study.

CHAPTER THREE

READING STRATEGIES

3.1 Introduction

This chapter presents the findings of research on reading strategies and discusses points regarding strategy differences at varying levels of language and reading proficiency. Furthermore, it looks at the methodology employed to examine reading strategies and concludes by formulating the research questions that would be investigated in the pilot and main studies.

Quite a substantial body of research exists on the reading strategies of foreign and second language speakers (Olson et al., 1984; Block, 1986; Barnett, 1988; Carrell, 1989; Vann and Abraham, 1990; Anderson, 1991; Kletzien, 1991; Brown and Perry, 1991; Arden-Close, 1993; Carrell et al.,1993; Trabasso et al., 1995). The studies vary in the type of strategies they investigated, the texts and subjects they used, the methodology they employed and in their findings. Overall, strategy research includes studies that have used questionnaires (Oxford and Nyikos, 1989; Green and Oxford, 1995; Barnett, 1988; Bialystock, 1981; Carrell, 1989); a cloze or gap-filling task (Vann and Abraham, 1990; Kletzien, 1991; Carrell et al., 1993); and intact (i.e.without gaps) passages with think aloud protocols (Olson et al., 1984; Block, 1986; Pritchard, 1990; Anderson, 1991).

3.2. Questionnaire-based studies

Oxford and Nyikos (1989) and Green and Oxford (1995) used the Strategy Inventory for Language Learning (SILL) questionnaire to examine the strategies learners use for reading as well as for other language skills such as writing, listening and speaking. The SILL consists of a taxonomy of strategies drawn from research on reading, writing, listening and speaking. Opposite each strategy the SILL presents a five-point scale from 'almost always' to 'almost never' and respondents indicate the frequency with which they use each strategy.

Using the SILL, Oxford and Nyikos (1989) examined variables affecting the choice of language learning strategies used by EFL university students. The findings showed that self-perception of motivation was the most powerful variable affecting strategy choice. Other variables such as effect of language proficiency, course status 'required by schools' Vs 'elected by the learners' own choice' and years of study, also had a strong influence on the choice of strategies. Oxford and Nykios (1989) argued that skilled readers are systematic in their strategy use and employ problem solving strategies in their reading. They also noted that skilled reading involves the use of strategies appropriate to the task and that the choice of strategies is influenced by affective factors such as motivation and learning goals.

Green and Oxford (1995) investigated the learning strategies and L2 proficiency (high, intermediate and low) of male and female ESL students. The findings showed that the more successful learners used a greater number of strategy types than did the less successful learners. However, there was no significant difference in the overall strategy use between the high and intermediate level students but these two levels were significantly different from the low level. Further, the findings showed that the more successful learners (high level) used metacognitive strategies more often than did the less successful or low level learners.

Although these studies have attempted to look at the strategies of learners, they have some limitations. First, these studies looked at reading strategies without asking subjects to interact with a reading text; thus the findings cannot be said to reflect the interactive nature of reading as an activity between a reader and a text. Moreover, the strategies in the SILL, which are generated from research investigating strategies under different conditions (that is, different readers reading different texts in different reading situations) necessarily will not reflect the strategies readers would use in any one particular reading situation. Second, despite the fact that the "SILL has been used around the world for students of second and foreign languages in universities, schools and government agencies" (Oxford and Nyikos, 1989:292), as Green and Oxford (1995:207) themselves caution "the SILL research to date, while impressive in quantity and quality, has left a number of questions unanswered because of its tendency to focus on broad patterns of strategy use." This suggests that the SILL fails to capture the specific different strategies used in different circumstances.

The problem of relying only on self-assessment instruments such as the SILL to measure learners' perceived ability to use strategies is noted by Oxford and Nykios (1989) who admit that the results obtained from the SILL might have been due to chance. Their views reflect the caution raised by MacIntyre et al. (1997) on the use of self-rating instruments as a sole means of assessing language learners' abilities. Cohen (1997) also raises a similar scepticism about relying solely on questionnaires for eliciting data. One way of rectifying this shortcoming would be to use additional methods that investigate the reading strategies used during the process of reading.

In addition to studies that have used the SILL, others have employed questionnaires developed by the researchers (Bialystock, 1981; Barnett, 1988; Carrell, 1989). Bialystock

(1981) investigated the effect of strategy use on the achievement of tasks by tenth and twelfth grade students learning French as a second language. In her study Bialystock used a learning strategies questionnaire which asked subjects to indicate the extent to which they used strategies for formal (knowledge of the structure of the language) and functional (knowledge to do with the use of a language) purposes. The subjects performed a sentence completion task which was assessed for accuracy of form and meaning. The finding showed that there was a significant difference in the frequency of the strategies used by tenth and twelfth grade students, with the latter using strategies more frequently. The results also showed that the subjects' perceived use of strategy (as measured in the questionnaire) was related to their achievement on the tasks. More particularly, the study showed that the subjects' perceived use of strategies for the functional (meaning) purposes had a stronger effect on performance on the tasks than on their perception of form (structure). Furthermore, the subjects' high scores in strategy use for reading were related to higher achievement on reading tasks. The researcher believed that the subjects in the study "…considered the strategies to be meaningful in that they described activities used by these learners..." (p.32). It is important to note that what the learners say they do may not always reflect what they actually do (Cohen, 1997); it is difficult to determine whether the strategies, generated as they were from the questionnaire and thus removed from an actual reading process, reflect those same processes which the subjects would have engaged in when reading a text.

The study by Barnett (1988) examined the relationships between real/actual strategy use, perceived strategy use and the reading comprehension achievement of university level French as a foreign language speakers. Real/actual strategies were inferred from the subjects' correct answers to multiple-choice context questions in which subjects chose the most likely phrase or sentence to complete the sentences. Perceived strategies were elicited from a

questionnaire which required the subjects to choose the one strategy which they thought best described how they read. Also subjects' recalls of propositional units of the text were used to measure their comprehension. Analyses of the actual strategy scores, the perceived strategy scores and comprehension scores of the subjects showed that the three were significantly related. For example, Barnett found that subjects' comprehension scores increased as their scores on both real and perceived strategies use increased. The more contexts the subjects used, that is the more strategies they used to read contextually, the higher their comprehension scores. Furthermore, the greater the number of effective strategies the subjects perceived, the higher they scored. However, the study found no significant difference between perceived and actual strategy use.

However, there are some drawbacks to this study. First, the students' comprehension scores were obtained from a text which was different from the text from which the subjects' actual strategy use was elicited. Hence, it is not possible to conclude that the actual strategies which Barnett said the subjects used in one text affected the comprehension scores on a different text. Second, the actual strategies, besides being elicited from the context-dependent multiple-choice completion format of the instrument (See below) did not necessarily reflect strategies the subjects would have used when reading a text. Third, as also noted by Carrell (1989), the multiple-choice format of the questionnaire, besides consisting of the predetermined correct choices of the researcher, forced the subjects to choose only one, when two or three alternatives were often equally appropriate. The following example provided by Barnett (p.161) illustrates the above point. (Strategies Barnett considered effective are marked with an asterisk*.)

1. When I read French, I:

a. read the whole passage once and then reread it.*

b. read part of the passage, then reread that part before going on.*

c. reread only the difficult sections.

d. read straight through the passage and do not reread.

Carrell (1989) also used a questionnaire to investigate the relationship between readers' metacognitive awareness of their strategies (that is their views of what reading strategies they think they would use) and their reading ability in their L1 (English) and the L2 (Spanish). The subjects were at intermediate and upper instructional levels. The results showed that the native English speakers, who considered more global or top-down strategies (e.g. using text structure or background knowledge) to be effective, read better in their L1 than in their L2. The Spanish subjects who perceived global strategies to be difficult performed better in the L2 than in their L1 and better than subjects who did not perceive these strategies to be difficult. These results suggest that global strategies appear to be useful for subjects who have attained a higher level of language proficiency, whereas local strategies (aspects which focus on sound, lexis or syntactic structures) seem to be useful to subjects at a lower level of L2 proficiency. The more subjects in both groups disagreed that local strategies were effective, the better they read in their L1. At the low L2 language proficiency level, native English speakers reading in their L2 appeared to consider more local or bottom-up strategies effective but the more advanced level subjects considered more top-down or global strategies effective. Similarly, the more proficient Spanish speakers in their L2 (English), who regarded more of the global strategies as being helpful for their reading, read better.

The findings of the study showed that subjects' perceptions of how they thought they would read a text and their actual performance in reading were related. Carrell's findings corroborate the findings of other previous studies (Bialystock, 1981; Barnett, 1988).

3.3. Cloze-based studies

Another approach to studying strategies has been to use a cloze task (with every nth word deleted) to infer reading strategies from subjects' responses (Carrell et al., 1993), and to use it with a think-aloud protocol to elicit the reading strategies of readers completing the task (Vann and Abraham, 1990). Others (Kletzien, 1991; Arden-Close, 1993) have used a gap-filling task and subjects' retrospective reports in order to study their strategies.

Carrell and her colleagues (1993) used a cloze task to investigate the L1 and L2 reading strategies of native Chinese and English speakers who completed cloze tasks in both languages. They found that both groups of native speakers performed better in cloze tasks in their L1 than in their L2. Carrell and her colleagues argued that the subjects who completed the tasks in their L1 used strategies which were different from those they used in doing the tasks in their L2. However, since strategies were not elicited from either tasks but were inferred from the cloze responses, it is difficult to determine whether the researchers' claims were well-founded.

A study by Kletzien (1991) examined the strategy use of tenth and eleventh grade good and poor comprehenders who completed gap-filling tasks of increasing difficulty levels – easy, intermediate and difficult. The tasks were developed by deleting context-dependent content words. Kletzien, citing Rankin and Thomas (1980), contends that deleting content words can make rational cloze "sensitive to integration of information across sentences..." (p.72). Some

studies (Brown, 1983; Bachman, 1985; Jonz, 1990) have showed that a cloze task can be sensitive to intersentential constraints beyond the immediate context of a deleted item.

After examining the retrospective reports subjects made about their strategies for choosing their responses, Kletzien found that the good and poor comprehenders used the same strategies for the three levels of texts and their scores on the tasks across the three levels were not significantly different. However, differences of strategies and scores between the good and poor comprehenders started to become evident as text difficulty increased. For example, while the total strategy use (strategy types) of the poor comprehenders who completed the most difficult task declined, there was an increase for the good comprehenders. Furthermore, when completing the most difficult task, the poor comprehenders employed a limited variety of strategies and reported them less frequently whereas the good comprehenders employed a greater variety of strategies and reported them more frequently. In addition, the good comprehenders achieved a higher score on the most difficult task than did the poor comprehenders. Kletzien (1991) argued that the main difference between the good and poor comprehenders was one of regulating strategy use rather than knowledge of the strategies. Kletzien also noted that a greater ability to control strategy use when completing the most difficult tasks differentiated the good from the poor comprehenders.

Unlike Carrell et al's study (1993), which inferred the strategies from the nature of the responses supplied, Kletzien's study is more convincing because the strategies for completing the gap-filling task were elicited from the subjects' reports of their processes. However, one concern over Kletzien's data elicitation procedure is that subjects' reports of their strategies were collected *after* the subjects had completed the entire task rather than

while they supplied each response. Braddeley (1993) warns that it is only recently attended information which is available for access in the short-term memory and that longer time-gap between processing and reporting can affect the reliability of retrospective reports. Hence, it is possible that the retrospective reports of the subjects in Kletzien's study might have been prone to memory problems. Asking the subjects to report on their strategies as they supplied each response might have lessened this problem.

Arden-Close (1993) studied the vocabulary inferring strategies of academically successful and less successful EFL college level learners. He found that the more successful learners often used their background and grammatical knowledge of the language, and used semantic and wider contextual cues to infer words. They also called upon their knowledge of grammar to verify meaning derived from the wider context although at times they incorrectly guessed words because they used only form as a clue. In contrast, the less successful learners more often either inaccurately matched words in the immediate textual segment to similar words which they had stored in their background knowledge or guessed words based on form. These learners failed to cross-check the grammatical and semantic accuracy of the meaning of these words in relation to the sentences and/or theme of paragraphs in which they occurred. The study also shows that insufficient knowledge of the language prevented the less proficient and less successful learners from compensating for the erroneous guesses they made based on their background knowledge.

What seems to be lacking in the studies above is any research into why some readers are successful and others less successful and whether the strategies these readers use are appropriate to their tasks. One study which has examined strategies in relation to task products and demands is that of Vann and Abraham (1990). Vann and Abraham studied the

reasons for the lack of success of two academically unsuccessful and less proficient foreign language learners by comparing their strategies and task products to those of successful and proficient subjects. The findings showed the unsuccessful and successful learners were similar in the strategies they used but differed in how they applied these strategies to the task at hand. For example, one of the unsuccessful learners in the study failed to check her answers to a verb completion task after she had finished the task. This, according to the researchers, indicated the subject's lack of a systematic approach to monitoring her performance. Another unsuccessful subject who completed a cloze task used a "making something similar" strategy – copying a word which had appeared in a similar phrase in a preceding textual segment. This subject failed to check the meaning from the context or to use his grammar knowledge. The study also showed that the unsuccessful learners often relied on local strategies and failed to call up the wider context to support their meaning. Vann and Abraham (1990) concluded that the unsuccessful learners "…lacked certain necessary higher-order processes, what are often called metacognitive strategies or self-regulatory skills … which would enable them to assess the task and bring to bear the necessary strategies for its [the task's] completion." (p.191).

Although the study considered only two unsuccessful learners and hence its generalisability to other subjects was limited, it is of particular importance not only for what it reveals about the strategies of unsuccessful learners but also for its insights into why such learners failed.

3.4 Intact text-based studies

A growing number of researchers (Olson et al., 1984; Block, 1986; Pritchard, 1990; Brown and Perry, 1991; Anderson, 1991) have investigated the reading strategies of foreign and

second language speakers by using a think aloud technique with intact (i.e., without gaps) passages.

Using the think-aloud method, Olson et al. (1984) studied the strategies which subjects used to understand stories in well-formed and ill-formed (those that violated conventions of story telling) texts and essays. They found that in contrast to subjects who read the ill-formed text, those who read the well-formed text made successful predictions of the story's development based on the unfolding story, tested these predictions as they read on and confirmed the predictions as the climax of the story was unveiled. Furthermore, the strategies the subjects used for the essays were different from those they used for the stories. For example, subjects' predictions in the essays contained less specific details whereas those in the stories had rich details. In addition, the subjects reading the essays did not generate and test hypotheses. Olson and his colleagues noted that the use of the think-aloud protocol provides an insight into the observable correlates of underlying processes but might not capture direct reflections of processes in the mind. Although most processes that are important to reading comprehension lie outside of our awareness, Olson and his colleagues argue that a skilled reader is aware of most of the conscious processes in reading. This suggests that less skilled readers lack an awareness of their own cognitive processes or activities. Olson et al add that we are aware of the thought processes that occur during reading and that the think-aloud method taps into these processes.

A case study by Block (1986) investigated the comprehension strategies of nine college-level native and nine non-native speakers of English who were considered to be less proficient readers. Using the subjects' think-aloud, Block studied the strategies which the subjects reported after they had read either a sentence or a whole paragraph within a text. Subjects'

recalls and comprehension levels were measured. The findings showed that the non-native and native speakers used similar kinds of strategies. However, Block distinguished between what she called 'Integrators', those who integrated information in the text, who monitored their understanding and were aware of text structure, and 'Non-integrators', those who did not integrate information in the text but instead relied on their personal experiences to understand the text. The Integrators and Non-Integrators who were speakers of either language showed differences in their recalls. For example, the recalls of the Integrators covered most of the information in the text, focussed on main ideas and followed the structure of the text, whereas those of the Non-Integrators did not.

Furthermore, in sharp contrast to the Non-Integrators, when they experienced comprehension crises the Integrators successfully made effective use of textual cues when they lacked the necessary personal experience. In addition, while the Integrators effectively monitored and controlled their strategy use, the Non-Integrators "…applied their learning strategies sporadically and unsystematically." (p.487). Block (1986) raises a key question that should be born in mind when we deal with less proficient readers who appear to possess a knowledge of strategies, "How could awareness of the strategic resources lying for the most part dormant within the Non-Integrators be awakened so that these could be applied more systematically and effectively?" (p.487) Block's question is similar to the remarks made by Vann and Abraham (1990) See above.

Pritchard's study (1990) examined the effect of cultural schemata on the reading strategies of eleventh grade proficient readers who read culturally familiar and unfamiliar texts. Based on the retrospective reports of the subjects, Pritchard studied how the texts affected the frequency with which certain types of strategies are reported. He found that when the

subjects read the culturally familiar text there was an increase in the frequency of certain strategies such as establishing intersentential ties and use of background knowledge. He also found that when the subjects read the culturally unfamiliar text there was an increase in the frequency of strategies relating to developing awareness and accepting ambiguity. Although this study provided useful insights into how the subjects read, the technique of eliciting strategies by presenting subjects with only one sentence at a time might not have captured the flexible and interactive processes of reading a whole passage.

Anderson (1991) investigated individual differences of strategy use by beginning, intermediate and high proficiency level university Spanish EFL students. Basing his research on the subjects' retrospective reports, Anderson examined the reading and test taking strategies of the subjects and found that high and low scoring subjects were using the same type of strategies. In addition he found no significant difference in the number of strategies used for reading and for test taking; high scores on the two tests significantly correlated with the use of a greater number of strategies. The findings showed that L2 was a more significant predictor of success for L2 reading than any reading or test taking strategy. He concluded (pp.468-469), "... strategic reading is not only a matter of knowing what strategy to use but ... a reader must also be able to apply it strategically." His remark is similar to those of Carrell et al (1993), Kletzein (1991) and Vann and Abraham (1990). Anderson further noted that factors such as motivation, level of interest, background and learning styles affected the success of the learners in reading the materials.

A similar argument to that of Anderson (1990) is also given by Yuill and Oakhill (1991) who say that what distinguishes good comprehenders from poor ones is that the latter lack ways of monitoring comprehension and dealing with failure. In addition, Chambliss' study (1995)

demonstrated that successful readers showed flexibility in and conscious planning of strategies they use to comprehend a text. They also make evaluations, change their mind (that is modify earlier comprehension status) and match their strategies to the textual clues as they come across them. As Deegan (1995) noted in her study of the protocols of skilled and less skilled readers, skilled readers modified their strategy use as they proceeded, whereas the less skilled readers not only failed to monitor conclusions which were based on inconsistent interpretations but also settled for less satisfactory interpretations.

A study by Trabasso et al. (1995) investigated the effect of strategies on the reading comprehension and recall of adult and child native speakers who thought aloud as they read stories. The findings showed that the two were not significantly different in their inferencing and explanatory strategies but that the children were more accurate than were the adults in the predictions they made. Further, the results showed that subjects who made coherent interpretations, explanations, predictions and also integrated the information into the stories understood and recalled better than those who did not.

3.5. Strategy training

An important aspect of reading strategy research has been an investigation into the training of learners to use their strategies in order to improve their reading performance. A number of studies (Brauman, 1986; Armbruster et al., 1987; Dewitz et al., 1987) have shown that instruction on strategies improves reading. For example, Dewitz et al (1987) trained fifth grade learners to make use of their syntactic and background knowledge to make inferences. The learners were taught to give reasons as to why some answers were unacceptable or acceptable, to evaluate and self-monitor their use of strategies and reading performance, and to transfer their instruction to new learning situations. The findings showed that the learners

who were trained performed better and transferred their strategy, use knowledge to new tasks more successfully than did learners who were not trained. Similarly, the studies by Brauman (1986) and Armbruster et al (1987) provided evidence that learners who were trained to use their strategies did significantly better than learners who did not receive the specific direct instructions.

Further evidence for the effectiveness of strategy training is obtained from Lundeberg's study (1987) which showed that novice readers benefited from training experiments developed on the basis of expert readers' cognitive strategies. In addition, Baker's study (1985) showed that less skilled readers who were given training on how to seek and resolve problematic parts of a text performed better. The study showed that the less skilled readers not only experienced difficulty in identifying problems but also seriously lacked a repertoire of criteria against which they could evaluate their understanding. Nunnan (1997) also reported a similar positive effect on reading when students were trained to use strategies.

3.6. Summary

The above review has shown that reading strategies can be influenced by factors such as language proficiency, cultural background, motivation and text difficulty. Further, it has shown that readers' perceptions of how they think they read have an influence on their reading performance. However, how readers' perceptions of their own strategies relate to the actual strategies they use in reading and how these influence performance have not been looked at. Native and non-native speakers appear to be similar in the kinds of strategies they use. However, readers at a high language or reading proficiency level appear to use a greater variety of strategies than do readers at a lower level. In addition, the more proficient readers seem to use more high-level processes such as metacognitive strategies. While more

proficient subjects tend to focus on more global than local strategies, less proficient readers rely more on local or bottom-up strategies than on global or top-down ones. Moreover, a lack of ability to utilise strategy resources efficiently appears to be the distinguishing feature between skilled and less skilled readers. As Vann and Abraham (1990) have shown, an important underlying factor that seems to distinguish successful learners from unsuccessful is the extent to which these learners appropriately utilise their repertoire of strategies for a given task. There is little research into the relationship between the appropriateness and effectiveness of strategies in reading intact (without gaps) texts by EFL speakers.

As the review has shown, some studies have examined reading strategies using intact texts and while others have employed texts with gaps. In addition, the procedures used for selecting subjects varies, with some studies (Anderson, 1991) selecting subjects on the basis of overall language proficiency level, others (Block, 1986; Kletzien, 1991) choosing subjects using reading proficiency levels, and some using subjects' academic levels (Vann and Abraham, 1990; Arden-Close, 1993). Further, the studies have classified the subjects into one level - less successful - (Block, 1986; Van and Abraham, 1990), two levels - high and low - (Carrell, 1989; Kletzien, 1991; Arden-Close, 1993) or three levels - high, intermediate and low (Anderson, 1991). For these reasons, it is difficult to generalise the results across the studies. However, important insights into how readers at differing levels of language and reading proficiency read and how they differ in the use of strategies have been obtained. One aspect of strategy use that has not been dealt with in any of the studies reviewed so far relates to the examination of readers' post-reading evaluations, readers' reflections on their own strategies, and how these both relate to the actual strategies they use. Looking at this post-reading stage of reading can offer additional insight into what factors might lie behind

the particular approaches readers adopt in reading. Moreover, there is only limited information on the strategies which readers employ as they go through the different stages of reading: pre-, during- and post- reading. Strategies that are used for planning, overseeing and evaluating other strategies (metacognitive strategies) and for regulating motivation and emotions (affective strategies) occur in all three stages and they influence the way readers interact with a text.

The above review has shown that the focus of the studies has been on strategy differences in terms of types and frequency of use. However, the question of their appropriateness to reading tasks and the effectiveness of these strategies is an area of enquiry that merits investigation because it is also a key area which will shed light on the reading difficulties of students at different levels of language proficiency in higher education in Ethiopia. Further, as mentioned in Chapter One, little research has been done in Ethiopia on the areas of strategy types and frequency of use and none on whether students use their strategies appropriately and effectively. Therefore, to investigate these areas, the following research questions have been formulated.

3.7. Research questions

- Are there differences in the strategy types used by students at high and low levels of language proficiency?
- Are there differences in the frequency of use of these strategies by students at high and low levels of language proficiency?
- How appropriate are the strategies used by students at high and low levels of language proficiency for their purposes?
- How effective are the strategies used by students at high and low levels of language proficiency for their purposes?

Chapter Four reports on a study which was carried out at Lancaster University to explore the methodology to be used to investigate the reading strategies of subjects in Ethiopia.

CHAPTER FOUR

A PRE- PILOT STUDY

4.1. Introduction

The purpose of this pre-pilot study was to explore the methodology and procedures which would be used to elicit the reading strategies of the subjects who would participate in the pilot and main studies in Ethiopia and to investigate the research questions stated in Chapter Three. The study also explored a three-phase data collection procedure – before, during and after reading. The strong and weak aspects of the design of the pilot and main studies would be assessed according to the insights from this study. A glance at the body of reading research on reading strategies (See Chapter Three) clearly shows that most studies have predominantly used two types of verbal reports for eliciting strategies – retrospection (Garner, 1982; Kletzein, 1991) and Introspection or think-aloud reports (Lundeberg, 1987; Anderson, 1991; Deegan, 1995). Before using verbal reports, it is important to understand what they are, their use, what kind of data we can reasonably expect to elicit, and their limitations.

4.2. Verbal protocols and their use

Verbal reports are accounts of cognitive processes given by learners before, during or after they complete a language learning task. They have been classified into three types (Cohen, 1995:3): (1) *Self-reports*; these consist of generalised statements which learners use to describe their learning behaviour. For example, "I tend to be a speed reader". (2) *Self-observation reports*; also commonly called 'retrospection' are specific inspections of the learner's language behaviour in the form of retrospection, that is reports made some time *after* a mental event had occurred, for example, "What I just did was to skim...". (3) *Self-revelation*

reports; also commonly referred to as 'think-aloud' or 'introspection', are disclosures of stream-of-consciousness *while* a task is being attended to. For example, "What does 'it' refer to here?". It is important to emphasise that the distinction between retrospection and think-aloud reports is not dichotomous but is on a continuum (Afflerbach and Johnston, 1984; Cohen, 1997). Afflerbach and Johnston note that it is possible to give a retrospective report of information heeded earlier while continuing to process concurrently.

The increasingly frequent use of retrospection and Introspection protocols as a method of eliciting data on cognitive processes of readers, and their valuable contribution to reading research has been highlighted (Cohen, 1994; Cohen, 1995; Afflerbach and Johnston, 1984; Wenden, 1991; Garner, 1982; White, 1980). Verbal reports have come to be recognised as successful methods of examining cognitive processes in reading and are now frequently used in reading research (Cohen, 1997).

4.2.1. Data from verbal protocols

Erricson and Simon (1980) emphasise the need to understand the nature of data and what can be reasonably expected from the use of verbal protocols. They note that verbal reports can only provide a direct and accurate reflection of traces of information heeded in the short-term memory and do not reveal the underlying internal stages of processes in the mind. They also point out that verbal reports are unlikely to capture automatic processes because these processes happen so fast that a learner may not be able to realise that they have taken place. This means the use of verbal reports to elicit strategies for word recognition that occur automatically may be unhelpful. They further emphasise that verbal reports are well suited to elicit problem-solving or conscious mental processes. Since strategies have been increasingly

recognised as deliberate mental problem-solving processes (Oxford, 1990), the use of verbal protocols to elicit strategies is justified.

4.2.2. Limitations of verbal reports

Retrospective and introspective reports have their own limitations. A key problem with retrospective reports is that since information heeded only recently is available for access and retrieval (See Section 2.2), data could be distorted due to memory problems that result from the time gap between cognitive processes and the reporting of these processes (Nisbett and Wilson, 1977; Erricsson and Simon, 1980). The main limitation of introspective reports relates to a risk of cognitive load resulting from the simultaneous processing and reporting (Afflerbach and Johnston, 1984). However, Afflerbach and Johnston cite studies which have used non-specific probes which helped subjects to maintain sufficient cognitive space for reporting and processing. Erricsson and Simon (1980) also emphasise that articulating cognitive processes using a language (verbal) does not "...change the course and structure of the cognitive processes. Nor will verbalization under these conditions slow down these processes." (p.227). In order to counteract the limitations of verbal reports, some investigators (Greene and Higgins (1994) in Cohen, 1995; Ericsson and Simon, 1980; Garner, 1982) have offered the following suggestions:

- minimise the time gap between the thinking process and the reporting of it
- use non-specific probes, such as 'what are you thinking or doing while you are reading?' when subjects are silent.
- train subjects in verbal reporting, including pre-task familiarisation exercises with the technique

- give clear instructions to subjects to focus primarily on the task and to understand the purpose of the procedure
- collect other data and assess the consistency of the data with verbal-report information

Section 4.3 describes the methodology and procedures used in this study to elicit strategies using retrospection and introspection reports.

4.3. Methodology

4.3.1. Subjects

Initially, first year undergraduate EFL students studying in the science areas at Lancaster University were targeted, but since such students were not available at the appropriate time, the participants were EFL speakers from the Linguistics Department and other Social Sciences departments. Six subjects participated - three MA students and an undergraduate from the Linguistics Department, and two MA students one studying accounting and the other, who also had a diploma in English language teaching, doing international relations. To counter balance the effect of the subjects' familiarity with the research procedure to be used, I used texts that were unfamiliar to these subjects. The overall number of subjects was partly determined by the participants' good will and their pressure of course work at the time.

4.3.2. Instruments

4.3.2.1. Texts

Initially I had hoped to use texts from Mekelle University College but as texts did not arrive in time for this study, I used passages from three science books (geology, biology, and

geography) from the library in Lancaster University. I selected the texts on the basis of their proximity to the subject areas taught in the University College. I selected texts which were complete, that is which dealt with a particular topic and ended with a discussion of that topic before the book began discussing a new topic. Three texts which fulfilled the above criterion were selected (See Appendix 1 for the texts).

4.3.2.2. Gap-filling task

The literature does not offer a specific procedure for examining strategy appropriateness. Therefore, I adapted from Kletzein (1991) a procedure which elicited both the researcher's (Kletzein's) and her subjects' processes. Kletzein (1991) designed a gap-filling task by deleting context-dependent content words which required information beyond the immediate clause for their closure. It can be argued that the processes used by the researcher to delete the words can be considered to correspond with the reading processes of the researcher when deleting those words. It is therefore possible that the deletion processes of the researcher can be used as a measure of whether the processes or strategies required by subjects to supply the responses for the blanks in the gap-filling task are appropriate.

Based on the above premise, I designed a gap-filling task by deleting words that can be restored using information beyond the immediate clause and across the whole passage (See Appendix 2 for the deletion processes). To check the reliability of my deletion I asked two judges to delete words by using the deletion processes I had used. There was 50% agreement between me and one of the judges and 55% agreement with the other judge. There was only 25% agreement amongst the three of us. Despite these differences, there were seventeen deletions which were chosen by all three of us and which were well spread out in the text. In order to raise the number of deletions to twenty, I added three of my own deletions which,

although they were not amongst the deletions of the judges, corresponded with the deletion process and were also well spread out. Deleting twenty words meant 85% agreement among the three of us. The final version of the task contained twenty blanks (See Appendix 3 for gap-filling task).

4.3.2.3. Metacognitive questionnaire

As was shown in Section 3.2, there is a relationship between readers' awareness of reading strategies before reading and their actual reading performance. In order to elicit the awareness of the subjects' in the present study a metacognitive questionnaire from Carrell (1989) was used (See Appendix 4 for the questionnaire). The questionnaire contains the following items: (1) six statements relating to the subjects' abilities in reading in English; these provide a measure of the subjects' confidence as readers in that language; (2) five statements regarding what they do when they do not understand something; these assess the subjects' awareness of repair strategies; (3) seven statements concerning what the subjects focus on to read more effectively; and (4) eight statements about things that make reading in English difficult for them. The last section of the questionnaire which asks learners about the strategies of the best reader they know was removed because as Garner (1988:15) cautions it is unhelpful to ask learners "to reflect on matters far broader than their own cognition". In addition, the focus of the present study is on learners' own strategy use rather than some one else's strategy use.

4.4. Procedure

4.4.1. Assigning subjects

Two subjects were assigned to each of the following three groups, Gap-filling, Retrospection and Introspection Groups. As all the subjects were not available at one time, they took part as

and when they were ready. Consequently, it was not possible to assign them to any particular group.

4.4.2. Metacognitive questionnaire

All the subjects first filled in the questionnaire and then completed the tasks in the following groups.

4.4.3. Gap-filling Group

The subjects in this group, both of whom said they were familiar with the think-aloud procedure, were asked to give a verbal report of their strategies immediately after they had supplied a response for a blank. The purpose of eliciting strategies immediately after the subjects had supplied a response was to reduce any memory problems and to overcome the weakness described in a previous study (Kletzien, 1991). In order to make sure that the subjects understood the task clearly, I gave each subject an explanation and asked them to practice reporting their strategies for completing a blank (as recommended in the literature; See Section 4.2.2). A different text was used for the practice session. Once the subjects had indicated their understanding of the procedure, they were allowed to continue with the task.

4.4.4. Retrospection Group

As in the gap-filling group, both the subjects in this group said they were familiar with retrospection, and were asked to give a verbal report of the strategies they used. In order to ensure that they understood the task clearly, I asked the subjects to practice retrospection after reading a practice text. Initially, the subjects had difficulty providing clear reports. The subjects were asked to describe clearly vague expressions such as, ‘like this’ in "having look at the title, I approached like this" (See Appendix 5, line 1). In some instances, when they

digressed to talk about their general reading strategies or to mention the importance of reading, I helped the subjects to focus on the task by saying, for example, "tell me about this paragraph". After I had established that the subjects had clearly understood how to proceed with the task, I asked them to turn over the passage after they had finished reading one paragraph. This was done in order prevent them from reading while trying to retrospect. I then asked them to give a retrospective account of the strategies they had used in reading that particular paragraph. The purpose of having these subjects retrospect after each paragraph was to reduce data lost by memory problems (See Erricsson and Kintsch, 1995) and rationalisation, that is distortion of their reports (See Olson et al., 1984); both of these might occur if there was a long time gap between the use of a strategy and the reporting of its use.

4.4.5. Introspection Group

As with the other two groups, I first gave the subjects a brief explanation of the kind of task they would be doing. I then asked them if they were familiar with introspection. Both subjects said that they had heard of it in lectures, and one of them indicated he had previously given an introspective verbal report. To make certain that each subject had understood the task, I first observed the subjects do the introspecting while reading in a practice session using a different text.

The first subject (surprisingly the one who said he had been involved in an introspection before this study) experienced difficulty introspecting and despite my probing said things like (See Appendix 6, line 1) "I am reading I don't think any thing" or "I am not thinking I am just reading (line 12). Only on a few occasions did he manage to provide clear description of his thought processes. He also tended to give a retrospective account of what he understood, that is a kind of summary of the text content.

After this experience, I changed my approach with the second subject. First, I asked this subject to give me an example of what an introspection was, but she did not seem to be able to do this. Then I showed her a demonstration of me introspecting by reading one paragraph from another passage. Following this, I asked her to do the same with another paragraph taken from another passage. Although she introspected, some of the descriptions of her thought processes were not clear and specific. For example, she said (See Appendix 7, line1): "I am looking at a word" which was vague and did not help me to understand exactly what she was doing or what sort of word (unfamiliar or difficult) she was referring to.

During the actual task, she managed to provide an account of her reading processes but at times she had to be guided and coached into giving clear and specific descriptions of what she was doing. For example, when she came across a new word, this was what she reported (See Appendix 7, lines 33-34): "I come across this word 'diffusion' I am not sure about it so I continue reading...". However, when she was asked to clarify what she meant by "so I continue" she clarified by saying, "I just leave it aside". Gradually her reporting became less vague and she also spoke of her confidence in the procedure although for most of the passage she was not clear and needed guiding. After completing the task, the subject indicated that introspecting was difficult and she would need more training. She also said that she felt it might have interfered with her reading but when asked if she understood the passage she replied she had the gist of it. Unfortunately, I did not measure reading comprehension hence the subject's claim that she understood had to be taken at face value. It was clear that for the main study some form of measure of reading comprehension would be needed. (See Section 4.11 for suggested modifications to the pilot study).

4.4.6. Round-up interview

After they had completed the tasks all subjects in the three groups were interviewed for their views and reflections on their reading (See Appendix 8 for interview questions). The subjects' verbal reports and the round-up interview were audio recorded and transcribed for coding and analysis.

4.4.7. Coding strategies

First, I identified the strategies from the reports of the subjects. The strategies were identified based on the following definitions from Oxford (1990:8) and Wenden (1991: 18).

> A strategy is a deliberate mental operation which a reader employs to aid the storage, retrieval, and use of information (Oxford, 1990); a specific action to make learning easier, to regulate the reader's efforts to do so (Wenden, 1991).

To illustrate how the strategies identified in this study corresponded to the definitions given above, I shall give the following examples from the reports of the subjects in this study.

- **Skipping a word which is difficult to pronounce** = I found a very big word, I am not sure if it is important or not er ... ca ..rbo yidrate ... so I skip the word

- **Reading main parts** = I go back to the sentence again, I mean after this example, this part is main part and I read them.

To check the reliability of my coding, a second judge was given a randomly chosen transcription (from a subject from the Gap-filling Group) and was asked to identify the strategies. The strategies of this judge were then compared with those of mine to see the degree of agreement or disagreement. There was 85% agreement. Additional strategies identified by the judge were added to the list of strategies I had identified. The same

procedure of validation was followed with a second judge. The judge was given the coded strategies on a separate sheet of paper and was asked to identify those strategies from a randomly selected transcription. A comparison of the coding of this judge and that of mine was made and agreement was 82 %. The final list of the strategies was then compiled (See Appendix 9 for the list of the strategies). Both judges were given the transcribed data and the original passage from which the gap-filling task was designed in order to help them follow references from the texts that were made by the subjects.

In order to illustrate how consistently the subjects across the different tasks reported a particular strategy, a strategy by subjects by task classification is given in Table 4.1.

Table 4.1. A strategy by subjects by task classification

Prior knowledge	I realise this is something about soil or something about scientific…, I tried to find out what specific area in the scientific subject about, and tried to …infer the meaning … from …my past education in junior and senior high school	Retrospection
	I realised that it [the first sentence] said something about soil or something scientific I tried to infer the meaning, infer the information from my experience	Introspection
	It is ***surface***. Erosion removes something from somewhere	Gap-filling

4.5. Results and discussion

In what follows, the data from the metacognitive questionnaire, the gap-filling task, the retrospection and introspection will be analysed.

4.5.1. Metacognitive questionnaire

First, the two scales in the questionnaire under the category of agreement (strongly agree and agree) and under disagreement (strongly disagree and disagree) were conflated into one scale (agreement and disagreement) for two reasons. First, it is always difficult to distinguish

clearly between 'strongly disagree' and 'disagree'. Second, it makes it convenient to classify the responses and to do a frequency count. For ease of interpretation the responses in the questionnaire were classified into two categories (See Carrell, 1989). Responses which related to sound-letter, word-meaning, or sentence-syntax aspects are classified as 'local' or 'bottom-up'. Others that related to text gist, background knowledge and text organisation are classified as 'global' or 'top-down'. Based on these classifications the subjects were categorised, according to which items they agreed or disagreed with, as 'local' or 'bottom-up' and 'global' or 'top-down' strategy users. For example, those subjects who agreed that these 'local' aspects were effective for coping with comprehension difficulty will be categorised as 'local' or bottom-up' strategy users, whereas, others who agreed that 'global' were effective will be classified as 'global' or top-down strategy users. By the same token, those who disagree that 'local' strategies are effective were classified as 'global', whereas, those who disagreed were classified as 'local' strategy users. Neutral responses were not included in the discussion because they were difficult to interpret.

Table 4.2. below shows the views of the subjects regarding their perceived ability to read in English. Their views will be interpreted as indications of their confidence.

4.5.1.1. Awareness of ability

Table 4.2 Awareness of ability

Groups	Able to Anticipate what Comes Next in the Text		Able to Recognise Main & Detail Points		Able to Relate Previous and Following Information		Able to Question Author's Truthfulness		Able to Use Prior Knowledge		Able to Sense Lack of Understanding	
Gap-filling N = 2	1A		2A		1A		1A	1D	1A	1D	1A	1D
Retrospection N = 2	1A	1D	1A	1D				2D	1A	1D	2A	
Introspection N = 2	2A		2A		2A		1A	1D	2A		1A	1D
Total = 6	4A	1D	5A	1D	3A		2A	4D	4A	2D	4A	2D

Note: Total number of the subjects = 6; 2 in each group
A = agreement; D = disagreement;

Table 4.2 shows that the majority of the subjects (four out of six) in the three groups said they were able to anticipate information coming next in the text, use their background knowledge, and detect a sense of lack of understanding. Similarly, four out of six of the subjects said that they were unable to question the truthfulness of what the author says in the text. It is plausible that these subjects may be less critical readers of the content of the text or they may consider the author's view as some thing to be accepted. Furthermore, most of the subjects (five out of six) said they had the ability to recognise main points and details in the text they read.

Neither of the subjects in the Retrospection group (Table 4.2) said they were able to relate previous and following information in a text. In sharp contrast, both subjects in the Introspection group said they had the ability to do so. Only one subject from the Gap-filling group said he had the ability to relate previous and following text. The responses of most of the subjects (Table 4.2) indicate that these subjects appeared to be confident of their ability.

4.5.1.2. Awareness of repair strategies

The second aspect of the questionnaire dealt with strategies which the subjects say they would use to repair difficulties in comprehension. The responses are given in Table 4.3.

Table 4.3. Awareness of repair strategies

Groups	Keep on Reading for Clarification Further on	Reread Problematic Parts	Reread before Problematic Parts	Look up Unknown Words in Dictionary	Give up or Stop Reading
Gap-filling n = 2	1A	2A	2A	1A	2D
Retrospection n = 2	2A	1A 1D	1A	2D	2D
Introspection n = 2	1A	2A	2A	2A	2D
Total = 6	4A	5A 1D	5A	3A 2D	6D

Note: Total number of the subjects = 6; 2 in each group
A = agreement; D = disagreement;

Most of the subjects (five out of six) agreed that when they did not understand something in the text they would re-read problematic parts as well as the text segments which came before the problematic parts. Furthermore, the majority (four out of the six) indicated that they would keep on reading for clarification as their repair strategy (Table 4.3). It appears that attending to information which precedes and follows a difficult part is seen as playing a useful role, as is re-reading a problematic part. All the subjects indicated that they would not give up or stop reading when they found something difficult in a text. This suggests a persistent or resolute approach to their reading in the face of difficulty.

4.5.1.3. Awareness of effective strategies

Strategies, which the subjects regarded as effective to overcome their comprehension problem, were elicited and the responses of the subjects (Table 4.4) were analysed.

Table 4.4. Awareness of effective strategies

	Bottom-up or 'local' Strategies												Top-down or 'global' Strategies		
Groups	Mentally Sound out Word Parts		Understand Each Word Meaning		Pronounce Each Word		Knowledge Of Grammar		Look up Words in Dictionary		Focus on Details		Text Organisation	Get Overall Meaning of Text	Relate Text to Topic Knowledge
Gap-filling n = 2			1A	1D		1D	1A	D	1A				1A	2A	2A
Retrospection n = 2	1A	1D		2D		2D	1A				1A	1D	2A	2A	2A
Introspection n = 2	1A			2D		2D	1A	1D		1D	1A		2A	2A	2A
Total n = 6	2A	1D	1A	5D		5D	3A	2D	1A	1D	2A	1D	5A	6A	6A

Note: Total number of the subjects = 6; 2 in each group
A = Agreement; D = Disagreement;

Table 4.4 shows that most of the subjects agreed that for effective reading they would focus on getting the overall meaning of a text, on relating their knowledge of a topic to the text and text organisation. Furthermore, most of the subjects (five out of six) indicated that they would

not focus on understanding the meaning of each word and on pronouncing each word to read effectively (Table 4.4). The responses suggest that these subjects appeared to be what Carrell (1989) referred to as 'global' or top-down strategy users. The responses of these subjects are not surprising considering the fact that these five subjects were familiar with the effectiveness of global strategies or higher level processes from their linguistic postgraduate courses.

4.5.1.4. Awareness of difficulty aspects

The final category of response relates to aspects which the subjects find difficult when reading silently in English. Table 4.5 below shows the responses.

Table 4.5. Awareness of difficulty aspects

	Bottom-up or 'local' Aspects						Top-down or 'global' Aspects					
Groups	Sounds of Individual Words	Pronunciation of Words	Recognise Words	Grammatical Structure	the Alphabet		elating Tex to Prior Knowledge	Getting Overall Text Meaning	Text Organisation			
Gap-filling n = 2	2D	2D	2A	2A	2D		1D					
Retrospection n = 2	2D	2D	A	D	2D		2A	2A	1A	1D		
Introspection n = 2	2D	2D	2D	1A	1D	2D	1A	1D	1A	1D	1A	
Total = 6	6D	6D	3A	3D	3A	1D	6D	3A	2D	3A	1D	2A	1D

Note: Total number of the subjects = 6; 2 in each group
A = Agreement; D = Disagreement;

The responses (Table 4.5) show that all the subjects in the three groups disagreed that sounds of individual words, pronunciation of words and the alphabet, that is aspects which Carrell (1989) called 'local' items, would cause them difficulty when reading. According to these responses, these subjects appeared to be bottom-up strategy users. However, it does not necessarily follow that these subjects use bottom-up strategies. Such dual interpretation could be due to a problem with the classification used by Carrell, or due to the inconsistent reporting

of the subjects. The former problem can be explained by the presence of two possible interpretations of the difficulty aspect in the questionnaire. For example, a disagreement that pronunciation or the alphabet causes difficulty in reading can be interpreted as either bottom-up (Carrell's classification) or top-down (because a skilled top-down reader would not find pronunciation of words or the alphabet difficult). The latter can be explained by the apparent contradiction in the responses of the subjects. For example, according to the views of these subjects on effectiveness these strategies would be top-down text processors (See Table 4.4). But their views (Table 4.5) indicate that these subjects would be bottom-up readers.

It is important to note that on the effectiveness of strategies all subjects said they would focus on 'global' aspects , that is, getting the overall meaning of text and on relating the text with background knowledge (Table 4.4). Most of them also said that they would focus on text organisation in order to read effectively. But on the difficulty aspects (Table 4.5) the same subjects said they would not focus on those aspects.

Some possible explanations for this apparent inconsistency of reporting could be that the subjects merely completed the questionnaire as they went along, or that they reported what they thought they ought to do, or that they in fact read in this way. Considering that four of the subjects were linguistics students and a fifth one had a diploma in English language teaching, it is likely that the subjects' prior familiarity with issues on foreign language reading or effective reading strategies might have influenced their responses to the questionnaire. But would subjects for the main study in Ethiopia, who do not have a linguistics background, do the same? The answer to this question in terms of deciding whether or not to use the questionnaire will be assessed below in the light of what Carrell (1989) learnt from it in her research.

First, Carrell's subjects were not linguistics students and her study did not indicate that any contradiction was reported by the subjects. Second, Carrell's findings also indicated that subjects' conceptualisations, which were elicited using this questionnaire, were indeed related to their reading performance, thus adding to the strength of the objective of using the instrument as a useful way to collect such data. This issue will be further discussed in the design consideration section (Section 4.11) and a decision on its use will then be resolved.

The next discussion (Sections 4.6. and 4.7) discusses the findings from the three groups: the Gap-filling, the Retrospection, and the Introspection Groups.

4.6. Gap-filling Group

A scoring scheme (See Appendix 10) taken from Carrell et al. (1993:958) was used for marking the responses in the gap-filling task. On the basis of this scheme, I scored the gap-filling papers. In order to get an inter-rater reliability check for my scoring, a second judge was given the scoring scheme and the gap-filling task completed by one of the subjects together with the list of exact responses to be used as a key. A comparison was made between the judge's scores and mine. The proportion of responses that were identically corrected by the judge and me was 86 %.

The scores for the gap-filling task are given in Table 4.6. The table compares the scores of the subjects in the light of six categories of responses. The discussion of the responses will focus on the relationship between appropriate/inappropriate strategies and correct/incorrect responses by both subjects.

Table 4.6. Distribution of scores in percentages for gap-filling task for Subjects 1 and 2

Scoring categories	Subjects	
	Subject 1 Score in %	Subject 2 score in %
Exact	50	30
Acceptable	20	20
Semantically acceptable	-	5
Syntactically acceptable	20	10
Unacceptable	5	35
Blank	5	None

Table 4.6 shows there are two noticeable differences between Subjects 1 and 2: (1) Subject 1 has a higher score (50 %) for the exact responses than does Subject 2 (30%); (2) Subject 1 has the lower unacceptable response score (5%) as compared to the 35% of Subject 2. What brought about these differences in the scores? In order to examine this, I shall make a comparison among the correct/incorrect responses, the appropriate/inappropriate strategies used to supply the responses and the deletion processes I used for each blank. Sample responses would be used for the comparison (See Tables 4.7 and 4.8). See Appendices 11 and 12 for complete responses of Subject 1 and 2 respectively. First, the relationship among the correct responses, appropriate strategies reported and the deletion principles for the items will be presented (Table 4.7).

Table 4.7. Comparison of correct response, appropriate strategy and deletion processes

Subject	Correct response	Appropriate strategy used	Deletion processes
1	**Reason** ***(response 4)***	'For this ***reason'***, that is what the writer want to say, … he explain erosions and it is serious detriment and after explaining the situation he'd like to say yes it is considered as serious ...because this whole sentence before the blank is describing er explaining reason, because those sentences above … are reasons **(lines 29-32)**	The blank requires the candidate to seek a clue for a reason why 'sheet erosion must be considered as most serious' (after the blank) by using the clue 'this' (before the blank) as a signal to an idea already mentioned , i.e. a reason (damage from sheet erosion being difficult to see until it is too late
2	**Reason** ***(response 4)***	The last is ***reason*** because I think it's ordinary grammar structure, 'for this reason', 'for this feature' ... and beginning of the sentence is conclusion of previous sentence **(lines 9-16)**	

The comparison shows that the correct responses were generated through the appropriate strategies, and that the strategies corresponded to the deletion processes I used to delete the responses (Table 4.7). As regarding subject 2, all the six exact responses supplied and the strategies used matched the deletion processes. However, as the response of Subject 2 showed (Table 4.7), an additional strategy that did not match the deletion process, for example, using grammar structure, was used to supply the correct response. This presents an interesting problem in the definition of an appropriate strategy, that is a strategy that does not match the deletion process is not always an inappropriate strategy.

In what follows, I shall compare the incorrect responses and the inappropriate strategies used by both subjects. Table 4.8 illustrates the comparison.

Table 4.8. Comparison of incorrect response, inappropriate strategy and deletion processes

Subject	Incorrect response	Inappropriate strategy used	Deletion process
1	**Particles** ***(response 11)*** **Exact response = surface**	It will be **particles** because the first sentence talks about [soil particles] and the exact repeat in this sentence in this blank [the particles] **(lines 48-49)**	The blank requires the candidate to relate clues such as, 'when flowing water moves over soil' (before the blank) with associated ideas about water moving over the soil surface 'when ... water moves as a uniform sheet over the surface' (in paragraph 2; second sentence). The blank also requires the candidate to relate subsequent information (after the blank) which refers to soil particles being detached or removed from the soil surface (in topic sentence before the blank in the paragraph (paragraph 4) with references about 'the particles in the direction of flow' (after the blank).
2	**Particles** ***(response 11)*** **Exact response = surface**	... ***particles*** because the first paragraph there is such expression [soil particles] and next paragraph four, this word, [particles], appears once more after the blank **(lines 33-34)**	

Table 4.8 shows that these subjects merely matched co-occurring compound words from the preceding sentence, while the blank required them to relate information in the paragraph

containing the blank with information from the preceding paragraphs. I must emphasise that all the seven incorrect responses, which were supplied by Subject 2, were the result of inappropriate strategies. The one incorrect response supplied by Subject 1 was the result of an inappropriate strategy.

From the preceding comparison it is possible to see the relationship between correct/incorrect responses and appropriate/inappropriate strategies. The actual results in themselves are inevitably not informative because of the small number of subjects involved in the study. However, there are ground for suggesting that the gap-filling task, when used with a larger number of students, might provide a useful insight into the relationship between appropriate and/or inappropriate strategies and reading performance.

In section 4.7, I shall compare the strategies reported by both the Retrospection and Introspection Groups.

4.7. Retrospection and Introspection Groups - strategies reported in common

Because of the large number of strategies reported and for ease of comparison, the strategies will be presented in three tables. Table 4.9 shows strategies reported in common by both groups, whereas Tables 4.10 and 4.11gives strategies only reported by either group.

Table 4.9. Frequency of strategies reported in common by both groups

Groups	Background Knowledge	Focus on Topic Sentence	Relate Preceding and Subsequent Text	Predict Content from Title	Reread Problematic Text Part	Skip Difficult Text Part	Show Awareness
Retrospection n=2	3	1	2	1	2	11	1
Introspection n=2	2	1	3	1	1	2	1

n= number of subjects in the group

There were twenty two types of strategies reported in all. Of these, seven (31.8 %) were reported by both groups (Table 4.9), while the majority i.e., twelve (44.4%) were reported by one group - Retrospection Group (Table 4.10). One striking picture which emerged from the strategies reported by both groups was that one strategy , that is, skipping difficult text parts, was the most frequently reported, particularly by subjects in the Retrospection Group (Table 4.9). To seek some explanation, I looked at the comments of the subjects during the round-up interview and discovered that the subjects in the Retrospection Group said that they felt the out come of the task would not affect them. Furthermore, from their comments I learnt that the subjects had less interest in the task. For instance, one subject (See Appendix 13, line 59) described her reading as "sloppy" and the other (See Appendix 5, lines 78-80) spoke of the task as "it is not my major interest". From these remarks it is possible to say that this particular strategy could be a reflection of how the subjects perceived the task to affect them. A cross-check of their views from the questionnaire also revealed that both subjects had strongly disagreed that they would give up or stop reading if they didn't understand something in the text. This may suggest that the lack of a purpose for reading the text may have encouraged subjects to employ strategies which they would not normally have used.

Although all the subjects were asked to read the texts carefully and to focus more on their reading, most said they believed they would not be tested afterwards and indicated that if there had been a test, they would have done their reading differently. To illustrate this point, I shall give the following examples from the reports of the participants. One of the subjects in the Retrospection Group said (See Appendix 13, lines 25-26): "If I write some assignment for this text I will stop [at] some difficult word or some difficult ideas and stop reading and think about that; in this case I'd like to get rough idea so I didn't stop to think." A second subject from the Retrospection Group added (See Appendix 5, lines 77-78): "Because I didn't have

any question to answer, I didn't seek for any points, which means, I didn't try to remember them."

4.7.1. Strategies reported only by one group

The next discussion briefly looks at the strategies that were reported by only one group. The strategies reported by the Retrospection and Introspection groups are given in Table 4.10 and Table 4.11.

Table 4.10 Strategies reported only by the Retrospection Group

	Use Discours Markers	Use Familiar Reading Method	Use Anaphoric Reference	Scan Examples	Use Paragraph Organisation	Guess from Context
Frequency	2	1	1	1	1	1
	Remember Preceding Text while Reading	Skim	Reread to Confirm	Memorise Important Points	Reread Main Points	Read for Gist
Frequency	1	2	2	1	2	3

Table 4.11 Strategies reported only by the Introspection Group

	Use Dictionary	Infer Meaning	Read Slowly
Frequency	1	1	1

4.7.1.1. Number of strategies

One most obvious difference between the two groups was that many more strategies (12) were reported by subjects in the Retrospection Group (Table 4.10) than by subjects in the Introspection Group (3). The smaller number of strategies reported in the Introspection group were the result of the difficulty both subjects in that group experienced in verbalising their strategies. Given the limited time of the practice session, it appears that lack of sufficient training might have caused the difficulty in verbalising and led to the reporting of the small

number of strategies. I shall examine this point in section 4.11 which deals with the suggested modifications for the pilot and main studies.

4.7.1.2. Quality of data

Concerning the quality of data obtained from the retrospection and introspection procedures, I can make the following observations. First, the descriptions of the strategies in the Introspection group were clearer than those in the Retrospection group. This can be demonstrated using an example of what two subjects in the two groups said when they came across a word. One of the subjects said (See Appendix 6, lines 7-8.): 'I found very big word, I am not sure if it's important or not er ...ca.. rbo .. yidrate ... so I skip the word.' The other said (See Appendix 5, line 33): 'I found some words I cannot understand in the first sentence, I just skip it.' The introspection clearly shows the nature of the difficulty with the word and what the subject was trying to do. In contrast, the retrospection merely indicates a problem with a word (even here it is not clear whether the problem was one of unfamiliarity or pronunciation) and does not show what the subject was trying to do. Second, from the introspective report it is clear to see where in the text the subjects were, but this was not possible with the retrospective reports.

In the next section I shall compare the views of the subjects in the metacognitive questionnaire with what the subjects reported during the actual reading.

4.8. Comparison of metacognitive questionnaire and think-aloud protocols

Although all the subjects indicated in the questionnaire that they would use their prior knowledge to read effectively (Table 4.4), four (one subject each from the Retrospection and Introspection Groups and all from the Gap-filling Group) reported using their background

knowledge during the actual reading tasks. Similarly, despite the fact that all the subjects said they would attend to the overall meaning of the text (Table 4.4), only the subjects in the Gap-filling Group reported employing this particular strategy. On the other hand, out of the six subjects who said that they would not give up reading when they found something difficult (Table 4.5), all four subjects from the Retrospection and Introspection groups skipped difficult items in the text. Surprisingly, neither of the subjects who completed the gap-filling task skipped a difficult textual part. In fact, as the following comment from one of the subjects illustrates, the nature of the task may have made it difficult to skip. This subject said: "...like here, blanks and no words; there is the need to do but if the text is simple [without gaps], then just read for comprehension." (See Appendix 12, lines 67-68)

On the other hand, out of the five subjects (Table 4.4) who said they would focus on text organisation to read effectively, three (one from Retrospection and two from Gap-filling) reported using this particular strategy during their reading. Neither of the subjects from the Introspection groups reported using text organisation as a strategy while reading in spite of the fact that both said in the questionnaire (Table 4.4) they that would focus on text organisation for effective reading.

4.9. Round-up interview

The post-reading reflections of three of the subjects showed that they would have read the texts differently from the way they read the text. For example, one subject said “I’d check spelling, check a word I skipped, and would like to read first and fifth paragraphs may be to find out some thing interesting.” (See Appendix 5, lines 82-83). A second subject added, “I read more carefully, ...I like to find out the difficult idea next time and read it carefully, ... use a dictionary....” (See Appendix 13, lines 61-62). A third subject commented, “if I have time I

try to read it again." (See Appendix 6, line 36). It is important to note that asking the subjects to reflect on their reasons for choosing the strategies would have given additional insights into their strategy use. This is one area of improvement that will be mentioned in the design considerations section (Section 4.11).

Regarding the subjects' feelings about the tasks he was completing, one subject remarked, "Like exam, English exam, to fill out words…. I don't like it." (See Appendix 11, lines 66-68). Another subject said, "it is not my major interest. I didn't have a strong feeling that I have to remember or I want to remember." (See Appendix 5, line 78-79). A third subject said, " a bit boring, it is not my interest." (See Appendix 12, line 69). These comments illustrated the subjects' lack of interest in the text and they appeared to be caused by the unfamiliarity of the texts selected. Asked whether the questionnaire influenced how they read, two subjects said it did influence them, while the others said it did not. It appears that the questionnaire might have had a carry over effect on the verbal reports because of the few minutes gap between the administration of the questionnaire and the verbal reports.

4.10. Points arising from the pre-pilot study

- This study was very exploratory in its approach and the design had a number of confounding variables which made the results difficult to interpret. First, the subjects were not matched in their level of academic studies, that is one was an undergraduate with no linguistics background, while others were post-graduates and familiar with reading and reading strategy issues. This variation in the subjects' academic studies could be one of the confounding factors. Second, because I did not assess the level of language proficiency of the subjects, I could not be certain that the differences in the strategies were caused by the lack of

match in the language level of the subjects although I assumed that these subjects must have passed their IELTS language proficiency test before starting at Lancaster University. Third, the use of three different texts with the three data elicitation procedures made it also difficult to determine whether differences in strategies were due to the methods employed or were the result of text effect.

- Valuable insight into how the subjects read was obtained through the use of retrospection and introspection data collection methods. These methods also made it possible to see what difficulties the subjects experienced and how they tried to resolve them. However, problems were experienced with both methods. For example, the subjects in the introspection group had difficulty verbalising their thought processes while reading and some of their reports were vague and the subjects had to be prompted to give specific examples. The subjects in the retrospection group also experienced problems in providing clear reports.

- The gap-filling task made it possible to look at the issue of appropriateness and/or inappropriateness of strategies. However, a major drawback in this study was the difficulty of establishing this for the *intact* texts and the Retrospection and Introspection Groups.

- The metacognitive questionnaire was a useful instrument not only in eliciting the pre-reading views of the subjects but also in providing data which was used for comparing with the strategies reported during the actual reading.

- The round-up interview provided useful information about the post-reading reflections of the subjects about their reading especially regarding which factors, such as, lack of interest, influenced their choice of certain strategies.

- The three-phase data collection procedure (questionnaire, think-aloud protocols and round-up interviews) proved useful in allowing comparisons between pre-reading views about

subjects' strategies, actual strategies used during reading and reflections on why those strategies were used.

- Although it was very brief, coaching and giving instruction to the subjects before they thought aloud was a useful procedure because the subjects had difficulty verbalising as English is not their first language. And the usefulness of the procedure related to the improvement in the introspection report and confidence the subjects showed; it may not affect the actual data.

- Lack of purpose in reading was shown to have influenced how some of the subjects read the texts. This was particularly so with subjects who read intact texts in the retrospection and introspection groups.

- As was shown, lack of sufficient time and training contributed to the difficulty the subjects experienced in thinking aloud. The other difficulty concerned the inability of the subjects to provide a clear description of their reading processes because of their low level of language proficiency. It is possible that the ability to verbalise may have reduced how much data a subject could report.

- With the exception of those doing the gap-filling task it was not possible to measure the reading performance of the subjects who read the intact texts. Hence, the relationship between strategies and reading performance could not be determined.

Based on the findings above, I decided on the following modifications to the design of the pilot study to be carried out in Ethiopia.

4.11. Suggested design considerations for the pilot study

4.11.1. Methodology

4.11.1.1. Subjects

With the small numbers and the fact that the subjects were not matched in their level of academic study, English language level and linguistics background it was not justifiable to make any degree of generalisation from the results of the pre-pilot study. Therefore, a larger number of subjects were necessary for the pilot study to be carried out in Ethiopia (See Section 5.2.1.1 in Chapter Five for details on the selection of subjects).

4.11.1.2. Texts

First, the texts which were used in the pre-pilot study were not selected from the books which first year students at Mekelle University College read for their studies. Second, the use of three different texts with the three data elicitation procedures (gap-filling, retrospection and introspection) in the pre-pilot study made it difficult to get a clear picture of why the strategies differed. Although the use of a large number of text types might be desirable to increase the generalisability of the results of the pilot study, it would make the interpretation of the results very difficult. To minimise this problem and to compare results across the language levels (high, intermediate and low) and the three procedures, two texts were used in the pilot study (See Section 5.3.1 for details on text selection).

4.11.1.3. Purpose for reading

The need for a purpose for reading was clearly shown during the pre-pilot study. For this reason, the subjects during the pilot study in Ethiopia were given a purpose (taking a test) for

reading their texts. Taking a test I believe reflects the authentic purpose which the subjects expect.

4.11.1.4. Metacognitive questionnaire

The quality (truthfulness) of the responses of the subject to the metacognitive questionnaire may have been compromised by the fact that four of the subjects were familiar with 'effective' or 'less effective' strategies in the linguistics courses they had taken. It is also possible that they may have been saying what they ought to do rather than what they actually did. Despite this limitation, the questionnaire made it possible to compare the pre-reading views of the subjects with the strategies reported. Furthermore, there would be a less likelihood of the data in the questionnaire being contaminated by the presence of items that might look right or wrong for students with linguistics background because the subjects during the pilot study in Ethiopia would have no background in linguistics. For these reasons, I decided to use the metacognitive questionnaire for the pilot study.

4.11.1.5. Measuring reading comprehension

The need for assessing the reading comprehension of the subjects in the pilot study became clear during the pre-pilot stage. For this reason, the reading comprehension of the subjects in the pilot study was measured (See Section 5.3.4. for details of the reading comprehension tests).

4.11.1.6. Gap-filling task

In contrast to the pre-pilot study, a gap-filling task was designed using texts from Mekelle because the task that was used during the pre-pilot stage was not designed using the texts

which first year students in Mekelle University College read for their studies (See Section 5.3.2.1. for details of the design of the gap-filling task).

4.11.2. Procedure

4.11.2.1. Training

It was shown in the pre-pilot stage that the subjects who experienced difficulty verbalising their strategies needed training and a longer practice time. Indeed some subjects indicated that they would need more training in order to be able to report their strategies clearly and easily. Despite their brevity, however, the sessions were useful in helping some of the subjects to provide clearer reports and helped them have more confidence. For this reason, training sessions for the pilot study would be longer.

4.11.2.2. Data elicitation

The three-phase procedure (the metacognitive questionnaire, verbal-reports, and round-up interviews) in this study made it possible to examine whether the subjects changed or still retained their views on how they read as they went through different stages of their reading. Using the round-up interview, I was also able to elicit information about factors such as lack of interest and its effect on the strategy choice of the subjects. As was mentioned (See Section 4.9 above), valuable insights into the post-reading reflections of the subjects would have also been obtained if I had asked the subjects to reflect on their reasons for why they had chosen to read the texts in the way they did. I decided to include this question in the round-up interview of the pilot study in Ethiopia.

4.11.2.3. Language of verbal reports

Difficulties in speaking in the L2 interfered with the subjects' giving of clear and informative verbal accounts of their reading processes. More valuable data would be obtained if the subjects in the pilot and main studies in Ethiopia used their native language. The ability to provide a clear description of reading processes and explanation would be essential if I was to see clearly what a reader was doing and how he or she interacted with the text. For this reason, the subjects in the pilot study would be asked to think aloud in their L1.

4.11.2.4. Assessing language proficiency level

Because language proficiency level was not assessed in the pre-pilot study, I could not determine whether the differences in the strategies were due to differences in the language levels of the subjects. It is important to emphasise here that the subjects targeted for the pilot study in Ethiopia would have varied levels of English language when they joined Mekelle University College. To obtain a reliable measure for assessing language level, I planned to use the following methods: the Ethiopian School Leaving Certificate Examination (ESLCE) English language results, the scores achieved by the subjects on their high school English language, a cloze test and a speaking test (See Section 5.2.1).

4.11.2.5. Research questions

As the primary purpose of this study was to explore the methodology and procedures for the pilot and main studies, no research questions were examined. However, the use of the gap-filling task provided useful insights into the research question in the pilot study which would examine the relationship between appropriate strategies and reading (See Chapter Three for the research questions).

Chapter Five presents the methodology and procedures of the pilot study that investigated the reading strategies of first year students in Ethiopia.

CHAPTER FIVE

METHODOLOGY - Pilot Study

5.1 Introduction

The pilot study is presented in three chapters: Chapter Five first describes the methodology and procedures used and states the research questions; Chapter Six analyses the results of the research questions; Chapter Seven examines the subjects' perceived strategy use before reading, the strategies reported during reading and post-reading reflections. The last section of Chapter Seven also discusses the methodological modifications suggested for the main study.

5.2. Methodology

5.2.1. Participants

The participants in this study were first year students beginning a four-year degree programme at Mekelle University College in the 1996/97 academic year. Entry to the University College is based on a Grade Point Average (GPA) system, in which a student is required to get a minimum of a C grade in English and mathematics in addition to an A grade in three other subjects. Therefore, in effect a student with a D grade in English and/or mathematics will not be able to meet the entry requirements.

The first year students study preparatory courses such as English, mathematics, biology, chemistry, geography, and agriculture during their freshman programme. After the

completion of their first year, they major in the fields of soil and water conservation, mining and geology, animal husbandry, crop production, and civil and industrial engineering.

The total number of first year students who enrolled during the pilot study stage was 156, of whom 48 students had an A, 92 a B, and 16 a C in the English in the Ethiopian School Leaving Certificate Examination (ESLCE). This was too large a population to be included in a study using introspective protocol. Therefore, it was necessary to establish a selection procedure that would narrow down the number to a manageable size. Furthermore, because of the often-raised concerns over the validity of the ESLCE results, it was necessary to develop a selection procedure that would provide a reliable classification of the participants into the three levels of language proficiency to be investigated (high, intermediate and low).

These levels were chosen because, (1) as mentioned Section 3.6, reading strategy studies vary widely in their selection procedures of subjects, hence the difficulty of generalising results across studies in terms of proficiency levels. More importantly, there are only a few studies (Anderson, 1991) which investigated strategy use according to three levels of overall language proficiency. (2) First year students in Ethiopia come with varying overall language proficiency levels. (3) Further, the bulk of the students lie at the intermediate level which means investigating strategies at the intermediate level too will be important in the Ethiopian context. (4) Studies carried out in Ethiopia investigating strategy use have not examined them according to three levels of proficiency. For these reasons, the three levels will be investigated in the pilot study.

The selection procedure was based on the scores from the following four measurements: the English results from ESLCE, the average scores achieved by these subjects on their high

school English language examinations, and their scores on a speaking and a cloze test. The four measures were chosen not only to provide a more valid classification of the subjects and to add to the reliability of the selection instruments but also to represent as far as possible most of the four language skills.

5.2.1.1. Selecting the students

I posted a notice to all first year students asking for participants who were willing to take part in the study and 81 students volunteered, out of whom 28 had an A, 39 a B, and 14 a C grade in English in the ESLCE. I explained to the volunteers the purpose of the research and what was expected of them in terms of time and their obligation to complete all stages of the study. Afterwards I used the following three stages of filtration. First, I matched the three ESLCE results, high (A), intermediate (B) and low (C) with top, middle and bottom average scores from the subjects' high school English language examination scores respectively. The match resulted in 68 students who had high school scores matching their ESLCE grades (25 with A, 31 with B, and 12 with C). Out of these, 65 took the cloze test (3 did not turn up).

In what follows, the procedure for marking the cloze test is described.

5.2.1.2. Marking the cloze test

The cloze test (See Appendix 14) had every seventh word deleted and a total of 65 blanks. First, I marked eight cloze test papers at random using the criteria (See Appendix 10 for schoring scheme) from Carrell et al. (1993). Then I asked two native speakers to mark this sample of cloze test papers using the marking criteria. The judges experienced a slight problem with distinguishing between two categories: 'consistent' and 'acceptable'. However, since the two categories were given the same mark (1 point) the problem did not result in

discrepancies in marking; hence the marking criteria was used as it was. Another minor problem related to differences in scores between the judges and me, which were caused by illegible handwriting in some of the papers. This was later resolved since I was able to read the handwriting of those particular papers. The number of cloze responses identically marked by the first judge and me was 90 percent and by the second and me 89 percent.

After the moderation procedure, the third and final filtration stage followed. First, I marked all the cloze test papers, rank ordered and divided the scores into three levels (top, middle and bottom). Then I matched the three levels of the cloze scores with those of the ESLCE and the high school scores and obtained 47 students (15A, 20B, 12C) who had consistent performances across the three measures. There 47 students took a speaking test, which is described below.

5.2.1.3. The speaking test

The test was based on a pair of colour photographs one showing elephants in the wild and the other tamed elephants in a circus. The purpose of using the two contrasting scenes in the photographs was to encourage detailed description and comparison and contrast. I believed using elephants in the wild was a relevant and familiar topic to the students, and that combining that topic with one which shows the same animals in a contrasting scenario would generate a rich discussion. Unfortunately I did not have sufficient time to design and pilot a speaking test using different photographs because of limited time. However, the speaking test I used in this pilot study was one which I had already piloted and used for assessing the speaking proficiency of EFL undergraduate students while I was studying for my MA. Because of the test's focus on description, comparison and contrast, other areas of discourse such as argumentation were not assessed in the test. Each subject was given one photograph

at a time and asked to give a detailed description of what he or she saw. Once the subjects had described the first photograph they were given the second. Finally, each subject was given both photographs and was asked to compare and contrast each picture. The entire speaking test lasted for about 15 minutes and was audio-recorded.

5.2.1.3.1. Scoring the speaking test

Before marking the test myself, I asked two native speakers to pick two audio-tapes at random (each tape contained four subjects' speaking tests). Each judge was asked to score four tests using the marking criteria (See Appendix 15 for the marking criteria) from Weir (1988). Once the judges' marking was complete, I marked the same eight subjects' tests using the same criteria. A comparison of our marking showed some differences especially in regard to marking 'Fluency'. This discrepancy was caused by two ambiguous clauses "utterances may still be hesitant" in Band 2, and "whilst occasionally hesitant" in Band 3. The fluency I had marked as falling within Band 2 was interpreted as corresponding to Band 3 by the judges. Furthermore, Band 3 also contained a clause "very occasionally hesitant" which did not correspond in its degree to "whilst occasionally hesitant" in the same Band. Therefore, we agreed that Band 3 should contain a higher degree, that is, instead of 'occasionally' it should be 'rarely hesitant'. Because of the judges' limited spare time, the improved criterion was tried out with only three new subjects' speaking tests. Agreement between the markers and me on the scores for the first eight papers provided a correlation index .84. The two markers and I gave identical scores when we used the improved criteria.

Once I had marked all the subjects' speaking tapes, I rank-ordered and divided the scores into top, middle and bottom and obtained 39 students (10 at top, 17 at intermediate, and 12 at low) who had scored consistently across the four measures. Finally, I randomly selected 27

students, that is 9 students from each level (top, intermediate and low) and rejected the rest. However, mid-way through the study seven subjects (five from the low level and one each from the high and intermediate levels) failed to complete all stages in the study and hence were excluded (See Table 5.1 for the final number of students and their grouping).

Table 5.1. Number of subjects per group per level

	Level		
Group	**High**	**Intermediate**	**Low**
Gap-filling	3	3	2
Retrospection	3	2	1
Introspection	2	3	1
Total	**N = 8**	**N = 8**	**N = 4**

N=20

Note: It is important to note here that caution should be exercised when interpreting the proceeding results for three groups because of the unequal number of subjects in the groups.

5.3. Materials

5.3.1. Texts

The use of a large number of texts would be ideal to obtain a more representative picture of the texts which first year students read and to increase the generalisability of the results. However, a large number of different texts not only adds the complication that we cannot know whether strategy variations are the result of subject or text effect, but also makes it difficult to design and interpret the results of a study in which each subject reads different texts. Further, it would also be difficult to analyse the enormous number subjects' protocols. For these reasons, and so that I could compare subjects' strategies from two angles, two passages were chosen from amongst the academic science texts which first year students read for their subject area studies. In consultation with the subject teachers and the librarian I took

the precautionary measure of having the two books from which the two passages had been taken removed from the library until the completion of the study. In selecting the texts, subject specialists teaching first year courses were asked to identify the texts which they considered central to the courses and which they most commonly recommended for reading at the start of the courses. One of the texts (See Appendix 16) was 437 words long and was taken from a Zoology book and the second text (See Appendix 17), which was 392 words long, was taken from an agriculture course - one which first year students take as a major area course in the second semester of their first year study.

5.3.1.1. Difficulty level of the texts

Reading is an interactive process involving the text and the reader. Some studies have shown that difficult textual features such as vocabulary (See Freebody and Anderson, 1983) and sentence structure account for reading comprehension difficulty, while others have linked the difficulty to a lack of background knowledge and reading. Although Miller and Kintsch (1980) note the importance of reading strategies and knowledge structures in readability, others (Drum et al, 1981:490) have emphasised that "vocabulary demand and syntactic difficulty are the most robust predictors of readability". Furthermore, most readability formulas use counts of language such as vocabulary and sentence structures and have been shown to give good indices of difficulty (See Klare 1974 for a review of readability). I have used Flesch's (1962) readability formula because it is one of the most widely used (Klare, 1974). Microsoft Word 6.0 was used to calculate the readability indices of the two texts (Table 5.2).

Table 5. 2. Readability indices of Text 1 and Text 2

Parameters	Text 1 Zoology	Text 2 Agriculture
Passive sentences	30%	40%
Words per sentence	15.7	26.1
Flesch-Reading Ease	45.5	25.7
Flesch-Kincaid Grade Level	10.5	16

A text with a Flesch-Reading Ease score of 0-30 is regarded as very difficult and its estimated reading grade would be college or graduate level, whereas a text with a score of 30-50 would have an estimated high school reading grade (See Flesch, 1962). (Scores on the Flesch-Reading Ease measure range from 0-100, and the higher the score the greater number of readers who can readily understand the text). Scores on the Flesch-Kincaid Grade Level indicate grade-school level. For instance, a score of 8.0 means the text would be understood by an eighth grade level U.S reader. As can be seen from Table 4.2, according to those measures, Text 2 is more difficult than Text 1. I must emphasise that these readability indices are useful for comparing the texts at the level of syllables, words and sentence structure but they not only lack the power to show differences at the structural and rhetorical level (Clapham, 1996), but also ignore aspects such as background-knowledge and the input of the reader.

5.3.2. Tasks

5.3.2.1. Gap-filling task

I designed a gap-filling task by deleting items from the selected texts in the same way as I had done in the pre-pilot study. The deletion processes that I followed required a subject to supply a response to a gap by integrating information beyond the immediate clause, and across the whole text (See Appendix 18 for the deletion processes). To check the reliability of

my deletions, an independent judge was given the intact texts and was asked to delete items based on the deletion processes I had used. For Text 1 and Text 2 we agreed on those gaps which we had both chosen and which were well spread out throughout the texts and we rejected those that were too close to each other to allow sufficient context. Agreement was 86% for Text 1 and 82% for Text 2. The final version of the gap-filling tasks contained twenty deleted items in Text 1 (the zoology text) and thirteen items in Text 2 (the agriculture text). See Appendices 19 and 20 for the two gap-filling tasks.

5.3.2.2. Intact texts

The same two texts that were used for the gap-filling tasks were used intact (i.e., without gaps) for the purposes of retrospection and introspection.

5.3.3. Metacognitive questionnaire

The same metacognitive questionnaire, which was used during the pre-pilot stage, was used to elicit the pre-reading views of the participants regarding their silent reading in English (See Appendix 4 for the questionnaire).

5.3.4. Reading comprehension tests

Two reading comprehension tests were used. One was an Oral Summary and the other a Written Short Answer Reading Comprehension Test (See Appendix 21 for the written tests). A summary was chosen because, as shown in the review (See Section 2.9) summarisation is a critical component of comprehension and therefore demonstrates the subjects' understanding of main ideas of the texts. In order to create a relaxing atmosphere for the subjects to express their understanding of the texts, the subjects were told to give their summaries orally and not to worry about their grammatical accuracy and pronunciation. Short answer reading

comprehension questions were also used to obtain an additional measure of the subjects' understanding of main ideas. English was used as the language for the Summary and the Short Answer Reading Comprehension Tests.

Care was taken to ensure that the short answer reading comprehension test did not contain questions that could be answered merely by lifting words or phrases from the texts. Subject specialists were also consulted for their views on whether the questions reflected the kinds of questions which they usually set. The subject specialists confirmed that the questions were similar to those they normally included in exams. I also checked whether the questions I designed for the test resembled those that usually appeared at the end of chapters in the academic science texts which the participants read during their studies. I discovered that my questions and those found at the end of chapters were similar in that they were both in the same format (wh-questions) and they were intended to elicit similar types of answers, that is they asked for main ideas. I must note, though, that there may have been some questions that could be answered using background knowledge. Text 1 was about amoeba, a topic with which the students were already familiar from high school. Because the texts from Mekelle University College were not available during the design of the pre-pilot study, I had not been able to pilot the tests (See Section 4.3.2.1 for more details).

5.4. Procedure

The twenty students who completed the study (See Table 5.1 for the final number of students) were assigned to two reading conditions: under Condition 1 the students read Text 1 and then took the oral summary test (Purpose 1). English was used for the oral summary because of the practical difficulties of having the oral summaries in the students' different local languages. Under Condition 2, which started one week after Condition 1, each student read

Text 2 and then took the written reading comprehension test (Purpose 2). The aim of sequencing Purpose 1 before Purpose 2 was to reduce any possible effect which the format (wh-questions) and the number of my questions in the written test might have on the content and scope of the oral summaries of the subjects.

5.4.1. Metacognitive questionnaire

All the subjects completed the questionnaire before reading the texts and reporting their strategies. I introduced a one-week buffer between the completion of the questionnaire and the start of eliciting strategies to limit any carry-over effect from the questionnaire to the reporting of strategies by the subjects.

5.4.2. Training

The importance of training subjects in the use of verbal protocols has been emphasised (See Cohen, 1995; Afflerbach and Johnston, 1984). Accordingly, the subjects in this study were given training before they reported their strategies. The training session with each subject lasted between 45 and 60 minutes. The subjects were given an explanation of the purpose of the research and were assured that the information they provided as well as their scores on the reading comprehension tests would not affect their regular academic grades. Texts for the training consisted of passages from academic books but not those used in the study. The elicitation of strategies from the introspective protocols began only after the subjects had indicated their familiarity with and their confidence in the data elicitation procedures. Non-specific prompts were used for the Introspection Group as suggested in the literature (See Section 4.2.2). The prompts were not pre-determined, that is they were not made at a specific time or at specific points in the text because probing subjects according to their responses allows for individual processing variations (Lundeberg, 1987). In addition, giving subject

pre-determined probes of a researcher restricts inherent individual differences (Lundeberg, 1987). Further, as Alderson (1990:447) notes, it is difficult to determine when to prompt subjects who give introspective verbal reports because "This is the inevitable result of a procedure which is reactive to an ongoing process, rather than the application of a pre-determined instrument."

Immediately after the training, each subject completed the task in his or her own group. The three groups were the Gap-filling Group, the Retrospection Group and the Introspection Group. The training procedure for the Gap-filling Group is described below.

5.4.3. Gap-filling Group

The subjects in this group were asked to report any strategy or strategies they used immediately after supplying a response to a blank. They were also informed that they would be asked to give an oral summary of Text 1 after they had completed all the gaps. A similar procedure for reporting strategies was also followed for Text 2 except that after completing the task the subjects took the written reading comprehension test instead of doing the oral summary.

5.4.4. Retrospection Group

As in the pre-pilot study, the subjects in this group were first asked to report the strategies that they had used immediately after they finished reading one paragraph of the text. After reporting on the strategies they used for the whole text, the participants were asked to give an oral summary of the passage. One week after reading Text 1, each participant read Text 2. The same procedure of strategy elicitation was followed for Text 2 except that after completing the task the subjects took the written reading comprehension test.

5.4.5. Introspection Group

The participants in this group were first informed that they would read Text 1 and would then do an oral summary of it. They were then asked to introspect while reading. A week later they followed the same procedures with Text 2, the only difference being that they were told they would be given a written test after they had finished reading.

5.4.6. Round-up interview

After the completion of all the tasks, each subject was interviewed about his or her post-reading reflections. The interviews focussed on:

- why the subjects read the text the way they did (to elicit their awareness of the effectiveness of their strategies.)
- how else they would have liked to have read the text (to elicit their awareness of their repair strategies)
- their interest before and during reading,
- whether or not their views in the questionnaire influenced the content of their reporting

(See Appendix 22 for the interview questions).

All the think-aloud reports and the interviews were audio-recorded and transcribed for data analysis.

5.5. Data analysis

5.5.1. Back-translation of transcribed data

Before analysing the reports of the subjects, I translated the original transcriptions from Amharic into English. To check the reliability of my translation, I followed the procedure for

back-translation used by Pritchard (1990). Because of the judges' limited spare time, I could only use the verbal reports of two subjects for checking inter-rater reliability. Further, professional translators were not available at the time to do the back-translation. However, since the language in the English translations was very easy in its structure and did not involve technical or complex vocabulary, I believed non-expert judges could carry out the back-translation. Hence, I gave the two sample translations to two judges both of whom were final year MA students at Addis Ababa University majoring in TEFL and who were familiar with issues of reliability. The back-translations of the judges were given to a third judge, who was also an MA graduate in TEFL and who was familiar with issues of reliability. He was asked to compare the back-translations of the judges with the original Amharic transcriptions.

The results of the comparison showed that there were nine words from the back-translation of the first judge and four words from the second judge that did not match those in the original transcription. Of the nine differences between the first judge and myself, three were caused by errors in my English translations and the other six were errors made by the judge. Of the second judge's four differences, one was due to an error made by me and the remainder were errors made by the judges. The four errors in my original translation were corrected because these errors caused changes in meaning. Since the number of errors was minimal, the translation of the remaining transcriptions was resumed.

5.5.2. Strategy coding

I identified individual reading strategies from the final English translations. An inter-rater reliability check of my coding of the strategies was made with a second judge, who had a PhD in TEFL and was well familiar with reliability issues but was not himself an expert on reading strategies. First, the judge was given three randomly picked transcriptions and a list

of one hundred and twelve individual strategies identified by me from the three transcriptions. Then he was asked to identify those strategies from the transcriptions. The judge identified ninety of the one hundred and twelve strategies. The judge also identified two new strategies that were not included in the list. The new strategies were afterwards included in the list. The agreement with my coding was 80%. Subsequent identification of strategies from the remaining transcriptions continued. The final list of all the strategies is given in Appendix 23. Since the focus of the present study is on an investigation of individual strategies, a detailed analysis of a classification of strategies was not deemed necessary. Therefore, the strategies were not classified.

5.5.3. Marking the tasks

5.5.3.1. Gap-filling tasks

First, I marked first five gap-filling tasks at random using the marking criteria (See Appendix 10 for the scoring scheme) used by Carrell et al. (1993). To obtain the inter-rater reliability for my marking I gave the papers I had marked and the marking criteria to three judges. Taking account of their limited spare time I shared out the five papers to the three judges. One of the judges had a Ph.D. in testing, the second was a native speaker of English and a professional science editor, and the third was a Ph.D. student at the Department of Foreign Languages. Following this, a comparison was made my marking and that of the judges. There was 100 % agreement between my marks and that of the Ph.D. student; this was not surprising considering that the gap-filling task marked by this judge had no correct responses. An 83% agreement was found with the native speaker and 87.5% with the judge with a Ph.D. in testing.

5.5.3.2 Oral summary

First, I marked ten of the twenty summaries at random using the marking criteria I had developed (See Appendix 24). I gave the same summaries and the marking criteria to a native speaker to determine the reliability of my marking. Inter-rater agreement was .90. I also checked the intra-rater reliability of my own marking two weeks after my initial marking and found a .92 agreement.

5.5.3.3. Short answer written comprehension test

As the questions in the test required only one answer each and since there were no alternative answers I did not carry out a reliability check on my marking. However, improvements on this test were incorporated during the main study (See Section 8.3.4.2).

Once all the tasks had been marked and all the strategies identified, each research question was examined. Sections 5.5.4 to 5.5.9 present the data analysis procedures for each research question.

5.5.4. Research Question 1A: *Are there differences in the strategy types reported among the subjects at the high, intermediate and low levels of language proficiency?*

Research Question 1A was examined by identifying the strategies which were reported at only one level. Afterwards the strategies reported at all levels were compared to determine whether the levels differed from each other in the types of strategies reported.

5.5.5. Research Question 1B: *Are there differences in the frequency of use of the strategy types reported among the subjects at the high, intermediate and low levels of language proficiency?*

Research Question 1B was examined in two ways. First, the frequencies of the strategies reported at the three levels were compared for each reading condition using a one-way ANOVA test (Kruskal-Wallis test). Second, further between-subjects comparisons of strategy frequency were made to determine whether or not significant differences existed between any two levels.

5.5.6. Research Question 2: *Are there differences in the frequency of use of the strategy types reported among the subjects at high, intermediate and low levels of language proficiency when these subjects read different texts?*

Three types of analysis were employed. The first compared the overall frequency of the strategies reported at the three levels for Text 1 and Text 2 to determine whether or not strategy frequency differed significantly according to the reading texts. The second was a within-subjects comparison of the frequencies of the strategies reported at each level for Texts 1 and 2. The third compared the ranks of the most frequently reported strategies at the three levels for Texts 1 and 2 to determine whether the frequencies of text-related strategies changed when the reading texts changed.

5.5.7. Research Question 3: *Are there differences in the frequency of use of the strategy types reported among the subjects at the high, intermediate and low levels of language proficiency when the reading purpose changes?*

The frequencies of purpose-indicating strategies reported at the three levels were compared for Purpose 1 and Purpose 2. Examples of purpose-indicating strategies were, Summarising text (Strategy 21), Memorising (Strategy 5), Skimming (Strategy 45) and so on.

5.5.8. Research Question 4A: *How appropriate are the strategies reported by the subjects at the high, intermediate and low levels of language proficiency for their purposes?*

This question was examined by comparing the rank of the appropriate strategies (See definition for appropriate strategies in Section 6.6) at one level to the rank of other strategies at the same level. The purpose of the comparison was to determine whether or not the subjects prioritised the appropriate strategies more than other strategies in accordance with the purpose for which they read a text.

5.5.9. Research Question 4B: *How effective are the strategies reported by the subjects at the high, intermediate and low levels of language proficiency for their purposes?*

To investigate Research Question 5B the verbal reports of a sample of subjects, who achieved the highest and lowest scores on the reading comprehension tests, from the three groups (Gap-filling, Retrospection and Introspection) were examined to determine differences in the

use of effective strategies. The pre-reading strategy awareness of the subjects at the three levels was compared with the strategies they reported during reading to determine whether strategy awareness before reading was reflected during the actual reading. Finally, the post-reading reflections of the subjects were examined in relation to their pre-reading strategy awareness and the strategies reported during the actual reading.

Chapter Six gives the first part of the results of the pilot study. It deals with Research Questions 1A, 1B, 2, 3, 4A and 4B.

CHAPTER SIX

RESULTS 1

6.1. Introduction

This chapter gives the results of the pilot study. For the sake of convenience, the results are presented in two parts. The first part is dealt with in this chapter and consists of the findings of Research Questions 1A, 1B, 2, 3, 4A and 4B. The second part is given in Chapter Seven and compares the strategies elicited from the metacognitive questionnaire and the actual strategies reported by the subjects during reading.

6.2. Research Question 1A: *Are there differences in the strategy types reported among the subjects at the high, intermediate and low levels of language proficiency?*

This question will be examined by comparing the strategy types that were reported only at one level (Tables 6.1 and 6.2). For ease of comparison, the strategy types are grouped under four broad categories: Text-focussed, Language-focussed, Purpose-focussed and Executive/Metacognition-focussed.

6.2.1. Strategy types

A total of twenty-one strategy types were identified from the three levels in Condition 1 (Text 1 and Oral Summary). Of these, nine were reported at the high level, ten at the intermediate and two at the low level. Table 6.1 shows these strategies.

Table 6.1. Strategy types by category by level in Condition 1

Category	Strategy types by level of language proficiency		
	High	**Intermediate**	**Low**
Text-focussed	Relating Parts of Long and Difficult Sentences	Breaking Text Parts into Smaller Units	-
	Analysing Cohesion in Sentences		-
Language-focussed	-	Using the Dictionary to Look Up New or Difficult Words	Using Wrong Word Meaning
			Making Wrong Linking of Ideas Regardless of Connection
Purpose-focussed	-		-
Executive/ Metacognitive Focussed	Predicting Content of Text	Justifying Skipping Difficult Text Part	-
	Paying Less Attention to Each Word	Justifying Correctness of One's Own Idea or Guesses	
	Readying Oneself before Reading	Reading Each Letter of Difficult Words	
	Monitoring One's own Reading Improvement	Using Mathematical Concept of Association to Predict Word	
	Paying Attention to Details	Expressing Belief in Guessed Word	
	Holding Previous Information in Mind while Reading	Revising Guessed Word Meaning	
	Feeling Satisfied for Getting Answer to Question Raised Concerning Text	Offering Alternative Idea for Doubted Information in Text	
		Rephrasing Text Idea in One's Own Word in the L1	

Table 6.1 above shows that the strategy types under the category of "Text-focussed" and "Executive/Metacognitive-focussed" were reported only at the high and intermediate levels. It is important to note that the bulk of the strategies were reported at the high and intermediate levels and that they indicate an ability to regulate or oversee or control strategy use. On closer inspection though most of the strategies at the high level under

"Executive/Metacognitive-focused" do not seem to be problem-driven, while those at the intermediate level seem to indicate a problem with the text. In contrast, not surprisingly, the only strategy types reported at the low-level indicated problems with language. It is important to note that out of the twenty-one types of strategies, nineteen were reported at the high and intermediate levels, while only two were at the low level. This suggests an apparent relationship between higher language level and the use of more varied strategies and low language level and a limited variety of strategies.

In what follows, the strategy types identified in Condition 2 (Text 2 and the Short Answer Written Comprehension Test) will be compared. A total of sixteen strategies were identified, of which seven were reported at the high and intermediate levels and two at the low level (Table 6.2). As in Condition 1, the strategies are grouped under the four categories.

Table 6.2. Strategy types by category by level in Condition 2

	Strategy types by level of language proficiency		
Category	**High**	**Intermediate**	**Low**
Text-focussed	Analysing Cohesion in Sentences	-	-
Language-focussed	-	Using the Dictionary to Look Up New or Difficult Words	Using Wrong Word Meaning
	-	Writing down New Words for Later Reference	Making Wrong Linking of Ideas Regardless of Connection
Purpose-focussed	Checking One's Own Confidence in Test Performance	-	-
Executive/ Metacognitive-focussed	Predicting Content of Text	Deducing from Textual Information	-
	Paying Attention to Details	Justifying Correctness of One's own Idea or Guess	-
	Extrapolating on Text Idea	Calming Oneself When Reading	-
	Revising Guessed Word Meaning	Synthesising Ideas One Has Just Read	-
	Reading for Details	Holding Previous Information in Mind While Reading	-

Table 6.2 shows that one strategy which related to text "Analysing Cohesion in Sentences" was reported only at the high level. This is in contrast to Condition 1 in which Text-focussed strategy types appeared at the high and intermediate levels (Table 6.1). Furthermore, the Purpose-focussed strategy "Checking One's Own Confidence in Test Performance" was reported only at the high level (Table 6.2). This particular strategy corresponds with the nature of the reading purpose, that is taking a test, for which the subjects in this study read the text in Condition 2. As in Condition 1, the only strategies reported at the low level indicated problems with language. Similarly, the strategies under "Executive/Metacognitve-focussed" were reported only at the high and intermediate levels and again constituted the bulk of the strategies (Table 6.2). This appears to indicate a corresponding relationship between higher language level and more variety of strategy types.

6.2.1.1. Summary

From the comparisons above it was clear that the strategies under "Text-focussed", "Purpose-focussed" and "Executive/Metacognitive-focussed" appeared to be related to the two higher levels of language proficiency (high and intermediate). All the strategies at the low level indicated language problems, whereas there were no language problem-indicating strategies at the high level. Furthermore, more varied strategies were reported at high and intermediate levels than at the low level. It was shown that there was little difference between the high and intermediate levels, and that these two levels were markedly different from the low level in the number of the strategy types reported. It is also interesting that the overall number of strategies slightly decreased from twenty-one in Condition 1 to sixteen in Condition 2. It is possible that the difficulty of Text 2 may have accounted for the decrease in the frequency of strategies reported.

It must emphasised that except for "Using the Dictionary to Look up New or Difficult Words" (reported 5 and 17 times for Condition 1 and 2 respectively) and two other strategies which were reported three times each, the remaining strategy types discussed here were only mentioned once. Considering the low frequency of the strategies, it is difficult to see any a major difference among the three levels.

Although wide differences were observed between the high and intermediate levels on the one hand and the low level on the other, it is difficult to claim any substantial differences in the strategy types among the three levels solely on the basis of the small number of the strategies compared above. Nevertheless, it must be underlined that the salient difference among the three levels appears to be one of executive or metacognitive strategy use. The observed differences among the three levels must be interpreted with caution because there were unequal number of subjects in each level.

In what follows, Research Question 1B investigates differences in the frequencies of the strategies reported among the subjects at the three levels in Conditions 1 and 2. Table 6.3 shows the results for Condition 1.

6.3. Research Question 1B: *Are there differences in the frequency of use of the strategy types reported among the subjects at the high, intermediate and low levels of language proficiency?*

Two aspects of frequency will be examined: differences in the frequency of the strategies reported among the three levels, and between any two levels.

6.3.1. Frequency of strategies among the three levels

The result of a one-way ANOVA test showed that the frequency of the strategies reported among the high, intermediate and low levels differed significantly (p = .0008) in Condition 1 (Table 6.3).

Table 6.3. Strategy frequency among high, intermediate and low levels in Condition 1

```
- - - - - Kruskal-Wallis 1-Way Anova

  SCORE1   Strategy frequency in Condition 1
By LEVEL   Language proficiency level

 Mean Rank   Cases

   101.99      63   LEVEL = 1   High
   108.37      63   LEVEL = 2   Intermediate
    74.63      63   LEVEL = 3   Low
                ---
               189   Total

 Chi-Square    D.F.      Significance
   14.3187       2          .0008
```

The result for Condition 2 also showed a significant difference (p= .0368) among the three levels (Table 6.4). Interestingly, the level of significance decreased from Condition 1 (p= .0008) to Condition 2 (p= .0368). Since it will be remembered that there was a decrease in the number of the strategy types from Condition 1 to Condition 2 (See Section 6.2.1. above), it appears that Condition 2 may have limited not only the strategy types but also their frequency. Note that Table 6.4 shows that the intermediate level used strategies more frequently than did the high level.

Table 6.4. Strategy frequency among high, intermediate and low levels in Condition 2

```
- - - - - Kruskal-Wallis 1-Way Anova

  SCORE2   Strategy frequency in Condition 2
By LEVEL   Language proficiency level

 Mean Rank   Cases

   100.52      63   LEVEL = 1   High
   103.41      63   LEVEL = 2   Intermediate
    81.06      63   LEVEL = 3   Low
                ---
               189   Total

 Chi-Square    D.F.      Significance
   6.6070        2          .0368
```

The results above tell us that these differences are among the three levels but they do not reveal between which levels the significant differences occur. In order to determine these differences, further between-subjects comparisons were made. Table 6.5 shows the result for the high and low levels in Condition 1.

Table 6.5. A between-subjects comparison of high and low levels in Condition 1

Mann-Whitney U

SCORE1 Strategy frequency in Condition 1
By LEVEL Language proficiency level

Mean Rank	Sum of Ranks	Cases
72.68	4579.0	63 LEVEL = 1 High
54.32	3422.0	63 LEVEL = 3 Low
		---
		126 Total

U	W	Z	2-Tailed P
1406.0	3422.0	-2.9457	.0032

Table 6.5 shows that there was a significant difference (p= .0032) between the high and the low levels. Similarly, the result for Condition 2 (Table 6.6) showed a significant difference (p = .0312).

Table 6.6. A between-subjects comparison of high and low levels in Condition 2

Mann-Whitney U

SCORE2 Strategy frequency in Condition 2
By LEVEL Language proficiency level

Mean Rank	Sum of Ranks	Cases
70.27	4427.0	63 LEVEL = 1 High
56.73	3574.0	63 LEVEL = 3 Low
		---
		126 Total

U	W	Z	2-Tailed P
1558.0	3574.0	-2.1543	.0312

The results in Tables 6.5. and 6.6 strongly suggest that despite the change in reading condition, that is text type and reading purpose, the frequency of the strategies reported between the high and low levels remained significantly different.

As regards the frequencies of the strategies at the high and intermediate levels, the results showed that there were no significant differences in either Condition 1 (p = .4949) or Condition 2 (p = .6958) (See Appendix 25, Tables 1 and 2 for the results). This appears to suggest that the high and intermediate levels used the strategies with similar frequency. It is also possible that the subjects in the two levels may not be markedly different in their level of language proficiency. In contrast, the frequency of the strategies reported between the intermediate and low levels showed a significant difference (p = .0004) in Condition 1 (Table 6.7). This significant difference between the intermediate and low levels appears to suggest that the high and intermediate level subjects may not be distinctly different in their language levels.

Table 6.7. A between-subjects comparison of intermediate and low levels in Condition 1

Mann-Whitney U

SCORE1 Strategy frequency in Condition 1
by LEVEL Language proficiency level

Mean Rank	Sum of Ranks	Cases
74.68	4705.0	63 LEVEL = 2 Intermediate
52.32	3296.0	63 LEVEL = 3 Low
		---
		126 Total

U	W	Z	2-Tailed P
1280.0	3296.0	-3.5735	.0004

Similarly, the intermediate and low levels differed significantly (p = .0222) in the frequency of the strategies reported in Condition 2 (Table 6.8).

Table 6.8. A between-subjects comparison of intermediate and low levels in Condition 2

Mann-Whitney U

SCORE2 Strategy frequency in Condition 2
by LEVEL Language proficiency level

Mean Rank	Sum of Ranks	Cases
70.67	4452.0	63 LEVEL = 2 Intermediate
56.33	3549.0	63 LEVEL = 3 Low
		---
		126 Total

U	W	Z	2-Tailed P
1533.0	3549.0	-2.2877	.0222

6.3.1.1. Summary

The results so far have shown significant differences in the strategy frequency reported among the three levels in Conditions 1 and 2. Furthermore, the results have shown significant differences between the high and low levels, and between the intermediate and low levels, although this was not the case between the high and intermediate levels. It was also shown that the level of significance between any of the two levels decreased from Condition 1 to Condition 2. A similar decrease was also observed when strategy types were compared (See Section 6.2.1) and when the overall frequency of the strategies were compared among the three levels (See Tables 6.3 and 6.4). One possible reason for this could be that the change in text type (from easier to more difficult) and reading purpose (from oral summary to written test) from Condition 1 to 2 might have reduced the frequency with which the strategies were generated.

In what follows, I examine the differences of strategy frequency between Text 1 and Text 2 (Research Question 2).

6.4. Research Question 2: *Are there differences in the frequency of use of the strategy types reported among the subjects at the high, intermediate and low levels of language proficiency when these subjects read different texts?*

Since differences in the use of strategy types have already been looked at (See Section 6.2.1.), it is not necessary to repeat the results here. Therefore, the main focus here is on the relationship between strategy frequency and text types at the three levels. Two methods of analysis will be used. The first (Section 6.4.1.) looks at strategy frequency differences between Texts 1 and 2. The second (Section 6.4.2.) compares the ranks of the most frequently used strategies among the three levels over the two text types. This comparison aims to determine whether certain text-related strategies were reported more often for Text 1 than for Text 2.

6.4.1. Strategy frequency

There was no significant difference (p = .0999) in the overall frequency of the strategies reported at the three levels between Texts 1 and 2 (Table 6.9).

Table 6.9. Comparison of overall strategy frequency between Texts 1 and 2

```
- - - - - Wilcoxon Matched-Pairs Signed-Ranks Test

    TOTAL1   total strategy frequency by all levels for Text 1
With TOTAL2  total strategy frequency by all levels for Text 2

    Mean Rank    Sum of Ranks    Cases

      27.57        965.00        35  - Ranks (TOTAL2 LT TOTAL1)
      28.75        575.00        20  + Ranks (TOTAL2 GT TOTAL1)
                                 71  0 Ties  (TOTAL2 EQ TOTAL1)
                                 ---
                                126  Total

    Z =  -1.6453        2-Tailed        P =  .0999
```

The result suggests that the change of texts did not significantly affect the frequency of the strategies. However, this result does not show whether the same was the case, for example, at each level, that is whether there was a change at the high level for Texts 1 and 2. To determine this, further within-subject comparisons were made. The results showed that there were no significant differences of strategy frequency at the high ($p = .1652$), intermediate ($p = .1448$) and low ($p = .4259$) levels for the two texts (See Appendix 25, Tables 3, 4 and 5).

6.4.1.1. Summary

The results so far have shown the lack of significant change in the frequency of the strategies reported for Texts 1 and 2. However, an important question that should be investigated is whether all the strategy types were reported with the same frequency at the three levels for the two texts. To shed some light on this, the ranks of the most frequently reported strategies at the three levels were compared (See Section 6.4.2). The aim was to determine whether the frequency of text-related strategies changed when the reading text changed, and whether the changes were similar or different among the three levels.

6.4.2. Rank of strategies

An exhaustive comparison of the ranks of all the strategy types in this study would be difficult. Since the three levels reported using different numbers of strategy types. In order to compare equal numbers of strategies, and in order that these numbers should be manageable, the number of strategies was chosen to match the smallest number of strategies reported by any one level. Therefore, since twenty-seven strategy types were reported at the low level in Condition 1, twenty-seven strategies matching were chosen for comparison. (See Appendix 26 for the rank of all the strategies at the three levels.) Table 6.10 below gives the rank of the

twenty-seven strategies. Descriptions of the strategies are shortened to fit the Table (See Appendix 23 for a fuller description of each strategy). The numbers in the brackets will be used as codes for each strategy in the subsequent discussions.

Table 6.10 shows that Strategy 42 "Relating Preceding and Subsequent Text" was most frequently reported (52 times) when the subjects at the high level read Text 1, whereas Strategy 44 "Re-reading Problematic Text Parts only" was most frequently used (58 times) for Text 2. It appears that the subjects tried to integrate, that is relate preceding and subsequent parts of Text 1 (the easier and more familiar text) for comprehension more often, whereas they focused mostly on problematic parts for Text 2 (the more difficult and less familiar text).

The subjects at the intermediate level most frequently reported (91 and 87 times) Strategy 44 "Re-re-reading Problematic Text Part only" when reading both texts. It appears that these subjects consistently focused on the problematic parts in both texts to resolve comprehension crises. A glance at the first four most frequently reported strategies of these subjects indicates that the subjects were using similar strategies with similar frequencies over the two texts (Table 6.10). The subjects at the low level also focused most (21 times) on Strategy 44 when reading Text 1. However, they seem to have resorted more (44 times) to (Strategy 21) "Memorising" when reading Text 2. It is to be remembered that the subjects in this study were merely told they would be given a written test after reading Text 2 and as will be shown (See Research Question 3 in Section 6.5), it is possible that the reading purpose influenced their choice of the strategies

Table 6.10. Rank of most frequently reported strategies at high, intermediate and low levels for Condition 1 and 2

Reading Condition 1, Test 1					
High		Intermediate		Low	
Strategy	F	Strategy	F	Strategy	F
Relating Text Parts (42)	52	Re-reading Problem Part (44)	91	Re-reading Problem Part (44)	21
Using Background (54)	48	Showing Awareness (46)	68	Using Wrong Meaning (60)	17
Re-reading Problem Part (44)	38	Translating (53)	60	Pronouncing (28)	15
Skimming (48)	22	Relating Text Parts (42)	50	Skimming (48)	14
Guessing a Word (16)	20	Using Background (54)	49	Translating (53)	13
Reading Ahead (30)	17	Guessing a Word (16)	40	Relating Text Parts (42)	12
Using Title as Cue (59)	17	Reading Slowly (33)	30	Using Background (54)	10
Taking Main Ideas (52)	16	Asking Meaning (3)	25	Making Wrong Link (20)	9
Reading Slowly (33)	15	Reading Ahead (30)	24	Skipping (49)	8
Using Grammar (55)	14	Verifying Information (61)	23	Using Title as Cue (59)	7
Showing Awareness (46)	14	Reading before Problem (15)	23	Memorising (21)	6
Verifying Information (61)	12	Relate Each Word (38)	20	Guessing a Word (16)	6
Memorising (21)	10	Using Grammar (55)	14	Reading Word for Word (34)	6
Concentrating (8)	10	Skimming (48)	14	sing Text Organisation (57)	4
Using Text Organisation (57)	9	Memorising (21)	13	eading before Problem (15)	4
Summarising (50)	8	Skipping (49)	12	Showing Awareness (46)	4
Asking Meaning (3)	7	Using Title as Cue (59)	12	Reading Ahead (30)	3
Question Author (29)	6	Reading Word for Word (34)	10	Using Grammar (55)	3
Visualising (62)	6	Paraphrasing (24)	10	Concentrating (8)	2
Reading Word for Word (34)	4	Verifying Information (61)	8	Taking Main Ideas (52)	2
Deducing (9)	4	Pronouncing (28)	7	Reading Only Known (40)	1
Analysing Cohesion (1)	3	Question Author (29)	6	Verifying Information (61)	1
Translating (53)	3	Taking Main Ideas (52)	6	Reading Each Letter (31)	1
Skipping (49)	3	Visualising (62)	6	Question Author (29)	1
Reading before Problem (15)	3	Deducing (9)	5	Extrapolating (11)	1
Extrapolating (11)	3	Summarising (50)	5	Recalling (36)	1
Reading for Detail (32)	3	Using Dictionary (58)	5	Reading for Detail (32)	1

Reading Condition 2, Test 2					
High		Intermediate		Low	
Strategy	F	Strategy	F	Strategy	F
Re-reading Problem Part (44)	58	Re-reading Problem Part (44)	87	Memorising (21)	44
Relating Text Parts (42)	35	Showing Awareness (46)	75	Pronouncing (28)	30
Using Grammar (55)	27	Translating (53)	69	Re-reading Problem Part (44)	22
Skimming (48)	25	Relating Text Parts (42)	40	Using Wrong Meaning (60)	16
Guessing a Word (16)	24	Pronouncing (28)	26	Skipping (49)	12
Using Background (54)	18	Reading Each Letter (31)	25	Guessing a Word (16)	10
Translating (53)	12	Using Background (54)	23	Reading Word for Word (34)	10
Memorising (21)	12	Reading Slowly (33)	21	Using Title as Cue (59)	10
Reading Ahead (30)	10	Guessing a Word (16)	21	Using Background (54)	9
Taking Main Ideas (52)	10	Reading Word for Word (34)	20	Making Wrong Link (20)	9
sing Text Organisation (57)	9	Using Grammar (55)	19	Translating (53)	7
Showing Awareness (46)	9	Memorising (21)	18	Using Grammar (55)	4
Skipping (49)	8	Using Dictionary (58)	17	Relating Text Parts (42)	3
Verifying Information (61)	8	Reading before Problem (15)	17	Reading Slowly (33)	2
Reading Slowly (33)	7	Reading Ahead (30)	13	Reading Ahead (30)	2
Reading Word for Word (34)	7	Skipping (49)	13	Question Author (29)	2
Question Author (29)	7	Asking Meaning (3)	10	Reading before Problem (15)	2
Summarising (50)	6	Skimming (48)	10	Showing Awareness (46)	2
Using Title as Cue (59)	6	Verifying Information (61)	8	Recalling (36)	2
Concentrating (8)	5	Breaking Text in Units (4)	7	Relate Each Word (38)	1
Visualising (62)	3	Paraphrasing (24)	6	Reading only Known (40)	1
Reading for Detail (32)	3	Using Title as Cue (59)	6	Asking Meaning (3)	1
Analysing Cohesion (1)	2	Using Text Organisation (57)	5	Reading for Detail (32)	1
Paraphrasing (24)	2	Concentrating (8)	5	Verifying Information (61)	1
Asking Meaning (3)	2	Taking Main Ideas (52)	5	Reading Each Letter (31)	1
Checking Overlooked (6)	2	Summarising (50)	4	Using Text Organisation (57)	1
Recalling (36)	2	Holding while Reading (17)	3	Concentrating (8)	1

F = Frequency of strategies
Numbers in brackets show codes of the strategies: e.g. Strategy (42) = Relating Text Parts

As Table 6.10 shows, Strategy 54 "Using Background Knowledge" was the second most frequently reported (48 times) strategy at the high level for Text 1 (the easier and more familiar text). However, this strategy fell to sixth place with a frequency of 18 times when the subjects read Text 2 (the more difficult and less familiar text). A similar decrease was observed at the intermediate and low levels for the two texts. It is important to note the proximity of the frequency of this strategy (48 times) at the high and (49 times) at the intermediate levels for Text 1. In contrast, background knowledge was used fewer times (10 times) at the low level than at the high and intermediate levels. It appears that background knowledge, which is a top-down strategy, was focused on more at the high and intermediate levels than at the low level. Further, it is possible that the low level subjects, because of their deficiency in the language, might not have been able to make use of their background knowledge (See Section 2.5). It should be noted also that the fact that the frequency of Strategy 54 decreased from Text 1 to Text 2 at the three levels (Table 6.10) suggests that Text 1 had encouraged a more frequent use of background knowledge.

A noticeable change was observed at the high level for Strategy 55 "Using Grammar Knowledge". As Table 6.10 shows, this strategy was reported more frequently (27 times) for Text 2 than for Text 1 (14 times). Similarly, this strategy was reported more frequently for Text 2 (14 and 3 times at the intermediate and low levels respectively) than for Text 1 (19 and 4 times at the intermediate and low levels respectively). It is important to note that the frequency of this strategy was much higher at the high and intermediate levels than at the low level for both texts. It appears that the subjects with a low level of language proficiency may

have found it difficult to bring their knowledge of the structure of the language to bear on the text in order to resolve their comprehension problems.

"Pronouncing Difficult Words" (Strategy 28) was reported at the high level only when the subjects read Text 2 and then it was ranked fortieth (See Appendix 26 for rank of all strategies). This strategy came in twenty-first place for the intermediate subjects reading Text 1, but moved to fifth place when the subjects read Text 2 (Table 6.10). An increase was also seen at the low level where Strategy 28 moved from third place (Text 1) to second place (Text 2). It is important to emphasise that the frequency of this strategy at the intermediate and low levels was much higher than that at the high level. It appears that "Pronouncing Difficult Words", which is a bottom-up strategy, was more frequently reported for the more difficult and less familiar text (Text 2). Furthermore, the absence of this strategy at the higher level appears to indicate that the subjects at this level either did not experience sound-letter level difficulty or that they did not focus on this strategy for the easier and more familiar text (Text 1).

"Skipping Difficult Text Parts (Strategy 49) was more frequently reported for Text 2 than for Text 1 at all levels (Table 6.10). This strategy was reported 3 times (in twenty-fourth place) for Text 1 and 8 times (in thirteenth place) for Text 2 at the high level. Similarly, its frequency increased at the intermediate and low levels for Text 2 (Table 6.10). It is important to note that the fact that the frequency of this strategy was higher at the intermediate and low levels than at the high level suggests that the subjects at the high level may have been able to cope with the text well. It can also be argued that the subjects at the high level may have been

able to use the context to get the meaning of the difficult words in Text 2 more successfully than did the subjects at the intermediate and low levels. The latter argument appears to be the case when one compares the higher number of times "Guessing Unknown Words" (Strategy 16) was reported at the high level (24 times) in comparison to the small number (21 and 10 times) at the intermediate and at the low level respectively (See Table 6.10). The more frequent skipping at the intermediate and low levels could also be that the subjects might have been less persistent in the face of difficulty.

"Reading Word for Word" (Strategy 34) showed a slight increase in frequency from 4 (Text 1) to 7 (Text 2) at the high level (Table 6.10). It appears that the subjects at the high level tended to focus on each word more when reading Text 2 than Text 1. Strategy 34 also increased in frequency from 10 (Text 1) to 20 (Text 2) at the intermediate level, and from 6 (Text 1) to 10 (Text 2) at the low level (Table 6.10). The higher frequency of Strategy 34 at the intermediate and the low levels than at the high level suggests a limited focus on a bottom-up processing by the subjects who are better in their language ability. Further, the increased frequency of Strategy 34 for Text 2 appears to indicate that the difficulty of this text may have increased the frequency of this particular bottom-up strategy.

"Using Text Organisation" (Strategy 57) and "Using the Title or Sub-Titles in the Text" (Strategy 59) to aid comprehension were more frequently used at the high level than at the low level (Table 6.10). As Table 6.10 shows, the subjects at the high level reported using Strategy 57 as often for Text 2 as for Text 1. These two top-down strategies (Strategies 57 and 59) appear to have been focused on more by the higher level subjects than by the low

level; this suggests that deficiency in the language might have prevented the low level subjects from engaging in higher level text processing.

6.4.2.1. Summary

The results so far have shown that aspects of Text 1 such as its familiarity had an influence in increasing the frequency of strategies such as "Using Background Knowledge" (Strategy 54), whereas aspects of Text 2 such as its unfamiliarity had a decreasing effect on the frequency of Background Knowledge. In addition, aspects of Text 2 such as its difficult readability influenced the increased frequency of strategies such as, "Using Grammar Knowledge" (Strategy 55), "Reading Word for Word" (Strategy 34), and "Skipping Difficult Text Parts" (Strategy 49). As was shown, more bottom-up strategies were reported as being used by subjects at the intermediate and low levels than by the subjects at the high level. Furthermore, bottom-up strategies were used more for Text 2 than for Text 1. It was also shown that the frequency of purpose-indicating strategies, such as "Memorising" (Strategy 21) increased for Text 2.

Research Question 3 below examines the differences of strategy frequency when the reading purpose changed from making an oral summary (Purpose 1) to writing the answers to a reading comprehension test (Purpose 2).

6.5. Research Question 3: *Are there differences in the frequency of use of the strategy types reported among the subjects at the high, intermediate and low levels of language proficiency when the reading purpose changes?*

Differences in the use of strategy types have already been examined in the answers to Research Question 1A. Furthermore, since the change in purpose was confounded with the change in text type in this study, the results of the statistical tests for Research Questions 1A and 2 will also apply to Research Question 3. Therefore, it is not necessary to replicate the strategy type and frequency results in this section. Instead, the focus here will be on the differences in the ranks of purpose-indicating strategies, such as "Summarising" (Strategy 50), "Memorising" (Strategy 21), "Taking or Identifying Main Ideas" (Strategy 52) and "Skimming" (Strategy 48).

Table 6.10 shows that the high level subjects reported Strategy 50 "Summarising" slightly more frequently (8 times) for Purpose 1 (summarise text) than (6 times) for Purpose 2 (taking the written reading comprehension test). Similarly, at the intermediate level this strategy was slightly more frequent (5 times) for Purpose 1 than for Purpose 2 (4 times). As Table 6.10 shows, Strategy 50 was not reported by low-level subjects. It should be noted that the frequency of summarising decreased slightly from Purpose 1 to Purpose 2, suggesting that the assigned reading purpose (summarising the text) may have induced a more frequent use of that strategy. Since I did not tell the subjects what they would have to do after reading, that is whether they should summarise, identify main points or memorise, this may explain why they reported Strategy 50 less frequently for Purpose 2. It is possible that the subjects might have transferred Purpose 1 to Purpose 2 as what Deegan (1995) referred to as a 'default' strategy.

Although the subjects at the high and intermediate levels tended to memorise the text

(Strategy 21) more frequently for Purpose 2 than for Purpose 1 (Table 6.10), the most conspicuous change occurred at the low level where the frequency of Strategy 5 rose from 6 (Purpose 1) to 44 (Purpose 2). These increases suggest that the prospect of taking the test (Purpose 2) may have triggered more frequent memorisation than did Purpose 1. In fact, as some of the subjects later commented the reason they memorised (i.e., processing the text at the surface level) for Purpose 2 was because they thought the test would contain questions that would require them to memorise. These results are similar to Fransson's study (1984) who found that subjects who perceive the reading purpose as requiring them to read for the sake of an examination tend to process the text at the surface level (See Section 2.8). My subjects also remarked that they used to memorise in their high school for examinations that contained multiple-choice, true-false and matching questions, and that they expected similar questions in the test in this study. It is also possible that the difficulty of Text 2 may have also contributed to these subjects' memorisation.

"Taking or Identifying Main Ideas" (Strategy 52) was reported more frequently (16 times) for Purpose 1 than Purpose 2 (10 times) at the high level. A similar change, although slight, was observed at the intermediate level. In contrast, this strategy was reported only for Purpose 1 at the low level (Table 6.10). This suggests that Purpose 1 (summarising) might have prompted more subjects to focus on main points than did Purpose 2 (taking a test).

6.5.1 Summary

It was shown that the reading purposes set in this study influenced the frequency of certain strategies. The subjects reported using purpose-indicating strategies, such as "Memorising"

(Strategy 21), "Summarising" (Strategy 50) and "Taking Main Ideas" (Strategy 52) with varying frequencies depending on whether they were reading to summarise the text (Purpose 1) or to take the written test (Purpose 2). For example, Purpose 1 appears to have induced a more frequent use of "Summarising" by the subjects at the high level although this was not the case with the subjects at the intermediate and low levels. Purpose 1 also seems to have encouraged the subjects at all levels to identify more main ideas than did Purpose 2.

Although Purpose 2 was not made explicit to the subjects, it appears that it too influenced reporting with a high frequency of strategies such as "Memorising" (Strategy 21) at all levels, and by extension, a reduction in the frequency of strategies such as "Summarising" (Strategy 50) and "Taking Main Ideas" (Strategy 52). From the comparisons so far it is possible to argue that the reading purposes, whether set by me (as in the case of Purpose 1) or by the students (as in the case of Purpose 2), did influence strategy choice.

The comparisons so far have focused on the differences in the frequencies of purpose-indicating strategies among the three levels and between the two purposes. In order to provide insights into whether more attention was paid to the appropriate purpose-indicating strategies than to other strategies, a comparison was made between the ranks of the purpose-indicating strategies and the other strategies. See Research Question 4A.

6.6. Research Question 4A: *How appropriate are the strategies reported by the subjects at the high, intermediate and low levels of language proficiency for their purposes?*

First, I shall define the term *appropriate* in the above question to clarify its meaning in the

context of this discussion. By '*appropriate strategy*' I mean a strategy that was suitable for the assigned purpose for which the subjects read the texts. For example, "Summarising" (Strategy 50) was an appropriate strategy for Purpose 1 because it was what the subjects knew what they would have to do after reading the text. I could not identify an appropriate strategy from the reported strategies of the subjects who took the written reading comprehension test (Purpose 2) because the subjects did not know whether the test would require them to focus on main points or details. For this reason, the discussion of strategy appropriateness will focus only on Purpose 1 (summarising). First, I shall compare the appropriate strategies at the three levels.

6.6.1. Appropriate strategies

The frequency of purpose-indicating strategies, such as Summarising (Strategy 50), "Memorising" (Strategy 21), "Taking Main Ideas" (Strategy 52) and "Skimming" (Strategy 48) will be compared at each level.

Although Strategy 50 "Summarising", an appropriate strategy, was less frequently reported than Strategy 21 "Memorising" when the subjects at the high level read in order to summarise (Purpose 1), it should be noted that there were more examples of Strategy 52 "Taking Main Ideas" and Strategy 48 "Skimming" at the high level. It can be argued that Strategy 52 was an appropriate strategy because summarising requires the identification of main ideas. In contrast, both Strategy 52 and 50 occurred fewer times than "Memorising" at the intermediate level (Table 6.10), and at the low level, there was no text "Summarising" (Strategy 50)

reported and "Taking or Identifying Main Ideas" (Strategy 52) was less frequent (2 times) than "Memorising" (6 times). It appears that the subjects at the high level focused on the appropriate strategies more than did the subjects at the intermediate and low levels. The difference becomes even more pronounced when we compare the high and low levels. A glance at Table 6.10 shows that the subjects at the high level reported Strategy 48 "Skimming" (22 times) "Taking Main Ideas" (16 times), and "Summarising" (8 times) while the subjects at the low level reported "Skimming" (14 times), "Taking Main Ideas" (2 times) and "Summarisation" (none). It is surprising that the low level subjects reported "Skimming" as this apparently suggests they were looking for the gist of the text. However, considering the fact that they achieved very low scores on the two tests (See Appendix 27 for the scores), it is possible that their skimming may have had a different purpose - speeding through the text to see if there was anything they could understand.

The comparison so far has shown that the high, intermediate and low levels differed in the type and frequency of the appropriate strategies they reported. As has been shown, the subjects at the high level employed the appropriate strategies more frequently than did the subjects at the intermediate and low levels. It is important to emphasise that these subjects achieved higher reading comprehension scores than did the subjects at the intermediate and low levels (See Appendix 27 for the scores). It must be stressed that the frequency of the strategies can only indicate the degree with which some strategies were prioritised over others; it fails to reveal whether these or the other strategies were used effectively, that is whether they led to successful comprehension. To shed some light on this point, Research

Question 4B examines the protocols of a sample of subjects from the Gap-filling, Retrospection and Introspection Groups.

6.7. Research Question 4B: *How effective are the strategies reported by the subjects at the high, intermediate and low levels of language proficiency for their purposes?*

An '*effective strategy*' in this study refers to a strategy that led to successful comprehension. For example, "Using the Dictionary" (Strategy 58), "Guessing Unknown Words" (Strategy 16), or "Showing Awareness" (Strategy 46) in order to bring about understanding of a text part through employing an alternative effective strategy that resolves a comprehension problem.

6.7.1. Effective strategies

The strategies in this study were generated from two tasks, the gap-filling task and the intact texts. '*Effective Strategies*' for the gap-filling task are those strategies that (1) resulted in the correct response for a gap, and/or (2) matched the deletion process that was used to make the gap. A strategy that produced the correct response and also matched the deletion process is considered to be an effective strategy. Effective strategies for the intact texts would be those that led to the comprehension of individual words or phrases in the text. They included strategies that directly led to comprehension, for example, using a dictionary or using context to work out the meaning of a new word. They also include strategies that were used to monitor unsuccessful strategies or which regulated alternative strategies and led to comprehension.

6.7.1.1. Effective strategies – Gap-filling Group

Two subjects (marked with asterisks in Table 6.11 below) were selected because they represented the two most extreme performances in their group - highest (**Subject 1**) and lowest (**Subject 2**). They also came from the high (**Subject 1**) and low (**Subject 2**) language proficiency levels. The responses and strategies of Subject 1 will be discussed first. (See Appendices 28 and 29 for protocols of Subjects 1 and 2 respectively).

Table 6.11. Number of correct and incorrect responses in the Gap-filling Group

	Total score – 20 points	
	Correct response	Incorrect response
*Subject 1	17	3
Subject X	14	6
Subject X	14	6
Subject X	12	8
Subject X	9	11
Subject X	9	11
Subject X	7	13
*Subject 2	0	20

Subject 1

The examples below illustrate that the effective strategies reported by Subject 1 resulted in the correct responses, and that in most cases these strategies matched the deletion processes I used to delete these responses. However, there were exceptions when a correct response was supplied using a strategy that did not match the original deletion (See Example 3 later).

Example 1

Blank 5: The body of an amoeba is comprised of a semi-fluid *cytoplasm* containing a small bubble-like *nucleus*, i. e. it is a cell. An amoeba, like other protozoa consists of one cell, but

this __cell__ is an integral organism, leading an independent life.

Deletion process (blank 5): The blank requires the candidate to relate the demonstrative pronoun [this] in [but this] to references about the cell such as, [i.e. it is a cell] and [an amoeba, like other protozoa, consists of one cell] which are mentioned in preceding sentences. The blank also requires the candidate to relate the demonstrative pronoun to the singular verb [is] in [is an integral organism, leading an independent life].

Exact response (blank 5) = cell; subject's response = "cell"

Subject's strategy for response: (blank 5) lines 14-16: "the man is talking about a cell, and here it says [an amoeba like other protozoa consists of one cell] and after this he says [but this] when he says [this] from the context in which it is put it is clear to see that it refers to [cell]."

As can be seen from the above example, there was a match between the candidate's strategies and the thought processes I went through when creating blank 5. A second example below will further demonstrate this point.

Example 2

Blank 9: The amoeba and other protozoa capable of forming pseudopodia belong to the class: __Rhizopoda__.This name has been attributed to them because of the external resemblance between pseudopodia and plant roots.

Deletion process (blank 9): The blank requires the candidate to relate references such as, [The amoeba and other protozoa ... belong to the class: …] with the sub-title of the text [class: Rhizopoda]. The blank also requires the candidate to use clues such as the word [class] before the blank and relate the clue with the sub-title of the text.

Exact response (blank 9) = Rhizopoda; subject's response = "Rhizopoda"

Subject's strategy for response (blank 9) lines 26-28**:** "the writer is asking what class amoeba and other protozoa belong to, and this writer has specifically started to write about the phylum and class, and since this word [class] is here and since the writer has already specified the class I went to the topic."

As the two examples showed, the reported strategies of Subject 1 were similar to those used to delete the responses and they led to the correct responses. The examples also showed how effectively the subject linked various textual cues. It is important to emphasise that the subject made use of his grammatical knowledge and the structure and context of the text to arrive at his responses. However, although in most cases the strategies reported matched the deletion processes and produced the correct responses, there were a few instances where a strategy that did not match the deletion process generated the correct response. Example 3 will illustrate this.

Example 3

Blank 1: MODE OF LIFE, STRUCTURE AND LOCOMOTION. The __amoeba____ is a

bottom dweller and is usually found in the ooze in slow-moving or still-water ponds. …. The word "amoeba" means "to change". The details in the structure of an amoeba are visible

Deletion process (blank 1): The blank requires the candidate to relate the definite article [the] before the blank with the theme of the text [1.1 Amoebae] and with references to [amoebae], such as, [The word amoebae] and [the structure of an amoebae] which are given after the blank.

Exact response (blank 1) = Amoeba; subject's response = "Amoeba"

Subject's strategy for response (blank 1) lines 1-3**:** "from the topic I have understood that we are talking about amoeba, and from what is said after the blank, which says [dweller] I understood that it is talking about a living organism, so as we are talking about amoeba, I have put in amoeba."

Such a mismatch presented an interesting insight into the definition of an effective strategy, that is it does not necessarily follow that a strategy that did not match the deletion process would always be ineffective and thus lead to an incorrect response. This finding is also important as it underlines the difficulty in predicting all possible effective strategies solely on the basis of the deletion processes based on which strategies reported by the subjects would be judged effective or ineffective.

As regards Subjects 2's strategies, all the ineffective strategies reported produced incorrect responses. To maintain consistency and to highlight the differences between Subjects 1 and 2,

parallel responses will be compared. (See Appendix 29 for protocol of Subject 2).

Note: To avoid repetition, the examples in the discussion of Subject 2 will not contain texts containing the blanks and the deletion processes. Only the exact responses and the strategies reported by the Subject will be given. ***See Subject 1*** for corresponding blanks and deletion processes.

Subject 2

Example 1

Exact response (blank 9) = Rhizopoda; subject's response = "because"

Subject's strategy for response (blank 9) lines 24-25: "before the blank it mentioned about the type of the disease, that is [the amoeba and other], and after the blank it mentions that amoeba can also be found in plants."

From the above example it was not clear why the subject thought "because" was the correct response. The example clearly showed that the subject failed to use the various textual clues, such as the word [class] before the blank and the sub-title of the text [Class: Rhizopoda]. Furthermore, the subject's response clearly demonstrates her lack of awareness of the grammatical appropriacy of her response. In addition, the subject gave the words the wrong meaning and produced the response regardless of any connection between the ideas. To support this observation, I looked at the subject's other responses and discovered a similar

pattern as Examples 2 and 3 below illustrate.

Example 2

The exact response (blank 1) = Amoeba; subject's response = "water"

Subject's strategy for response (blank 1) lines 1-3**:** "the reason I put this is that before the blank it reads [mode of life and structure] which talks about water, the meaning is, it means it has shape, taste and kind, and we can know the taste and kind of water by tasting I mean [slow moving still water] means tasting, and [slow moving] means we know."

Example 3

Exact response (blank 3) = changing; subject's response = "disease"

Subject's strategy for response (blank 3) lines 6-8**:** "before the blank it reads [amoeba means to change] it means disease, from what I have learnt amoeba is a disease, and after the blank it reads [in the structure] which means the amoeba has changed, as indicated above, to disease"

The examples clearly showed that the strategies reported by Subject 2 did not lead to the correct responses. They also illustrate that the subject not only lacked the language, as evidenced in the grammatical inaccuracy of her responses, but also apparently the mechanism for monitoring her comprehension and regulating her strategies. This lack of awareness can be observed in Example 2 above where the subject gave two different meanings to the same

words [slow moving] and yet did not appear to be aware of this. As Baker (1985) pointed out "less skilled readers have a limited set of criteria against which to evaluate their understanding." (p.308) Further, this subject's use of inappropriate background knowledge and her inability to cross check this using her knowledge of the structure of the language clearly illustrates interference from background knowledge which is characteristic of poor readers who try to substitute the closest schemata they have for an incorrect meaning (See Section 2.5).

6.7.1.1.1. Summary

The examples above have demonstrated that Subject 1, who reported more effective strategies, achieved higher scores than did Subject 2. Furthermore, it was possible to determine the relationship between the effective/ineffective strategies and their results, that is responses. However, I could not determine the role of the effective/ineffective strategies reported on an item basis to the overall comprehension of the text. None of the subjects who completed the gap-filling task reported summarising the text but they nevertheless managed to give a summary of the text of the gap-filling task. They were able to summarise, as some of them later remarked, not because they used the strategy of summarising but because they were able to import a summarised form of the text from their prior knowledge. In fact as the summaries of some of the subjects later showed, there were references in the summaries which were not contained in the text. It is important to remember that the text they were reading was familiar to them in their high school. The lack of summarisation in this task might be the result of the task limiting the subjects from processing the entire text beyond the

sentences containing the blanks although the subjects were not asked to process the text only in this fashion. Another difficulty with the task was that I could not see in the protocols whether or not the subjects had monitored their comprehension or regulated their strategies, that is, employed alternative strategies that worked. It appears that these processes may have taken place but were not reported possibly because the subjects reported the strategies retrospectively which means on-line thought processes had been lost. It is also possible that the subjects simply reported the 'finished product' that is, any change of strategy that might have taken place was not reported.

The next section examines the effective strategies reported in the Retrospection Group. As in the Gap-filling Group, two subjects were selected: Subject 3 (highest scorer) and Subject 4 (lowest scorer). See Appendices 30 and 31 for protocols of Subject 3 and 4 respectively).

6.7.1.2. Effective strategies - Retrospection Group

Subject 3 experienced a comprehension problem and this was how he reported resolving it (lines 8-9): "I read the last sentence at the speed with which I read the previous sentences, and I didn't understand the explanation." Here, the subject indicated not only his awareness of the problem but also the cause, that is, reading with speed. He then said he employed a new strategy (line 9) "I read it again" and he indicated that it had worked (line 10): "I understood it". What is interesting is that not only was he aware of the problem, but as the next protocol shows, he evaluated the source of the problem (lines 10-11): "when I re-read it I was thinking about what I had missed and which part I didn't pay attention to". This

evaluation led to the regulation of the new strategy, that is, re-reading (lines 11-12): "then I looked at each word with concentration, I mean the meaning of it, and what each word wanted to convey in the context of what is being said." When I asked him whether he understood that sentence he said he did.

Subject 4 reported resolving her comprehension problems, which interestingly related mostly to difficult words, as follows (Appendix 31, lines 8): "I kept in my mind difficult words to look up in books later". The suggested solution, that is, keeping in mind ... to look up in books later, had the subject been aware, would not have worked because there were no books for reference at the time, except the dictionary which the subject did not use. After reading another paragraph, she said (lines 21-22): "I re-read the words twice and kept them in mind to look them up in a dictionary..." Considering that a dictionary was available there was no advantage in keeping a new word in mind and continuing to read. In fact, she referred to her comprehension saying (lines 27-28): "I didn't understand the paragraph because the words were not clear to me."

Given the low language level of this subject, one should wonder why, since there was no time constraint, she did not attempt to use the dictionary and then re-read the paragraph. It appears that this subject lacked the mechanism for monitoring whether her alternative strategy, looking up in books, would work or indeed was feasible when other strategies, such as using context, failed. This can be illustrated from the following protocol (lines 36-38): "I found a word 'seep'. I re-read the sentence in which this word was found to find its meaning. I was translating the meaning of the words before and after that word." This subject not only

showed awareness of the failure of the above strategy (translating) saying (line 38): "but they could not explain it to me", but also guessed the source (line 38): "it could be that those I translated may not be correct." One would expect an alternative and effective strategy (given the language level of this subject) to be using the dictionary but the alternative strategy the subject employed was (lines 38-39): "then I kept the words in my mind." It must be noted that the word 'seep' was not a technical word and was not used in a technical sense in the text. This subject clearly lacked a broad array of criteria against which to evaluate her understanding (See Baker, 1985).

Further evidence of the lack of effective strategy use can be shown from the following protocols (lines 2-4): "there were words separated by a hyphen and I thought they were different but the second time I read it I realised that they were joined, ... and since a full-stop came after them I knew they had the same meaning." However, as the next protocol shows Subject 4 failed to apply the same strategy when she encountered a similar problem, that is new hyphenated words. She reported (lines 26-27): "I also tried to relate it to biology, for example, he put it as 'projected – a' [in the text this was: projection – a pseudopoda] I tried to remember in which biology lesson I had learnt it but I could not." Since the subject only reported two instances of a problem with hyphenated words, I was unable to tell what strategies this subject used for the other hyphenated words in the text (there were four such words).

The subject's lack of awareness that even the effective strategies she used would not help her to get the summary of the text can be well exemplified in the following protocols (lines 6-8):

"I re-read the paragraph.... The first time I read their sounds only so when I read them next they would not be difficult to translate; the second time I was not as fast as the first time and I read at a medium speed. …" Similarly, after reading the third paragraph the subject said (lines 18-24), "The third paragraph had words which were difficult in their pronunciation and meaning, ... when reading the second time I carefully pronounced them in my mind...". For the fifth paragraph, she reported (lines 35-36), "In the fifth paragraph I first pronounced the words in my mind because if I didn't know how they were pronounced it might make me make a mistake when I read for meaning". The same pattern was followed for the sixth paragraph (lines 42-43): "When reading the sixth paragraph ... I read their sounds first so that I would not make a mistake when translating." The lack of text integration which characterises weak readers (See August, et al., 1984) was clearly seen in the protocol of this subject. Less skilled readers often show a lack of monitoring of their comprehension, explains Chamblis (1995), and as the protocol of this subject showed, a limited strategy repertoire against which to monitor understanding appeared to be one of the key aspects of this subject's reading (Baker, 1985).

As the examples above illustrated, the subject attempted to resolve comprehension problems mostly at the sound-letter and word-level although in a few cases she attempted to translate the text. As her protocol revealed, in most cases she made no attempt to go beyond this level to construct an integrated meaning of the text and eventually to create a summarised form of the text. It is likely that her language deficiency was a handicap in her processing of the text at a higher level. However, I would argue that it would still have been possible to cope first

with sound-letter and word-level problems (through using the dictionary and re-reading), and then gradually to build up meaning and summarise.

Returning to Subject 3, most of his report indicated that he did encounter sound-letter and word-level problems as his next protocol shows (Appendix 30, lines 4-5): "I was reading with speed, I didn't go back ...because the idea was easy for me, and I understood it at once....". He further added (lines 14-16): "I didn't re-read this time except for a word towards the end, I know the word but I didn't expect it can be expressed in this way here, then I related it with the last sentence ... contextually". Having read the last paragraph he added (lines 46-47): "... towards the end in the sentence before last, there was a difficult word and I re-read it contextually...". It appears that high language proficiency may have enabled him to free his processing capacity and to engage in a higher level of text processing. This can be seen from the following excerpts (lines 6-7): "as I went along I was thinking about what I understood, and I was doing this simultaneously as I was reading." He added (line 7): "I was mulling over and organising the correctness of what I read."

6.7.1.2.1. Summary

The examples from Subjects 3 and 4 have shown the differences of awareness in effective strategy use. Subject 3 was more successful at employing effective strategies than Subject 4. It is also likely that linguistic ability and effective strategy use were responsible for these two subjects' differing reading comprehension scores. Insights into these two subjects' reading strategies were obtained but they were arrived at from generalised statements about what the

subjects remembered doing. A look at the protocols of both subjects revealed that their reports contained examples of a particular episode or problem in a segment of a paragraph and that other interactions were lost. For example, Subject 3 frequently referred to the last segment of the paragraph he was reading. It is possible that his strategy reporting was constrained by a recency effect (See Erricsson and Kintsch, 1995; Erricsson and Simon, 1980), and that other strategies employed earlier may have been lost due to memory problems (See Olson et al, 1984). This distorting effect will be discussed in the Section 7.6, which deals with design considerations for the main study.

Furthermore, there were instances of what appeared to be patterns of routine reporting of strategies by the two subjects. For example, Subject 3 said (line 18): "I read the same way here as in the third paragraph." and added (line 22), "Other than this I was reading in the same way as I read the previous paragraphs." Reporting his strategies for paragraph seven he said (line 45): "I read the seventh paragraph as I had read the previous paragraphs." Similarly, Subject 4 also made the following remark (lines 46-47): "In the seventh paragraph, in the same way as before, I pronounced the sounds in my mind without understanding their meaning". To determine whether these were simply isolated incidents, I looked at the protocols of other subjects in the group. I discovered that three other subjects had made similar references. For example, one said: "it does not differ from how I read the first six." Another subject added: "Most of it was as I had previously described." A third subject also made similar mentions in three paragraphs: "The fourth paragraph, I read it as I had done for the others"; "I read the fifth paragraph as I did for the fourth paragraph"; "As with the other

paragraphs, I first read the seventh paragraph...". I must emphasise that whenever these subjects made these remarks I asked them to talk about the paragraph that they were reading at that moment. I discuss such problems in the design consideration section (Section 7.6) and draw conclusions on the use of the retrospection method.

In what follows, the effective strategies reported in the Introspection Group will be discussed. Four subjects were selected: three subjects (**Subjects 5, 6** and **7**) had the same high score, so I could not distinguish among them, and the fourth subject (**Subject 8**) had the lowest score. (See Appendices 32, 33, 34 and 35 for protocols of Subjects 5,6,7 and 8 respectively).

6.7.1.3. Effective strategies - Introspection Group

Subject 5 effectively integrated textual information with background knowledge to resolve a comprehension crisis while reading the following sentence (line 88): 'The amoeba breathes in oxygen dissolved in the water', then he showed awareness of a problem and said (lines 88-89), "I don't understand this sentence, when it says breathes in it means it goes in, why?" He then employed a new strategy, that is he went back and read (line 90): "let me read it again" and confirmed his understanding (lines 91-92): "OK, I understand …it is mentioned above and it also talks about breathing and from my past experience in biology it is so." However, he did not settle for this and he read the sentence again (line 94) and re-confirmed his understanding (line 94): "We have mentioned this earlier" and he re-read the sentence (lines 94-96): 'The amoebae breathes in oxygen dissolved in the water it helps to decompose the compound substances of the cytoplasm into simpler ones' and he confirmed his

understanding saying (lines 96-97), "yes, this is correct. I know from my experience that if there is cellular activity there is decomposition which means from larger to smaller."

Subject 6 showed awareness of the structure of the text and why he would need to regulate his strategy, that is, read slowly. He said (lines 6-7), "I have started a new paragraph, now I am starting slowly ... because from the way it is put it seems to be going to explain a new idea to me." While continuing to think-aloud he said (lines 8-9): "I have slowed down now because I have found some thing new - it is a property or behaviour." Then he confirmed his comprehension saying (lines 9-10): "OK I have understood the new idea." In fact, immediately after saying this he employed a new strategy to get the overall idea of that paragraph (lines 9-10): "OK, as I have understood the new idea, I am going back to the beginning to comprehend the idea so far."

Subject 5 also effectively integrated textual clues to confirm his understanding, as his next protocol shows (lines 9-13): " '0.2-0.5mm', aha I understand, 'hardly visible' he is saying they cannot be seen, OK, they are 'colorless, or jelly-like clot' yes, OK their shape changes he says…aha 'the details in the structure of an amoeba are only visible' aha it is correct I understand the details can be seen in a microscope, yes this is correct because, before this he had said they are invisible."

It has been said that when a reader makes an erroneous prediction, this may lead to the subject misinterpreting the text. I was able to see this clearly by looking at the think-aloud protocol of **Subject 5**. This subject experienced difficulty with a new word 'bulge' and

interpreted the word 'appears' as meaning 'when it comes into sight' and thus arrived at a different meaning for 'bulge'. This is shown in his think-aloud protocol (lines 35-45): "... [a bulge appears at this spot], what does a bulge appear mean? let me go back and read, [when the cytoplasm flows towards a certain spot on the amoeba's surface]…OK then what happens? bulge, bulge, if a bulge appears, I am looking ahead to get what it is [it increases in size and turns into a projection - a pseudopoda…] the what? I have gone back, [a bulge appears …] …[it increases in size and] eh? [and turns into a projection - a pseudopoda] aha, that means the amoeba uses pseudopoda, the cytoplasm flows over into, ... it is some kind of either food or something which they see appearing, a bulge that is, yes I think it could be because it is when they see this bulge they move towards it using their pseudopoda.." Such rich and detailed interaction of the thought processes of this subject would have been lost had he given a retrospective account of his reading strategies.

Subject 7 experienced a problem and said (Appendix 34, lines 35-38): "I don't understand the idea of the sentence, what it wants to express, the idea of the sentence contradicts my knowledge, is it me or is it him? One of us is wrong! And if it is me, I am re-reading to find out where I have gone wrong, now I am paying attention and relating what is here with what I already know, now I understand." The thinking process of this subject shows that not only was he aware of his comprehension problem but also the nature of the problem and the cause of it. The protocol also shows that not only did he employ a new strategy (re-reading from the beginning) but also regulated the strategy by "paying attention" and "relating what is [in the text] with what [he] already knew". The following example from this subject shows how he

tackled a problem (lines 25-29): "I need a dictionary I don't understand what the idea of the sentence is, I am going back, ... maybe the meaning of the word I just looked up may not go with the sentence, now I am looking for its second meaning by going back, ... now I understand."

In sharp contrast to the three subjects, **Subject 8** did not employ effective strategies and lacked the awareness to monitor and regulate his strategies in order to integrate the text and eventually build a summary of the text. This can be clearly seen from the next protocol:

Subject 8 said (Appendix 35, lines 1-3): "now I am reading the first part of the paragraph by memorising, I am still memorising as I don't know the meaning, now I recognise the words and I am reading them by producing sounds in my mind and I am trying to memorise." It is clear to see the level of text processing that the subject was engaged in. Further examples of this can be seen from the following protocol (lines 3-4): "now I am repeating the sound of a word I don't know." Then he re-read and said (lines 4-5): "now I know its meaning because it is connected by [or] with the next word and I went back and read the one before [or], since [or] suggests similar things." The lack of awareness of how to transfer his effective strategy, that is using a conjunction to guess meaning, to a similar problem can be illustrated by the following protocol (lines 48-50): "now I have found a new word and I am reading by repeating its sound in my mind and now as I look ahead to get its meaning I saw that it is connected by [and] but I don't know the word after the [and] so I have skipped it." Earlier this subject attempted to guess the meaning of a new word by using the clue from 'or' but

here he failed to transfer the use of conjunctions to a similar problem.

The lack of any awareness that the meaning of a word can be guessed from different contexts was demonstrated in the following protocol (lines 6-8), "Now towards the end I have found the same word that I didn't know and I am re-reading it by sounding it out in my mind." Following this strategy the subject employed another one (line 8): "and I have skipped it because I don't know its meaning". Reading further on he said (lines 13-14), "I have found a new word and I am re-reading it by repeating its sound, as I don't know its meaning, I have kept the spelling and pronunciation." When this subject met this word again he said: (line 27): "now I have found that word which I repeatedly found earlier and I am skipping it." One interesting remark which this subject made during the round up interview was that he sometimes memorised because he was not interested, to some extent, in the content. Less skilled readers such as this subject lack a wide range of criteria against which to evaluate their understanding (See Baker, 1985). The pattern of strategy use throughout his protocol was similar to the examples above. The reading problem this subject experienced pertained to what Yuill and Oakhill (1991) described as a processing difficulty at the level of integration. It is also important to note that the subject' memorisation may have also been the result of the influence of our cultural education system (See Section 1.1) in which particular emphasis is placed on rote learning.

6.7.2. Summary

The discussion so far has shown that the subjects who used appropriate and effective strategies demonstrated better reading performances than those who did not. It has also

shown that the high scoring subjects were not only aware of the strategies they used but also monitored their comprehension, and regulated their strategies to cope with comprehension problem. These subjects were also aware of the purpose for which they were reading and used strategies that corresponded with the purpose. As regards the low scoring subjects, they often lacked awareness of the effectiveness of the strategies they were using. Further, they seemed unaware of alternative strategies that might be effective to help them with their comprehension problems. In addition, these subjects lacked the awareness to oversee and regulate their strategies and thus failed to employ strategies that would have enabled them not only to cope with the text but also to build meaning in accordance with the purpose for which they were reading (See Chamblis, 1995).

Chapter Seven presents the results of the comparison of the subjects' awareness of their own strategies before reading and the strategies they reported during reading.

CHAPTER SEVEN

RESULTS 2

7.1 Introduction

This chapter presents the second part of the result of the pilot study. First, it deals with the strategies elicited from the metacognitive questionnaire. Then it compares the strategies from the questionnaire to the strategies reported by the subjects during reading. The aim is to determine whether the subjects' pre-reading awareness of their own strategy use was reflected in the strategies they used in reading. Finally, the chapter relates the subjects' pre-reading and during-reading strategies to their post-reading reflections about their own reading from the round-up interview.

7.2. Awareness of strategies before reading

For ease of interpretation, the responses in the questionnaire are first grouped into two categories. Responses that related to sound-letter, word meaning or sentence-syntax aspects were classified as 'local' or 'bottom-up'. Others that related to text gist, background knowledge, and text organisation were classified as 'global' or 'top-down' (See Section 4.5.1 for more details).

The responses in the questionnaire are presented in four tables for ease of comparison. Table 7.1 shows awareness of ability of the subjects at the three levels. Table 7.2 presents the awareness of the subjects regarding the effective strategies, and Tables 7.3 and 7.4 give the responses of the subjects regarding their awareness of the repair strategies they would use and difficulty aspects they perceive respectively.

e 7.1 Awareness of ability by proficiency level

Able to ecognise Iain and tail Points		Able to Relate Preceding and Subsequent Information in Text		Able to Question Truthfulness of what Author Says in Text		Able to Use Prior Knowledge To Understand Content of Text		Able to Sense Lack of Understanding	
Y	-	7Y	-	5Y	-	7Y	-	6Y	2N
Y	-	5Y	2N	3Y	1N	8Y	-	5Y	3N
Y	1N	1Y	1N	3Y	1N	3Y	1N	1Y	2N

rity of awareness in most (five out of six) areas of ability between and intermediate levels. In contrast, there was little similarity low level on the one hand and those at the high and intermediate in three areas: "Able to Anticipate What Comes Next in Text", ulness of what Author Says in Text" and "Able to Use Prior- d Content of Text". The difference between the high and one hand, and the low level on the other concerned the ability to details, relating preceding and subsequent text, and sensing lack 1). It appears that the subjects at the low level appear to be aware repertoire of strategies which they might be able to use.

ive strategies

le 7.2 Awareness of effective strategies by proficiency level

'local' or bottom-up strategies										'global' or top-down strategies					
s on anding ng of Word		Focus on Details		Focus on Pronouncing Each Word		Focus on rammatical Structures		Focus on Using the Dictionary		Focus on Getting Overall Meaning of Text		Focus on Relating Text to One's Own Prior Knowledge		Focus on Text rganisatio	
	1N	5Y	3N	3Y	2N	-	8N	4Y	-	6Y	1N	5Y	2N	6Y	1N
	1N	7Y	-	5Y	2N	3Y	5N	5Y	2N	5Y	1N	3Y	1N	4Y	2N
	-	3Y	1N	4Y	-	3Y	1N	4Y	-	3Y	1N	1Y	-	2Y	1N

7.2.1. Awareness of ability

Table 7.1 Awareness of ability by proficiency level

Level of proficiency	Able to Anticipate What Comes Next in Text		Able to Recognise Main and Detail Points		Able to Relate Preceding and Subsequent Information in Text		Able to Question Truthfulness of what Author Says in Text		Able to Use Prior Knowledge To Understand Content of Text		Able to Sense Lack of Understanding	
High	5Y	3N	7Y	-	7Y	-	5Y	-	7Y	-	6Y	2N
Intermediate	6Y	1N	6Y	-	5Y	2N	3Y	1N	8Y	-	5Y	3N
Low	4Y	-	2Y	1N	1Y	1N	3Y	1N	3Y	1N	1Y	2N

Table 7.1 shows the similarity of awareness in most (five out of six) areas of ability between the subjects at the high and intermediate levels. In contrast, there was little similarity between the subjects at the low level on the one hand and those at the high and intermediate levels on the other, except in three areas: "Able to Anticipate What Comes Next in Text", "Able to Question Truthfulness of what Author Says in Text" and "Able to Use Prior-Knowledge to Understand Content of Text". The difference between the high and intermediate levels on the one hand, and the low level on the other concerned the ability to recognise main points and details, relating preceding and subsequent text, and sensing lack of understanding (Table 7.1). It appears that the subjects at the low level appear to be aware of only a relatively limited repertoire of strategies which they might be able to use.

7.2.2. Awareness of effective strategies

Table 7.2 Awareness of effective strategies by proficiency level

	'local' or bottom-up strategies										**'global' or top-down strategies**					
Language Proficiency Level	Focus on Mentally Sounding out Parts of Words		Focus on Understanding Meaning of Each Word		Focus on Details		Focus on Pronouncing Each Word		Focus on rammatical Structures		Focus on Using the Dictionary		Focus on Getting Overall Meaning of Text		Focus on Relating Text to One's Own Prior Knowledge		Focus on Text rganisatio	
High	4Y	3N	6Y	1N	5Y	3N	3Y	2N	-	8N	4Y	-	6Y	1N	5Y	2N	6Y	1N
Intermediate	3Y	2N	3Y	1N	7Y	-	5Y	2N	3Y	5N	5Y	2N	5Y	1N	3Y	1N	4Y	2N
Low	2Y	1N	3Y	-	3Y	1N	4Y	-	3Y	1N	4Y	-	3Y	1N	1Y	-	2Y	1N

The main difference between the subjects at the high level on the one hand and those at the intermediate and low levels on the other was that the high level subjects chose more global strategies as their effective strategies. For example, three strategies "Focus on Getting Overall Meaning of Text", "Focus on Relating Text to One's Own Prior Knowledge" and "Focus on Text Organisation" were chosen as effective at the high level, while one "Focus on Getting Overall Meaning of Text" was chosen at the intermediate and low levels (Table 7.2). Further, while the high and intermediate level subjects disagreed to "Focus on Grammatical Structures" (a bottom-up strategy), the low level subjects agreed to focus on this strategy. However, there was one bottom-up strategy, "Focus on Details", which was chosen as an effective strategy by most of the subjects at all the three levels.

It is clear from Table 7.2 that most of the subjects at the low level said they were aware of the effectiveness of more bottom-up strategies than were those at the high and intermediate levels. For example, there were five such strategies "Focus on Understanding Meaning of Each Word", "Focus on Details", "Focus on Pronouncing Each Whole Word", "Focus on Grammatical Structures", "Focus on Using a Dictionary" at the low level, two "Focus on Understanding Each Word" and "Focus on Details" at the high level, and three "Focus on Details", "Focus on Pronouncing Each Whole Word" and "Focus on Using the Dictionary" at the intermediate level.

7.2.3. Awareness of repair strategies

Table 7.3 Awareness of repair strategies by proficiency level

Level of proficiency	Keep Reading to Get Further Clarification		Re-read Problematic Parts		Reread before Problematic Parts		Look up Unknown Words in a Dictionary		Give up or Stop Reading	
High	7Y		7Y		1Y	4N	5Y	1N	1Y	7N
Intermediate	6Y	2N	8Y	-	5Y	2N	6Y	1N	4Y	2N
Low	1Y	1N	2Y	1N	3Y	1N	2Y	1N	2Y	-

Table 7.3 shows that most of the subjects at the high and intermediate levels indicated their awareness of the same three repair strategies "Keep Reading to Get Further Clarification", "Re-read Problematic Parts" and "Look Up Unknown Words in a Dictionary". However, most of the subjects at the low level did not indicate that they would use the same repair strategies. Only one repair strategy "Re-read before Problematic Parts" was chosen by them as well as by most of the subjects at the intermediate level (Table 7.3). Note that only at the high level did the majority of the subjects indicated that they would not give up reading as a repair strategy for their comprehension problem. It appears that these subjects could be persistent readers in the face of reading difficulties.

7.2.4. Awareness of reading difficulty sources

Table 7.4 Awareness of difficulty sources by proficiency level

Level of Proficiency	Sounds of Individual Words		Pronunciation of Words		Recognise Words		Grammar Structure		The Alphabet		Relating Text to Prior Knowledge		Getting Overall Text Meaning		Text Organisation	
High	3Y	2N	4Y	2N	6Y	1N	4Y	-	-	6N	3Y	5N	5Y	1N	2Y	3N
Intermediate	4Y	1N	4Y	1N	4Y	1N	1Y	3N	2Y	3N	4Y	3N	5Y	3N	3Y	2N
Low	2Y	1N	3Y	-	1Y	2N	3Y	1N	3Y	1N	3Y	1N	3Y	-	2Y	2N

The response of most of the subjects at the high level indicated that they appeared to be aware that "The Alphabet" would not cause them difficulty in their reading, whereas this was not the case with of most of the subjects at the low level (Table 7.4). Similarly, most of the subjects at the high level indicated that "Relating Text to Prior Knowledge" would not cause them difficulty, while those at the low level did not indicate this. Furthermore, most of the subjects at the low level indicated their awareness that the "Pronunciation of Words" would cause them difficulty whereas those at the high and intermediate levels did not.

7.2.5. Summary

From the above tables, it is clear that on the whole the subjects at the high level appeared to be aware of using more top-down strategies to read effectively than were the subjects at the intermediate and low levels. In contrast, the subjects at the low level seemed to be aware of using more bottom-up strategies to read effectively than were subjects at the high and intermediate levels.

In what follows, I shall compare the metacognitive strategy awareness of the subjects and the actual strategies they reported during reading.

7.3. Strategy awareness before reading vs. actual strategy use

This section compares the strategies chosen in the questionnaire with the actual strategies reported by each level. It should be emphasised that only the strategies in the questionnaire that matched those in the verbal protocols are compared. For ease of presentation, the strategies, table by table, are compared to the actual strategies reported.

7.3.1. High level: awareness of ability vs. actual ability-indicating strategies use

It is to be recalled that most subjects at the high level had indicated their awareness of their ability to employ different strategies when they completed the metacognitive questionnaire (Table 7.1). Amongst the strategies that they said they were able to use were, "Able to Relate Preceding and Subsequent Information in the Text" and "Able to Use Background Knowledge". A look at the ranks of the most frequently reported strategies (Table 6.10) shows that "Relating Preceding and Subsequent Text" (Strategy 42) and "Using Background Knowledge" (Strategy 54) were most frequently reported strategies. Further, the high level

subjects in the questionnaire said they were aware of their ability to recognise main points and details (Table 7.1). As can be seen from Table 6.10, the high level subjects reported "Skimming" (Strategy 48) and "Taking Main Ideas" (Strategy 52) much more frequently than "Reading for Details" (Strategy 32), reported only 3 times. Furthermore, the majority of the subjects (Table 7.1) had indicated in the questionnaire that they were "Able to Anticipate Information in the Text" and "Able to Question an Author's Meaning". The ranks of strategies (Table 6.10) show that the subjects did report "Reading Ahead" (Strategy 30) and "Questioning the Author's Intention" (Strategy 29). It appears that high level subjects' views of their own awareness of strategy use were reflected in their actual reading.

7.3.2. Awareness of effective strategy vs. actual effective strategy use

Amongst the strategies which the subjects at the high level said in the questionnaire they would employ were "Focus on Text Organisation", "Focus on Relating Text to Background Knowledge" and "Focus on Getting the Overall Meaning of the Text (Table 7.2). As Table 6.10 shows, the high level subjects reported "Using the Text Title as a Cue" (Strategy 59), "Using Text Organisation" (Strategy 57), "Skimming" (Strategy 48) and "Using Background Knowledge" (Strategy 54). This strongly suggests that the subjects indeed had an awareness of the reading strategies they would use and that they translated this awareness in their reading.

7.3.3. Awareness of repair strategies vs. actual repair strategy use

In the questionnaire most of the high level subjects said they would use two strategies, "Re-read Problematic Part" and "Keep Reading to Get Further Clarification", to repair their comprehension problems (Table 7.3), and as can be seen from Table 6.10 the same strategies

"Re-reading Problematic Text Parts only" (Strategy 44) and "Reading Ahead" (Strategy 30) were amongst the most frequently reported strategies. It is interesting that re-reading before a problematic text part was chosen as a repair strategy by only one subject in the questionnaire (Table 7.3) and this strategy (Strategy 15) was amongst the least frequently reported strategies at the high level (Table 6.10). Furthermore, the pre-reading views of the subjects at the high level in the questionnaire showed that they would not give up or stop reading as a repair strategy (Table 7.3) and during reading these subjects reported "Skipping Difficult Text Parts" (Strategy 49) amongst the least frequent strategies (Table 6.10). One minor incongruity between the high level subjects' perceived strategy use and the actual strategies they reported was that these subjects had said in the questionnaire that they would use the dictionary but they did not use it in reading.

7.3.4.Intermediate level: awareness of ability vs. actual ability-indicating strategy use

The pre-reading views of the subjects at the intermediate level were, in some respects, similar to those at the high level. For example, most of the intermediate level subjects indicated their awareness of their ability to use background knowledge, relate preceding and subsequent text, recognise main points and details, anticipate information and sense their lack of understanding (Table 7.1). A look at the strategies reported during reading (Table 6.10) shows that these strategies were indeed amongst the most frequently reported strategies at the intermediate level. For example, "Relating Preceding and Subsequent Text" (Strategy 42), "Using Background Knowledge" (Strategy 54), "Reading Ahead" (Strategy 30) and "Showing Awareness" (Strategy 46) were reported with high frequency. It is interesting that few subjects at the intermediate level said in the questionnaire that they would question an author's meaning (Table 7.1) and "Questioning the Author's Intentions" (Strategy 29) was

indeed one of the least frequently reported strategies (Table 6.10).

7.3.5. Awareness of effective strategies vs. actual effective strategy use

Most of the intermediate level subjects indicated in the questionnaire that they would focus on details, pronounce each whole word, use a dictionary and get the overall meaning of text to read effectively (Table 7.2). However, during the actual reading these strategies were seldom reported (Table 6.10). Although most of the subjects indicated in the questionnaire that they would not focus on grammatical structure (Table 7.2), they did report "Using Grammatical Knowledge" (Strategy 55) more frequently when reading (Table 6.10).

7.3.6. Awareness of repair strategies vs.actual repair strategy use

As Table 7.3 shows, most of the intermediate level subjects said in the questionnaire that they would "Reread Problematic Parts" and they reported most frequently "Rereading Problematic Text Parts only" (Strategy 44). The subjects also said in the questionnaire that they would "Keep Reading to Get Further Clarification" and "Reread before Problematic Parts" and as Table 6.10 shows, the subjects did report using "Reading Ahead for Clarification" (Strategy 30) and "Rereading before Problematic Parts" (Strategy 15). Although most of the subjects in the questionnaire said that they would "Look up Unknown Words in Dictionary", they reported "Using the Dictionary" (Strategy 58) rarely.

7.3.7. Low level: Awareness of ability vs. actual ability-indicating strategy use

Most of the low level subjects in the questionnaire said that they were "Able to Question an Author's Meaning" (Table 7.1). However, in their actual reading, "Questioning the Author's Intentions" (Strategy 29) was reported only once (Table 6.10). Two of the four subjects at

the low level said in the questionnaire that they would not be "Able to Sense a Lack of One's Comprehension Problems" (Table 7.1) and, as the strategies they reported during reading showed, "Showing Awareness" (Strategy 46) was amongst the least frequently reported strategies. In addition, the subjects said in the questionnaire that they would look up unknown word in a dictionary but they did not use the dictionary when reading.

7.3.8. Awareness of effective strategies vs. actual effective strategy use

The six effective strategies, which most of the low level subjects in the questionnaire said they would use, were "Understanding the Meaning of Each Word", "Focus on Details" "Pronouncing Each Word", "Grammatical Structures", "Using the Dictionary" and "Getting the Overall Meaning of a Text" (Table 7.2). Table 6.10 shows that of the six strategies the low-level subjects said they would used, only one, "Pronouncing Difficult Words Internally" (Strategy 28), was most frequently reported. It is interesting that despite saying in the questionnaire that they all use the dictionary and despite their deficiency in the language, the low level subjects did not use it in their actual reading. Although there may be a number of reasons why they did not use the dictionary, it is possible that they may have felt too daunted to look up most words or that they did not want to be seen as weak students. It appears that the subjects' awareness of effective strategy use before reading was not reflected, to a large extent, in their actual reading.

7.3.9. Awareness of repair strategies vs. repair strategy use

In the questionnaire most of the low-level subjects said that they would "Reread before a Problematic Text Part" (Table 7.3). However, as the ranks of strategies in Table 6.10 shows, during reading the subjects very rarely reported "Re-reading before Problematic Parts"

(Strategy 15). Similarly, most of the subjects in the questionnaire did not consider "Rereading Problematic Text Parts" to be a useful repair strategy (Table 7.3). However, as Table 6.10 shows, "Rereading Problematic Parts" (Strategy 44) was the most frequently reported strategy during reading by the low-level subjects.

7.3.10. Summary

As shown in the preceding discussion most of the subjects at the high level appeared to have transferred their pre-reading strategy awareness to their actual reading. As regards the subjects at the intermediate level, they reported using some of the strategies for which they showed awareness in the questionnaire. In sharp contrast, however, those at the low level rarely translated their awareness of their strategies into the use of these strategies during reading. The lack of match between awareness of strategy use in the questionnaire and actual use of those strategies might also be the result of language deficiency, processing difficulties (See Sections 11.7 and 11.8) or a mismatch between perceived and actual strategy use.

In the following section I shall examine the post-reading reflections of the subjects regarding their reading from the round-up interviews. First, I shall present a summary of the overall views of all the subjects and then discuss the views of a sample of subjects in relation to their pre-reading awareness and their reported strategies during reading. The summary from the round-up interviews in the first and second weeks is presented in Table 7.5 below. Question 1 was intended to elicit the subjects' awareness of how effective they thought their reading was. Question 2 was aimed at eliciting the subjects' awareness of their repair strategies. Questions 3 and 4 were intended to obtain the subjects' reflections regarding their level of interest before and during reading, including whether or not the questionnaire had an

influence on their subsequent reading.

7.4. Round-up interview: *post-reading views*

Table 7.5. Summary of views from the round-up interviews

Questions		Replies	Week 1;Text 1 Level H	I	L	Week 2; Text 2 Level H	I	L
1) Why did you read the text the way you did?		To understand	5	5	3	7	6	3
		Good for my education	0	1	0	0	0	0
		To memorise it	0	0	1	0	0	1
		This is how I read	2	2	0	0	0	0
		To do the test	1	0	0	1	2	0
2) Thinking back now, how else do you think you would have liked to have read it?		Same way	2	1	0	1	1	1
		Differently	6	7	4	7	7	3
3) How strong was your interest?	Before & while reading	High & not as high	1	5	1	5	4	2
		High & high	7	3	3	3	4	2
4) Did the questionnaire influence how you read today?		Yes	2	2	2	0	0	3
		No	1	4	0	3	4	0
		I didn't remember it	5	2	2	5	4	1

7.4.1. Awareness of effectiveness of reading strategies

Most of the subjects (5 at the high and intermediate levels and 3 at the low level) said that their reason for employing the strategies they reported when reading Text 1 was to understand the text. The majority of the subjects (7 high, 6 intermediate and 3 low) who read Text 2 agreed. These responses of the subjects might seem obvious; however, on closer inspection they underline an important problem: some subjects do not seem to be able to evaluate their own reading, that is it appears that even the subjects who had low reading scores thought that they had used strategies that helped them to understand the text.

In what follows, I shall illustrate the problem of awareness of strategy use mentioned above using the views of a sample of low and high scoring subjects – subjects I have already cited in the discussion of effective strategies (See Section 6.7.1).

Subject 2 (low scorer; Gap-filling Group). This subject showed her lack of awareness of her difficulty reading the text as (Appendix 29, line 48): "except in a few places it was OK." Note that her reply here contradicts not only her reason for using her strategies, which was 'to understand', but also her reading performance.

In contrast to the view of Subject 2, the views of the high scoring subjects revealed awareness of the effectiveness of the strategies reported. The following examples illustrate this point.

Subject 1 (high scorer; Gap-filling Group). When asked why he read the text the way he did this subject replied (Appendix 28, lines 63-64), "subsequent and preceding ideas should not contradict each other. I cannot simply fill in, the passage should give a coherent idea. That is why I read it by going back and forth."

Subject 3 (high scorer; Retrospection Group) said (Appendix 30, lines 58-59), "I would not read it any differently to get the central idea, but if you had asked ask me to write or memorise, I would have read every sentence two or three times." It appears that this subject was aware that his way of reading was effective and sufficient for the purpose for which he was reading.

The examples above illustrate that the subjects who scored low appeared less aware of the effectiveness of strategies that would have helped them to process the text and attain the level of comprehension suited to the assigned purpose than those who scored high. It is interesting that the weak readers were not only less aware of the effectiveness of their strategies but also, as shown below, lacked an awareness of alternative strategies that might

have helped them to repair their comprehension problems at the time.

7.4.2. Awareness of repair strategies

As Table 7.5 shows, the majority of the subjects who read Text 1 (6 high, 7 intermediate, and 4 low) indicated that in retrospect they would have liked to have read the text differently. A similar high number of subjects (7 high, 7 intermediate, and 3 low) acknowledged that they would have read Text 2 differently. Given that the subjects, especially those who scored low, thought they had used strategies which would help them understand the text, it appears that they may not have been aware of other alternative ways of reading which would have helped them in their reading at the time. This suggests a lack of awareness in evaluating their comprehension problems and the effectiveness of the reading strategies they employed. I shall first illustrate this problem using the views of the two low scoring subjects mentioned above and shall then provide examples from high scoring subjects to show the differences between their repair strategies and that of the low scoring subjects.

Subject 2 (low scoring; Gap-filling Group) had earlier said that her reason for employing her strategies when reading was to understand the text, and later when asked how else she would have read the text she replied (line 52), "I would have reread it to get the idea because the idea was difficult for me." It is to be recalled that this was the same subject who had earlier said 'except in a few places it was OK'. Here she mentions difficulty. It is important to note that this subject had indicated she would have re-read the text as an alternative effective strategy to help her read better but she did not mention, for example, getting the main points or summarising the text - strategies which would have enabled her to attain the assigned purpose. It seems this subject lacks an awareness of effective alternative strategies

that were suitable for the purpose for which she read.

Subject 6 (high scorer; Introspection Group). Asked how else he thought he might have read the text he replied (Appendix 33, lines 37-39), "May be take more main ideas, focus on them; it would have been possible to read by relating it to general situations I see and read about, and to do so in depth and extensively without simply concentrating on the text information. If I had done this, it would have been clearer to me." In retrospection, I realised that it would have been useful to ask the subjects why they did not employ the strategies they said they might have liked to have used. I shall discuss this in more detail in the section dealing with the design considerations for the main study (See Section 7.6 later).

The examples above show that one major difference between the subjects who scored high and those who did not was that the former were aware the effectiveness of their strategies.

7.4.3. Interest

It has been argued (See Cohen, 1994) that one of the factors outside the text that affects how we read is interest and motivation.

Asked about their interest before reading Text 1, most of the subjects (7 high, 3 intermediate, and 3 low) said they were highly interested throughout their reading. However, as Table 7.5 shows, the number of subjects who maintained a high interest throughout the reading of Text 2 decreased (3 high, 4 intermediate, and 2 low). This was because, as some of the subjects explained, Text 2 was more difficult and unfamiliar than Text 1.

7.4.4. Questionnaire influence

Most of the subjects (14 out of 20) said the questionnaire did not influence how they read Text 1, which was given to them after the administration of the questionnaire. However, as can be seen from Table 7.5, the number of subjects who said the questionnaire did not influence them increased to seventeen when they read Text 2 which was given two weeks after the administration of the questionnaire. It appears that the one-week buffer introduced may not have been sufficient to counter the recency effect. This problem can be illustrated from the following remark made by Subject 1 in Week 1. He said (Appendix 28, lines 70-71), "In places I started to sound out the words mentally but remembering what I had said in the questionnaire I read without making any sounds." Asked in Week 2 whether the questionnaire influenced him, he replied: "No." I shall suggest improvements to the administration procedure of the questionnaire later (See Section 7.6).

7.5. Conclusions from the pilot study

There were no substantial differences in the types of the strategies reported among the three levels. The number of strategy types reported at the high and intermediate levels were similar although slight differences were observed between the low level on the one hand, and the high and/or intermediate levels on the other.

There was a significant difference in the frequency with which the strategies were reported among the subjects at the high, intermediate and low levels. However, between-subjects comparisons revealed that the high and intermediate levels were not significantly different from each other. However, there was a significant difference between the high and intermediate levels on the one hand the low level on the other. Furthermore, I must

emphasise that any differences must be interpreted with caution because there were fewer subjects at the low level than at the high and intermediate levels.

The two texts did not significantly affect the overall frequency of the strategies reported at the three levels. This was confirmed by the within-subject comparisons. However, differences of rank were observed for certain strategies reported for the two texts at the three levels. More bottom-up strategies were reported for the more difficult text (Text 2) than for the easier (Text 1). This was more the case at the intermediate and low levels than at the high level. Further, more local textual features were focussed on for Text 2 than for Text 1 at the intermediate and low levels than at the high level.

There was no evidence in the data to suggest that the strategies reported were imagined or created by the subjects. However, there were instances of response patterns that seemed to indicate that some subjects in the Retrospection Group might have engaged in a studied or routine reporting of the strategies (See Section 6.7.1.2.1).

As was shown, the subjects who supplied more correct responses to the gap-filling task reported more effective strategies than the subject who did not. Although it was possible to determine the effectiveness and/or ineffectiveness of the strategies on a response basis, it was difficult to assess the extent to which the strategies reported for each response in the gap-filling task contributed to the overall comprehension of the text. As was mentioned (See Section 6.7.1.1.1), none of the subjects who completed this task reported summarising the text, but nevertheless they succeeded in giving a summary of the text. The gap-filling task appeared to have limited the number of strategy types reported by the subjects in comparison to the Retrospection and Introspection tasks (See Table 7.6 for a comparison).

Table 7.6. Comparison of individual strategy use across groups and levels

Number of strategy types by level by group					
Gap-filling Group		**Retrospection Group**		**Introspection Group**	
Subjects according to level	Number of strategy types	Subjects according to level	Number of strategy types	Subjects according to level	Number of strategy types
1 (L)	14	1 (L)	27	1 (L)	19
2 (L)	2	2 (I)	23	2 (I)	35
3 (I)	10	3 (I)	23	3 (I)	23
4 (I)	12	4 (H)	24	4 (I)	23
5 (I)	16	5 (H)	27	5 (H)	27
6 (H)	10	6 (H)	35	6 (H)	28
7 (H)	11	**Total = 159**		**Total = 155**	
8 (H)	14				
Total = 89					

Note: (L) = Low level; (I) = Intermediate level; (H) = High level

As was shown in Section 6.5, the subjects at the high level reported more appropriate strategies than did the subjects at the intermediate and low levels. Overall, the subjects who reported more appropriate and effective strategies achieved higher reading performance than those who did not. Furthermore, the subjects who scored higher often showed an awareness of their reading problems, they monitored and regulated their strategy use and succeeded in employing alternative effective strategies. In contrast, those who got low scores failed to monitor their reading comprehension, and often lacked the ability to regulate their strategies in response to their reading problem and the purpose for which they were reading.

The design of this study confounded purposes with text type, that is the change in reading purpose from Purpose 1 to Purpose 2 was accompanied with the change of the reading texts. Consequently, it is difficult to distinguish the effect of purpose on strategy frequency from that of text.

The three-stage data collection procedure (metacognitive questionnaire, think-aloud protocol and round-up interview) made it possible to triangulate the data. The metacognitive

questionnaire provided useful insights into the pre-reading awareness of the subjects regarding their strategies and abilities. Similarly, the round-up interview gave valuable insights into the post-reading reflections of the subjects that would have been difficult to obtain from the reported strategies only. However, some data loss occurred because of the neutral category in the metacognitive questionnaire. The questionnaire was designed to elicit the subjects' own awareness of strategy use about which there was either agreement or disagreement because the items concerned reading activities that the readers either do or do not engage in. For example, using a dictionary is an activity that a reader does or does not do and a neutral response to this item is inappropriate.

7.6. Suggested Methodological Modifications for the Main Study

7.6.1. Gap-filling task

Despite its usefulness in showing the relationship between effective strategies and correct responses, this task made it difficult to assess the relationship between the strategies reported for each response and reading comprehension of the entire text. Furthermore, the task had a limiting effect on the type of strategies reported. Therefore, this task was not retained for the main study.

7.6.2. Reading texts

The design of this study confounded the change in reading texts with the change in reading purposes and this made it difficult to determine the effect of the texts on the frequency of the strategies reported. Furthermore, some subjects scored high on the summary test for Text 1 although they did not report summarising the text. It appeared that their familiarity with the

content might have played a compensatory role for weak comprehension and this made it difficult to assess the relationship between appropriate strategies and reading performance. Comments from one subject revealed that she summarised the text using her background knowledge although she did not understand the text. Looking at the summaries of some of the subjects I discovered that their summaries contained references that were not present in the actual text. For these reasons only Text 2 (the agriculture text) was kept for the main study. Furthermore, the use of Text 2 makes this study more relevant to one of the major training areas in the University College – agriculture.

7.6.3. Purpose for reading

The need for a clear and explicit reading purpose was shown in this study. Therefore, the subjects in the main study were informed of the nature of the purpose for which they were reading the text.

7.6.4. Comprehension measures

One major difficulty that the subjects experienced with the oral presentation of their summaries was some of them kept repeating points they had already summarised and they had to be asked to think of other points. However, as they commented, this procedure had made them uncomfortable; they would have preferred a written form as this would have given them the opportunity to examine what they had covered and to make alterations when necessary. In view of this, for the main study, the oral summary replaced a written one. This would have the advantage of not only allowing the subjects to assess and modify the contents of their summaries but also making the test look similar to the written examination format they were used to.

The Short Answer Reading Comprehension Test (Purpose 2) was used in the main study. However, in this pilot study I did not inform my subjects about the nature of the test and this made it difficult to examine the relationship between purpose and strategies. It also made it difficult for the subjects, as they did not know for what purpose they were reading Text 2. Therefore, for the main study, the subjects were informed that the test would contain short answer comprehension questions. As regards the summary, the subjects were asked to write it down because this would give them the chance to edit what they had written, and/or add ideas that they might remember. To avoid the risk of my assessing their writing skill, the subjects would not be penalised for making grammatical errors. In order to reduce any possibility of the subjects not taking the reading seriously and not thus reading carelessly, I did not tell the subjects not to worry about their grammatical accuracy in writing the summaries. In fact, I discovered that most of the written summaries of the subjects contained frequent grammatical errors. This suggests that the subjects, though not asked not to worry about their grammatical accuracy, did not put an effort to producing summaries with grammatical accuracy.

7.6.5. Strategy elicitation

As has been shown there were two problems with the retrospective method. The first concerned the accuracy of the reports; that is, some accounts appeared to be repetitions of preceding reports. The second pertained to the lack of completeness of the reports, which resulted from memory loss. As was mentioned in Section 6.7.1.2.1, some of the verbal reports by the subjects in the Retrospection Group contained strategies that were used only in the final segments of the paragraphs. Because of these two problems, the retrospection

method was dropped in the main study.

In contrast, the introspection method provided detailed and rich descriptions of the strategies. Furthermore, data was not lost due to memory problems because the introspection method allowed spontaneous reporting of the strategies while the text was being processed. Because the subjects reported their strategies as they read the text, their reports covered all segments of the text. Therefore, the introspection method was kept in the main study.

7.6.6. Training duration

Some subjects commented that they would have mastered the introspection procedures if they had been given more time. For the main study, therefore, I increased the training time from 45 minutes to 1.5 hour.

7.6.7. Language proficiency assessment

As discussed above, the subjects' language proficiency had to be assessed, but a standardised and valid language proficiency assessment measure was not available at the time of the pilot study data collection. However, for the main study, the TOEFL (the objectively marked) test was used.

7.6.8. Proficiency levels

The data has strongly shown the lack of a significant difference between the high and intermediate levels in the type and frequency of the strategies reported. Unfortunately, because of the high number of low-level subjects who dropped out of the study and hence the unequal number of subjects at the three levels, the significant differences observed between

the subjects and those at the high and intermediate levels were questionable. Therefore, in order obtain an unbiased insight into the low level subjects' strategy use and to compare them with those at the high level subjects, two levels – high and low – were kept in the main study. There was equal number of subjects (13) in each level.

7.6.9. Research questions

As there were no longer two texts and two purposes, Research Questions 2 and 3 were not investigated in the main study. Therefore, Research Questions 1A, 1B, 4A and 4B will be examined.

7.6.10. Metacognitive questionnaire

This instrument has provided useful data on the pre-reading awareness of the subjects and I was able to compare the data with the strategies reported and with the post-reading reflections. Since it provided valuable data, I decided to keep it for the main study. However, three improvements were incorporated: one was the removal of the "neutral" category from the questionnaire. The second was that I used invigilators during the administration of the questionnaire and emphasised that each subject should think very carefully about how they read and provide accurate information about themselves. The emphasis on this was because two subjects at the end of the pilot study remarked that they did not complete the questionnaire thoughtfully, or carefully and they commented on the absence of some sort of benefit for their participation in the study. Although these remarks did not represent the majority view, they nevertheless pointed to a factor that could contaminate the data. Finally, in view of this, in the main study I gave the participants a certificate of participation and a small get together party. I also believe that the opportunity to take the TOEFL test further

increased their motivation.

7.6.11. Round-up interviews

As has already been explained in the pilot study, the subjects were not asked why they did not read the text they way they would have liked to have read it. This would have provided useful insights into why they did not employ the strategies that they though might have helped them to read better. Therefore, in the main study this question was inserted into the interview.

The pre-pilot study has given useful insights into the methodology for the examination of strategies and shed light on the modifications necessary for the main study.

Chapter Eight presents the methodology and procedures used to investigate the reading strategies of the subjects in the main study.

CHAPTER EIGHT

METHODOLOGY - Main Study

8.1. Introduction

This chapter presents the methodology and procedures employed to examine Research Questions 1A, 1B, 2A and 2B in the main study.

8.2. Subjects

The subjects in this study were twenty-six first year students who enrolled at Mekelle University College in the 1997/98 academic year. Before selecting the twenty-six students, first, an explanation was given to first year students in the University College regarding the purpose of the research, the role the participants would play, their duties and how much time each participant would be spending. They were also informed about the tests to be used in the research, including the TOEFL Test. To encourage participation, a certificate for taking part in the study and an invitation to a get-together party were promised. I believed the participants would be motivated to take part in the study because of the incentives such as the certificate and the opportunity of taking the TOEFL free (See Section 8.3.3 for the justification of using the TOEFL).

After the explanations sixty participants who were willing to take part in and complete the tasks in the research were included in the first selection procedure of the study – The TOEFL Test. Fifty six participants took the test. Three participants did not turn up and one participant was dismissed for continuing to complete answers after the completion time had been called. The TOEFL test was used in order to classify the subjects into high and low

levels of language proficiency. Before the classification it was necessary to verify the normality of distribution of the TOEFL scores of these subjects because this would inform the selection of an appropriate statistical procedure for the classification. It was discovered that the scores were not normally distributed and were positively skewed (See Appendix 36 for distribution figure). This precluded the application of the normal distribution curve for categorisation. Consequently, another method of classification - the quartiles method - which does not assume normality of scores distribution but which will nevertheless give the possibility of categorising the scores into high and low was used.

The method yielded the following results: fourteen participants with a TOEFL score of 417 and below at the low level (25th percentile), twenty eight participants with scores between 423 and 463 at the intermediate level (50th percentile) and fourteen participants with a TOEFL score of 467 and above at the high level (75th percentile). One participant from the low level could not participate; therefore to get equal numbers between the high and low levels, one participant with the lowest TOEFL score (467) was eliminated from the high level. The intermediate group served only as a demarcation group between two clearly separated high and low levels and was rejected. Then a t-test was performed on the scores of the high and low level subjects to determine whether the two levels were significantly different. The results showed that the two levels were significantly different ($p < .001$; See Appendix 36, Table 1). A Pearson's correlation analysis also showed that the subjects' overall TOEFL scores and their reading comprehension scores were significantly correlated ($r = .85$; See Appendix 36, Table 2). This means the subjects who had a high overall language proficiency also had a high reading proficiency level. Finally, the twenty-six subjects were selected for the study – thirteen subjects each at the high and low levels.

8.3. Materials

8.3.1. Text

The same passage, which was used in the pilot study, was used in this study (See Appendix 17 for the text). The text was taken from a textbook on agriculture which first year students read for a course on Agriculture during the second semester of their first year study. The text was selected according to the recommendation of a subject specialist teaching the course. The text was amongst texts which the subject specialist considered to be central to the course and which he typically recommended that students taking the course should read. The text was 392 words long. It should be noted here that subjects had not yet started taking the course from which the text for the study was obtained.

8.3.2. Metacognitive questionnaire

Carrell's (1989) metacognitive questionnaire was used in order to elicit the views of the participants about their reading strategies before they read the text in the research (See Appendix 37 for the questionnaire.)

8.3.3. The TOEFL Test

Concerns over the validity of the results of the ESLCE results have often been expressed. Although I have not found studies reporting this, the fact that fifty-four of the sixty subjects who volunteered in the present study had an A, six a B and none a C grade in English in the ESLCE, and the fact that these subjects' scores on the TOEFL were very low, is a clear indication that high scores in the ESLCE are of questionable validity. For this reason, the TOEFL test was used to classify the subjects into high and low levels of English language proficiency. The TOEFL test is a "...highly secure, internationally administered" test for

assessing the language proficiency of foreign language speakers. It has substantial reliability estimates of between .87 and .90 for the three sections (reading comprehension and vocabulary, structure and written expression and listening comprehension) and a reliability index of .90 for the total examination (Stevenson, 1987). Other reviews (Madsen, 1990) also show high reliability indices for the three sections between .86 and .90 and a .95 for the total examination.

8.3.4. Reading comprehension tests

Two tests - a Written Summary and a Short Answer Reading Comprehension Test - were used to assess the reading comprehension of the participants.

8.3.4.1. Written Summary Test

As mentioned in Section 7.6.4, an oral mode of summarising had caused some difficulty to the subjects in the pilot study. So a written summary was asked for. Since this test did not contain any individual questions, it could not be subjected to item analysis. In order, therefore, to obtain a reliable assessment of the subjects' reading performance, I developed a marking scheme and checked its reliability as follows. First, I read the text and wrote a summary of it. Afterwards I asked four native speakers and an Ethiopian English language teacher at the University College to do the same. For the purpose of comparison, I first identified thirteen statements which dealt with a single main idea from the text. Second, I compared the five judges' and my summaries and discovered that there were eleven statements which all of us had included in our summaries. However, there was one statement which appeared in three of the judges' summaries and in mine but which did not appear in the other two judges. This was added to the list of eleven statements already identified by all of us. Finally, there was a statement in the text which none of us had included in our

summaries. I included this statement to our list of summary statements because I felt that the participants would lose their points if this idea was left out of the marking criteria and thus would be disadvantaged. The final version of the marking criteria consisted of thirteen statements. (See Appendix 38 for the final version of the criterion)

8.3.4.2. Short Answer Reading Comprehension Test

Since I had not trialled and piloted the Short-Answer Reading Comprehension Test during the pilot stage (See Sections 5.3.4 for the explanation) I asked a judge who had a PhD in testing at the Department of Foreign Languages to write short answer reading comprehension questions based on the text. The judge wrote an additional four questions that were not present in the test I had used for the pilot study. I added the four questions to the previous test and gave the final version of the test to ten students who had already just completed their first year of study. It should be noted that the ten students had read the text when they took the course on Agriculture. The reason for using these subjects was because first year students had not been assigned to the University College during the trial of the test. The subjects were asked to answer the questions in the test without reading the text in order to check whether there were any questions that could be answered from background knowledge. Of the ten questions in the test, one question (Question 2) was answered correctly by four students while a second (Question 5) was answered correctly by three students (See Appendix 39 for the test questions). The remaining eight were not attempted by anyone. Considering the fact that of the subjects who had read the text at some time during their study a few attempted only two questions, and considering that the first year students who had not read the text were unlikely to answer the questions correctly without the text, I decided to keep Questions 2 and 5 in the final version of the test.

8.4. Procedure

8.4.1. Administration of the metacognitive questionnaire

Following the classification of the subjects into high and low language levels, the next step was the administration of the metacognitive questionnaire. Before handing out the questionnaire it was necessary to create an atmosphere in which the participants would take the questionnaire seriously and complete it carefully and thoughtfully. This was necessary because of comments from a few subjects during the pilot study which suggested signs of a lack of care in filling the questionnaire. To counter this problem, the participants were only allowed into the room after showing their identification cards to two other invigilators and me. This procedure very much resembled the highly strict nature of invigilation that had been undertaken two days previously for the TOEFL test. Judging by the fact that subjects brought with them, even though they had not been asked to, their TOEFL exam-hall entrance forms, I believe they must have considered the questionnaire to be as strict and serious an undertaking as was the TOEFL.

The subjects were then given an explanation regarding the purpose of the questionnaire. Afterwards, the subjects were asked to think back carefully for five to ten minutes about how they read. They were informed that thinking about their own reading was essential before filling in the questionnaire as the questionnaire would later ask them to talk about their own reading and that if they had seriously and carefully thought about how they read, that would help them to provide accurate information about their own reading. I also strongly emphasised the fact that the focus of the research was on their own reading. Judging from the way they became quietly immersed in their thoughts with some even closing their eyes the participants did seriously think about their reading

After the subjects had thought about their own reading, I instructed them to read each statement in the questionnaire carefully and to make sure that they answered all the questions. The questionnaire was then distributed and the subjects were asked to complete it.

A three-week time buffer was introduced between the completion of the metacognitive questionnaire and the start of elicitation of strategies which formed the think-aloud protocols. The purpose of this gap was to reduce any possible carry-over effect from the questionnaire to the think-aloud protocols.

Before the start of the elicitation of the subjects' strategies, care was taken to ensure that subjects did not have access to the books from which the reading text was taken. Therefore, the books were removed from the library until the end of the study. This procedure presented no problem to the teaching-learning process since it was done in consultation with the subject instructor and the librarian who confirmed that the books would not be used till the coming semester.

8.4.2. Training

Training of subjects in think-aloud protocols has been recommended as a useful way of increasing the reliability and validity of data from the procedure (Afflerbach and Johnston, 1984). Before the elicitation of strategies from the think-aloud protocols, each subject was given an explanation about the purpose of the research. Assurance was given that the outcome of the tests would not have a negative effect on the regular academic performance of participants. In the training session a different text was used from that to be used in the actual experiment. The practice text had a similar layout, that is it had no illustrations or

diagrams. Subjects were given the complete book containing the practice text because it was difficult to anticipate how many pages the subjects would need, nor how long they would need to master the think-aloud protocol.

During the training session participants were asked to say out loud what they were thinking and doing as they read. They were also asked to focus more on their reading than on the act of thinking out loud; they should not worry about the fact that they would be speaking while reading, that they should not worry about what to say. Two subjects expressed their worry that the thinking-aloud would interfere with their reading. I explained to these and the other subjects that thinking is part of their usual reading process and that what the subject were asked to do in the study would be to say out loud whatever thoughts occurred. In response to a question by two subjects, I also explained to them that whether reading silently or thinking aloud their reading of the text in terms of eye movement across the text stops the moment they start thinking and that their reading would not be disrupted. After these explanations all the subjects expressed their satisfaction.

During the training the participants were asked to give clear descriptions of any vague references they might use. For example, instead of saying, 'I don't understand this' they were instructed to specify what 'this' referred to, that is a word, a phrase, etc. The subjects were also asked to specify where they were in the text so that the connections they made across the different textual parts could be analysed and compared to similar strategies in the questionnaire (e.g. 'go before problematic part and read from there' or 'read ahead for clarification'; See the questionnaire for examples in Appendix 37). I was able to determine whether they were focussing on a particular textual part or whether they had read before or after it. For example, instead of saying 'I'm reading here' they were instructed to name the

specific textual part they are reading and to say whether they had read the text before or after it.

Only two students out of the total twenty-six participants initially experienced difficulty in understanding what was meant by think-loud, and after coaching all were able to do the think-aloud. Subjects were asked to think loud in Amharic as I felt that thinking loud in the L2 (English) might interfere with their reporting. Only one student, the one who had the highest TOEFL score (610) and who came from the one of the best private schools in the capital, insisted on thinking aloud in the L2, and he was allowed to do so. As his scores on the two tests showed later, the subject had the highest score on the two tests.

Probes were used during the training when a subject seemed to be silently reading and not thinking aloud. Non-cueing probes, for example, 'what are you doing now as you read?' were used as suggested in the literature (See Afflerbach and Johnston, 1984). The subjects were also informed that similar probes would be used during the actual experiment to help them maintain their reporting of their reading strategies. The subjects were allowed to proceed with the think-aloud only after: (a) they had indicated familiarity with and confidence in the think-aloud procedure, (b) I had established the clarity and completeness of their verbal reports during the training session.

8.4.3. Administration of the Summary Test

Following the training, each participant was informed that after reading they would be given two tests: first the Written Summary and then the Short Answer Reading Comprehension Test. The purpose of sequencing the Written Summary before the Short Answer Reading Comprehension Test was to reduce any possible influence which the format (wh-questions)

and the number of the short answer questions might impose on the content and scope of the summaries of students. Furthermore, I felt that asking the subjects first to summarise would provide me with the opportunity of capturing the summaries of whatever they had understood in their own way. The subjects were informed that there would be no word limits to the two tests and that their summaries would not be marked for grammatical accuracy as the focus was on measuring their comprehension rather than their writing skills. The subjects were also informed that there was no time limit on the reading. This reflected the actual reading situation in which the participants would find themselves during their studies. Once the subjects had completed reading the text and after I had obtained each subject's confirmation that he or she had understood the text, the reading text was removed and the subjects were given a blank A-4 paper and were asked to write a summary of the text. The text was removed for two reasons: (1) to reduce the risk of some subjects lifting a section of the text as an answer to the Summary and Short Answer Reading Comprehension Tests; (2) to limit the risk of less active text processing which the presence of a text during a summarisation can encourage (See Section 2.9). The removal of the text also would give the subjects an authentic or realistic setting for their test: sitting for examinations without books, handouts or notes. The Summary Test took about twenty five minutes.

8.4.4. Administration of the Short Answer Reading Comprehension Test

Upon completing the Summary Test, the subjects were immediately given the Short Answer Reading Comprehension Test. Here too the reading text was not available to the subjects. The test took about twenty minutes. The subjects were allowed to do what they would normally do during their studies although no specific examples of what they could or should do were given so as not to bias the subjects' reports. Since a dictionary had already been

used during the practice session, and since the participants were not specifically told to use it, its availability during the actual think-aloud was not considered to contaminate the data.

8.4.5. Round-up interview

After the completion of the reading, the think-aloud and the tests, the subjects were interviewed for their views on the following points:

- why they read the text they way they did
- how else they might have liked to have read the text
- why they did not read the text the way they say they would have liked to
- whether they believed their way of reading had helped them or not
- how interested they were before and during reading
- what they consider to be the most effective strategy/ies they had used during their reading
- their reading performance on the two tests
- whether the questionnaire and the think-aloud protocol interfered with their reading

(See Appendix 40 for interview questions)

Each session with a subject including the training, the think aloud, the tests and the round up interview lasted for an average of four hours. Finally, the think-aloud protocol and the round-up interviews were audio recorded and transcribed. The transcription included the entire contents of the audio recording; no content selection was made during the transcription process.

8.4.6. Translation of the think-aloud protocols

Following the transcription, I translated at random six subjects' think-aloud protocols from Amharic into English. Afterwards, I checked the reliability of my translation based on the procedure for back-translation used by Pritchard (1990) as follows: first, the translated verbal protocols were given to three judges. One of the judges was an instructor who had an MA degree and teaches a course on translation in the Department of Ethiopian Languages at the Institute of Language Studies in Addis Ababa University. The other judges were two final year students in that department who were majoring in translation and who were recommended by the judge (their instructor) as the two outstanding students in their section. All the three judges were native speakers of Amharic - the language to which the English transcriptions were to be back translated. The judges were given explanations regarding the nature of the transcription, that is that the text does not for the most part follow the usual sentence structure as it is an unedited version of thought and that they should not leave out any repeated textual segments from the transcription. The judges were asked not to translate words which the subjects had cited from the reading text.

After I had obtained the judges' back-translations I asked a fourth judge to compare the judges' back-translations with the original Amharic transcriptions. There were five words from the judges which did not match the original transcription. Two of these words were due to my errors in translating whereas the rest were judges' errors. The two words were replaced by those of the judges' as they presented meaning change while the three words were rejected because they did not alter the meaning. As the amount of error was considered to be very minimal subsequent translation of the remaining transcriptions resumed. After the completion of the translation, I coded individual strategies as follows.

8.4.7. Coding strategies and reliability check

Before completing coding strategies from the translated protocols, I checked the reliability of my coding by coding individual strategies from four subjects' protocols at random. Two judges, both post-graduate instructors at the Department of Foreign Languages at Addis Ababa University, were given the four protocols and were asked to code the strategies from them. I must note that the four samples represented only a small proportion (16%) of the total (N=26) participants. However, I believed they were sufficient for the purpose of checking reliability for the following two reasons: (a) the sample transcriptions contained 243 individual strategies for comparison and this figure was considered large enough to be the basis for the reliability check; (b) the judges at the time were heavily loaded with end of semester work and therefore it would not have been possible to give them a large number of sample transcriptions.

The result of the reliability check showed that out of the 243 individual strategies, there was an exact match of 159 strategies between the judges and me. Thirty-six (36) individual strategies only differed in wording. For example, I identified the judge's 'repetition' and 'noticing' as 're-reading' and 'awareness'. Thirty-eight strategies which were only coded by me were kept after discussion with the judges. The judges were unable to code these strategies because they were not experts in the area of reading strategies. If the wording differences were counted as exact matches, the level of agreement between the judges and me was 82%. This level of agreement was considered moderately high considering the fact that the judges were not specialists in reading strategies. However, in order to obtain a second source of confidence in the reliability of the judges' agreement, I carried out an additional intra-rater reliability check. To achieve this, I re-coded at random four subjects'

complete transcriptions three weeks after I had coded strategies from these same transcriptions.

The purpose of introducing a three weeks buffer was to reduce any possible recency effect which my preceding coding might have on the process of my re-coding. An independent judge, one who had earlier been involved in the coding reliability check, was asked to compare the re-coded strategies with those I had coded at the initial coding. Two hundred and forty (240) individual strategies were re-coded in comparison to the two hundred and thirty two (232) strategies initially identified. The judge discovered an exact match for two hundred and twelve (212) strategies and a wording difference for only twelve (12) strategies. There were eight overlooked strategies on both occasions and these were included. In addition, the two new strategies which were identified during the re-coding were included in the initial list of strategies. Since the result of the reliability check was considered very high, subsequent coding of the remaining transcriptions was resumed. A total of fifty-four individual strategies were identified from the protocols of the high and low level subjects. Because there were more strategy types in the pilot study (63) than in the main study (54), the numbering of a strategy (e.g. Summarising "Strategy 43") in the main study will not be identical to that of the pilot study (e.g. Summarising "Strategy 51"). (See Appendix 41 for the list of the strategies of the main study).

8.4.8. Marking of the reading comprehension tests

Following the completion of the coding of the strategies, I marked all the summaries of the subjects using the marking criteria I had developed (See Section 8.3.4.1 above). To check the reliability of my marking, I gave the summary papers of twenty-one random subjects to seven judges to mark using the marking criteria. Each judge marked three papers. A t-test

was used to determine whether the scores given by the judges were significantly different from those given by me. The result of the test (Table 8.1) showed that there was no significant difference (p = .815).

Table 8.1. T-test for independent samples of markers

Number of Markers		Mean Cases	SD	SE of Mean
Researcher	1	21	4.3571	2.242 .489
Judges	2	21	4.0952	2.343 .511

Mean Difference = .2619

Levene's Test for Equality of Variances: F= .056 P= .815
t-test for Equality of Means 95%

However, there were a few minor variations: there was a difference of one mark (on three papers) between the papers marked by two judges and me, and another instance of two marks difference (in one paper) between another judge and me. The other judges gave identical marks to mine. The differences were resolved through a moderation procedure resulting in the addition of points to the scores of the subjects by taking the average score given by a judge and me. I also asked a native speaker who is a postgraduate student at the Department of Linguistics in Lancaster University to mark the summaries; agreement between the judge and me was .94. The judge also had an intra-rater reliability index of .96.

Finally, after the completion of the coding of the strategies and the marking of all the test papers, the data were analysed.

Chapter Nine gives the first part of the results of the main study which deals with Research Questions 1 and 2. It also provides some interpretation of the analysis of the results.

CHAPTER NINE

RESULTS 1

9.1. Introduction

This chapter gives the first part of the results of the main study. First, it investigates Research Questions 1A, 1B, 2A and 2B using a qualitative and quantitative analysis of strategy types and frequency of use of the high and low level subjects. Second, it presents a case study in which the think-aloud protocols of a sample of successful (subjects with highest reading comprehension scores on the two tests) and less successful (subjects with lowest reading comprehension scores on the two tests) from the two language proficiency levels are analysed in detail.

9.2. Research Question 1A: *Are there differences in the strategy types reported by the subjects at the high and low levels of language proficiency?*

Research Question 1A will be investigated by comparing the strategy types reported only by the high level subjects will be compared to those reported by only the low level subjects in order to determine whether strategy types substantially differed according to the two levels of language proficiency.

9.2.1. Strategy types, and level of language proficiency

Of the total fifty-four strategy types identified in this study, forty-six of them were found in

the strategies reported by the high level subjects while thirty-eight of them were found in the strategies reported by the low level subjects (See Appendix 42 for rank of all the strategies). Of the fifty-four strategies there were thirty-three strategies which were reported by both levels. However, there were twenty-one strategies types which were not reported by both levels and of these fifteen were reported only by the high level subjects and six were reported only by the low-level subjects. Table 9.1 shows these twenty strategies.

Table 9.1. Strategies reported only in one level

No	High level	F	Low level	F
1	Taking Main Ideas from the Text	8	Reading on Despite a Problem	20
2	Planning Ahead for Strategy Use	7	Focussing on List of Factors in Text	1
3	Rejecting Earlier Checking for any Overlooked Idea in Text	6	Spelling Difficult Words	1
4	Comprehension or Guessed Meaning	6	Pronouncing Difficult Words Internally	1
5	Marking Important Text Parts for Later Reading	4	Using Word Order to Understand New Words	1
6	Calming Oneself or Read Calmly	4	Reading Word for Word	1
7	Using Text Organisation	3		
8	Comparing Own Reading at Different Stages	2		
9	Using Title or Sub-title as a Cue	2		
10	Taking Notes	2		
11	Guessing Shift in Idea Development in Text	1		
12	Evaluating Merit or Value of a Strategy	1		
13	Reading for Details	1		
14	Focussing on each Sentence	1		
15	Weighing between Strategies			

F = Frequency of strategies

Table 9.1 shows two important differences between the high and low level subjects' strategies. First, 7 out of the 14 strategies at the high level consist of metacognitive strategies, that is strategies which are used to regulate, oversee or monitor other strategies. For example, "Planning Ahead for Strategy Use", "Rejecting Earlier Comprehension or Guessed Meaning", "Checking for Any Overlooked Idea", and "Evaluating Merit or Value of a Strategy". In contrast, these strategies are absent from the low level. The strategies

reported at the low level mostly consist of bottom-up strategies. For example, "Focussing on list of items or factors, "Pronouncing words", "Reading Word for Word" and "Spelling Difficult Words". It is also important to emphasise that four of the five strategies at the low level indicate problem with language. Second, relatively more varied and diverse strategies were reported by the high level than the low-level subjects. Although the number of the strategy types between the two levels (14 at high and 6 at low) is not substantial, the nature of the strategies signifies a difference at a higher level of strategy use – metacognitive level. It appears that the high level subjects may have been monitoring and regulating their strategy use more frequently than did the low-level subjects.

Research Question 1B next examines whether the lack of difference in the strategy types was also reflected in the frequency of use of the strategies by the subjects at both levels.

9.3. Research Question 1B: *Are there differences in the frequency of use of the strategy types reported by the subjects at the high and low levels of language proficiency?*

A t-test analysis showed that there was no significant difference (P = .436) in the mean frequency of the strategies reported by the subjects at the high and low levels (Table 9.2).

Table 9.2. T-tests for independent samples of levels

Levels	No. of strategy types by level	Mean	SD	SE of Mean
High Level	46	24.4348	43.758	6.452
Low Level	38	29.5526	62.568	10.150

Mean Difference = -5.1178
Levene's Test for Equality of Variances: F= .613 P= .436

The comparisons of the strategy types and frequency of use above showed that the two levels were not significantly different from each other. However, despite the lack of difference, a look at the scores achieved by the high level subjects on the Summary and Short Answer Reading Comprehension Tests shows that the high level subjects had a higher reading score than the low level subjects (See Appendix 43, Tables 3 and 4 for the scores). In order to examine whether there was a general pattern of relationship between the scores on the two tests, and the strategy types and strategy frequency, a rank order correlation test was used (Table 9.3).

Table 9.3. Correlation coefficients for test scores, strategy type and frequency for high and low levels

	X1	X2	X3	X4
X1	1.0000	.5783	-.0761	.0421
	(26)	(26)	(26)	(26)
	P= .	P= .002	P= .712	P= .838
X2	.5783	1.0000	.2128	.2797
	(26)	(26)	(26)	(26)
	P= .002	P= .	P= .297	P= .166
X3	-.0761	.2128	1.0000	.8151
	(26)	(26)	(26)	(26)
	P= .712	P= .297	P= .	P= .000
X4	.0421	.2797	.8151	1.0000
	(26)	(26)	(26)	(26)
	P= .838	P= .166	P= .000	P= .

X1 = Summary score; X2 = Short Answer Reading Comprehension score
X3 = Strategy frequency; X4 = Strategy types

As Table 9.3 shows, there was no significant correlation between the scores achieved on the two tests and the strategy types and their frequency of use at both levels. However, a positive correlation (r = .5783) was found between the scores on the Summary and the Short Answer Reading Comprehension Tests. That is, the subjects who had high scores on the Summary Test also showed high scores on the Short Answer Reading Comprehension Test.

Furthermore, Table 9.3 shows that the subjects who reported using strategies with greater frequency also reported more varied strategy types (r = .8151). This suggests a one-to-one correspondence between strategy types and the frequency of their use.

In order to determine whether the general pattern of interaction between strategies and test scores also held true for each level, separate correlation analyses were carried out. Table 9.4 shows the result for the high level.

Table 9.4. Correlation coefficients for test scores, strategy types and frequency at high level

	X1	X2	X3	X4
X1	1.0000	.5814	-.1733	-.2128
	(13)	(13)	(13)	(13)
	P= .	P= .037	P= .571	P= .485
X2	.5814	1.0000	.2476	.1017
	(13)	(13)	(13)	(13)
	P= .037	P= .	P= .415	P= .741
X3	-.1733	.2476	1.0000	.8795
	(13)	(13)	(13)	(13)
	P= .571	P= .415	P= .	P= .000
X4	-.2128	.1017	.8795	1.0000
	(13)	(13)	(13)	(13)
	P= .485	P= .741	P= .000	P= .

X1 = Summary score; X2 = Short Answer Reading Comprehension score
X3 = Strategy frequency X4 = Strategy type

The results in Table 9.4 were similar to those of the two levels combined (See Table 9.3). There was a correlation (r = .5814) of the scores on the two tests and a high correlation (r = .8795) of strategy types and frequency for the high level subjects. These results show that there is an apparent consistency in the reading achievement of the high level subjects across the two tests. They also show that the subjects who reported more varied strategy types also used them with greater frequency.

For the low level subjects too, there was a high correlation (r = .8301) between the types of the strategies reported and their frequency of use (Table 9.5) but there was no correlation between the scores on the two tests.

Table 9.5. Correlation coefficients for test scores, strategy types and frequency at low level

	X1	X2	X3	X4
X1	1.0000	.0740	.3861	.4402
	(13)	(13)	(13)	(13)
	P= .	P= .810	P= .193	P= .132
X2	.0740	1.0000	.4227	.3514
	(13)	(13)	(13)	(13)
	P= .810	P= .	P= .150	P= .239
X3	.3861	.4227	1.0000	.8301
	(13)	(13)	(13)	(13)
	P= .193	P= .150	P= .	P= .000
X4	.4402	.3514	.8301	1.0000
	(13)	(13)	(13)	(13)
	P= .132	P= .239	P= .000	P= .

X1 = Summary Test score; X2 = Short Answer Reading Comprehension Test score
X3 = Strategy frequency X4 = Strategy type

9.4. Summary

The results so far have shown a lack of a significant difference between the subjects at the high and low language levels regarding the types and frequency of the strategies they reported. Furthermore, greater frequency of strategies and more varied strategy types were correlated at both levels. However, despite the lack of difference between the two levels, the two groups had significantly different ($p < .01$) comprehension scores on the two tests (See Appendix 43, Tables 1 and 2). Further, the high level subjects had higher reading comprehension scores on the two tests than did the low level subjects (See Appendix 43, Tables 3 and 4). An important question that should be examined here, therefore, is what caused the differences in the reading scores?

In order to examine the relationship between strategy use and reading performance, the appropriate and effective strategies reported by the high and low level subjects will be investigated next in Research Questions 2A and 2B.

9.5. Research Question 2A: *How appropriate are the strategies reported by the subjects at the high and low levels of language proficiency for their purpose?*

Appropriate strategies will be investigated using two methods. The first will be a comparison of the ranks of the most frequently reported strategies by the high and low level subjects to determine which of the two levels chose, that is prioritised, an appropriate strategy more frequently than other strategies. Since it was difficult to decide how many strategies to include for the comparison of strategy ranks, twenty-seven strategies (50% of the fifty-four strategies reported in this study) were selected. Table 9.6 below shows the ranks of the twenty-seven strategies.

As a comprehensive comparison of all the twenty-seven strategies is difficult, for the sake of convenience the discussion will focus on only the first ten strategies (marked with asterisks in Table 9.6) from both levels. The second method will compare the ranks of the most frequently reported strategies at each level to establish whether an appropriate strategy was chosen or prioritised more frequently than other strategies. Finally, effective strategies will be discussed by examining the think-aloud protocols of a sample of high and low-scoring subjects from high and low levels.

Table 9.6. Ranks of most frequently reported strategies by subjects at high and low levels

High level	F	Low level	F
*Going Back Before Problematic Parts and Read from there (15)	213	*Going Back Before Problematic Parts and Read from there (15)	358
*Showing Awareness of Lack of Comprehension (39)	207	*Showing Awareness of Lack of Comprehension (39)	154
*Guessing Unknown Words' or Phrases' Meaning Using Context (17)	74	*Translating into L1 (46)	75
*Summarising Text (43)	72	*Guessing Unknown Words' or Phrases' Meaning Using Context (17)	75
*Using the Dictionary (51)	52	*Re-reading Problematic Parts Only (36)	67
*Confirming Understanding (10)	44	*Reading Ahead for Clarification (25)	43
*Using Background Knowledge (47)	41	*Memorising (20)	39
*Repeat Text Idea to Oneself Using Own Words in L1 (35)	40	*Repeat Text Idea to Oneself Using Own Words in L1 (35)	35
*Checking Comprehension (5)	37	*Using the Dictionary (51)	31
*Memorising (20)	35	*Asking Oneself Meaning of Word or Phrase (3)	29
Translating into L1 (46)	35	Using Background Knowledge (47)	25
Reading Ahead for Clarification (25)	32	Questioning Author's Meaning (24)	21
Skimming Text (40)	28	Despite Problem (27)	20
Questioning Author's Meaning (24)	26	Using Grammar Knowledge (48)	18
Relating Preceding and Subsequent Text (34)	22	Relating Preceding and Subsequent Text (34)	15
Reading Slowly (28)	21	Skimming Text (40)	14
Concentrating (9)	15	Checking Comprehension (5)	14
Activating Schemata (1)	12	Reading Slowly (28)	11
Using Text Organisation (50)	12	Skipping Difficult Textual Parts (41)	11
Revising the Text (38)	11	Summarising Text (43)	8
Checking One's Own Confidence for Taking the Test (7)	10	Confirming Understanding (10)	6
Using Grammar Knowledge (48)	10	Reading Through a Text Part without Synthesising (29)	6
Re-reading Problematic Parts Only (36)	9	Revising the Text (38)	6
Taking Main Ideas from the Text (44)	8	Reading Word for Word (30)	4
Planning Ahead for Strategy Use (22)	7	Anticipating Content (2)	3
Inferring Information from Text (18)	6	Concentrating (9)	3
Anticipating Content (2)	6	Using Sounds of Other Words to Aid Memorisation (49)	3

F = Frequency of strategies

9.5.1. Ranks of appropriate and other strategies between high and low levels

The ranks of the ten most frequently reported strategies show that "Summarising" (Strategy 43) was reported as the fourth most frequently used strategy only at the high level (Table 9.6). As was mentioned earlier Strategy 43 is an appropriate strategy for the purpose for which the subjects read the text. In contrast, "Summarising" is conspicuously absent from the ranks of the ten strategies at the low level and as Table 9.6 shows, this strategy is reported in twentieth place at the low level. It is important to note that "Memorising" (Strategy 20), which is not an appropriate strategy, was reported more frequently than "Summarising" by the low-level subjects than by the high level subjects. It might appear on the surface that memorising by the low level subjects was due to the subjects' language deficiency and their inability to synthesise the text's idea in their own words.

However, on closer inspection it seems that the subjects were prioritising an inappropriate strategy. This point can be supported by making the following observations from the ranks of the strategies in Table 9.6. First, the low-level subjects reported "Guessing Unknown Words' or Phrases' Meaning Using the Context" (Strategy 17) more frequently than "Using a Dictionary" (Strategy 51). This suggests that they were able to cope with the text and did not need the dictionary. Second, the subjects also reported "Translating into L1" (Strategy 46) more often than "Using a Dictionary". Based on these observations it looks as if the reason the low-level subjects memorised may not have been due to because of language deficiency.

Returning to the high level subjects, they reported "Skimming" (Strategy 40) more often than did the low-level subjects. Since skimming involves looking for the gist of the text, and since summarising also requires the identification of main ideas of the text, it can be argued

that the high level subjects more frequently used a strategy (skimming) which is complementary to an appropriate strategy (summarising) than did the low level subjects.

Table 9.6 shows that "Confirming Understanding" (Strategy 10) was reported more frequently by the high level subjects than by the low-level subjects. This suggests that the high level subjects were aware of the need to confirm their understanding of the text more often than did the low level subjects. Furthermore, the high level subjects reported "Checking Comprehension" (Strategies 5) more frequently than did the low level subjects. It is important to emphasise that Strategies 10 and 5 are metacognitive strategies, that is strategies which are used to regulate other strategies. The absence of these strategies from the most frequently reported strategies at the low level and their more frequently reported use at the high level suggests that the high level subjects' were more aware of the necessity of regulating other strategies than were the low-level subjects. It is important to emphasise that the strategies reported only by the high level subjects consisted of more metacognitive strategies than those reported by the low level subjects (See Section 9.2.1 above).

As Table 9.6 shows, beyond the ten strategies, there were also interesting differences between the high and low level subjects in the frequency of the strategies they reported. For example, "Revising the Text" (Strategy 38) was reported more often by the high level subjects than by the low-level subjects. This suggests that the high level subjects may have been able to identify more of the ideas contained in the text. In addition, the high level subjects reported "Checking One's Own Confidence in Taking the Test" more frequently than did the low level subjects (Strategy 7). This suggests that the subjects intended to

monitor their achievement on the test in the light of the purpose for which they were reading.

Surprisingly, "Using the Dictionary" (Strategy 51) was reported more frequently by the high level subjects than by the low-level subjects. One would expect the high level subjects, because of their high language level, to cope with the language demands of text better than the low-level subjects and therefore to use the dictionary less often. An inspection of the ranks of the strategies in Table 9.6 shows that the high level subjects reported "Guessing Unknown Words' or Phrases' Meaning Using Context" (Strategy 17) more frequently than "Using the Dictionary". The question is why would the high level subjects use the dictionary when they have frequently used context to cope with difficult text parts? As will be explained later in the Case Study in Section 9.6.1, the high level subjects were extra cautious in settling for the meanings they had derived from context and they cross-checked the meanings using the dictionary. Another difference between the high and low level subjects was that the high level subjects more frequently reported "Using Background Knowledge" (Strategy 47) than did the low level subjects (Table 9.6). It appears that the subjects at the high level because of their high language level were able to make use of their background knowledge (See Section 2.5 for details).

Besides the above-mentioned differences, there were a few similarities between the high and low level subjects in some of the strategies they reported. For example, the subjects at both levels reported the following two strategies: "Going Back before Problematic Parts and Reading from there" (Strategy 15) and "Showing Awareness" (Strategy 39) in identical places in the ranks (Table 9.6).

The comparisons above have shown that the high level subjects appeared to be using an

appropriate strategy more frequently than did the low-level subjects. Furthermore, the high level subjects seemed to have controlled or regulated their strategy use more frequently than did the low-level subjects. It is important to emphasise that the high level subjects had high reading comprehension scores compared to the low level subjects. Although the comparisons of the ranks of the strategies above are useful in showing strategy prioritisation between the two levels, they do not show whether each level chose an appropriate strategy more frequently than other strategies. In order to examine this, the next section compares the ranks of appropriate and other strategies within a level.

9.5.1.1. Strategy ranks at high level

As was shown in Table 9.6, "Summarising" (Strategy 43), identified earlier as an appropriate strategy, appears in fourth place in the ranks of the strategies reported by high level subjects. In contrast, "Memorising" (Strategy 20), which is not commensurate with the purpose for which the subjects read the text, ranks tenth. Further, "Confirming Understanding" (Strategy 10) and "Checking Comprehension" (Strategy 5) were reported more frequently than "Memorising". These differences are important in that they not only show the prioritisation of an appropriate strategy but also signify an underlying awareness of appropriate strategy use by the high level subjects.

9.5.1.2. Strategy ranks at low level

The low-level subjects reported "Summarising" (Strategy 43), which should have constituted the main purpose for reading, in twentieth place and this was only reported eight times. In sharp contrast, as mentioned above, the low-level subjects reported "Memorising" (Strategy 20) more frequently than "Summarising". Furthermore, the subjects reported "Checking

Comprehension" (Strategy 5) and "Confirming Understanding" (Strategy 10) in seventeenth and twenty-first places respectively. From these comparisons it is clear to see that an appropriate strategy and other strategies which could have consolidated the low level subjects' comprehension were not prioritised in comparison to an inappropriate strategy - memorising. It is possible that the unbalanced prioritisation of the strategies may have been responsible for the low reading comprehension scores achieved by the low-level subjects.

9.5.2. Summary

The investigation of Research Questions 1A and 1B has shown a lack of significant difference between the high and low level subjects in the types and frequency of the strategies they reported. The results have also shown that there was no correlation between the strategy types, their frequency of use and the scores on the two tests for both levels. In addition, the answer to Research Question 2A has demonstrated that the high level subjects reported using an appropriate strategy more frequently than did the low-level subjects. In contrast, subjects at low level did not show appropriate utilisation of strategies for the purpose for which they read. It was also noted that the high level subjects achieved a higher reading score than did the low-level subjects.

It must be emphasised that both the high and low level subjects reported "Showing Awareness" (Strategy 39) as the most frequently reported strategy (See Table 9.6 above). This strategy is a metacognitive strategy, a strategy which is used to monitor and regulate other strategies. An important question that must be examined then is, despite the low level subjects' apparent awareness, and despite their reporting similar strategies to those used by the high level subjects, what caused them to achieve lower reading scores than the high level

subjects? Although the comparisons of the ranks of the strategies above have provided insights into strategy prioritisation, they fail to explain the effective strategy use and interaction between awareness and other strategies. Research Question 2B will shed some light on the effective strategy use of the subjects. Since it would be difficult to examine the think-aloud protocols of all the subjects, the protocols of a sample of subjects who achieved the highest and lowest reading comprehension scores from the high and low language proficiency levels will be examined in a Case Study (Section 9.6.1).

9.6. Research Question 2B: *How effective are the strategies reported by the subjects at the high and low levels of language proficiency for their purpose?*

9.6.1. Case Study

Before investigating the think-aloud protocols, it is important to examine whether the pattern of strategy prioritisation of the high and low scoring subjects reflects that which was observed for the overall high and low level subjects (See Table 9.6). Afterwards, the think-aloud protocols will be examined. First, the Case Study compares the ranks of the strategies reported by subjects at the high and low language levels (TOEFL) who achieved the highest and lowest scores on both reading comprehension tests.

Note on subjects' coding in the case study: Example: **Subject H_1H =** the first H in H_1H stands for high language level (TOEFL), and the second H indicates highest scores on both reading comprehension tests.

Three subjects from the high language level (TOEFL) were selected; two subjects (Subject

H_1H and Subject H_2H) had identical highest scores on both reading comprehension tests and a third subject (Subject H_3L) had the lowest comprehension score. (See Appendices 44, 45 and 46 for the complete protocols of Subjects H_1H, H_2H and H_3L respectively). From the low level, three subjects were selected. One subject (Subject L_1H) had the highest average scores on the two comprehension tests (because no subject had the highest score on the two reading comprehension test) and the other two (Subject L_1L and Subject L_2L) had the lowest comprehension scores on both tests. (See Appendices 47, 48 and 49 for the complete protocols of Subjects L_1H, L_1L and L_2L respectively). The first comparison examines the ranks of the strategies reported by the highest scoring subjects (Subject H_1H, Subject H_2H, Subject L_1H) and the lowest scoring subjects (Subject L_1L, Subject L_2L, and Subject H_3L) to determine the similarities and differences between the subjects regarding their strategy prioritisation. Tables 9.7 shows the ranks of the strategies from the highest scoring subjects.

Table 9.7. Ranks of strategies of Subjects H_1H, H_2H, and L_1H

High language level				Low language level	
Subject H_1H		Subject H_2H		Subject L_1H	
Strategy types	F	Strategy types	F	Strategy types	F
39	20	39	18	36	48
51	18	43	10	3	19
43	16	3	7	39	15
3	13	47	6	21	11
10	11	36	3	20	9
25	10	15	3	45	5
36	9	10	3	25	5
5	8	38	2	46	4
15	6	25	2	43	3
47	6	22	2	48	3
17	6	18	2	17	3
35	5	17	2	15	2
38	5	51	1	10	2
11	3	44	1	44	1
34	2	20	1	38	1
25	2	9	1	40	1
22	2	N = 16	64	35	1
20	2			9	1
48	2			5	1
1	2			7	1
6	1			1	1
31	1			N = 21	137
46	1				
40	1				
32	1				
4	1				
24	1				
14	1				
1	1				
N = 29	157				

An inspection of the ranks of the strategies reported by Subjects H_1H and H_2H shows that both subjects reported "Summarising" (Strategy 43) in second and third places amongst the most frequently used strategy (Table 9.7). This strategy as explained earlier is an appropriate strategy to use for the purpose for which the subjects read the text. It is possible that the use of this particular strategy may have contributed to the higher reading performance of the subjects. Furthermore, both subjects reported "Revising the Text" (Strategy 38) and it is possible that they may have been able to retrieve more ideas from the text. In addition, both subjects reported "Confirming Understanding" (Strategy 10) which would have consolidated their understanding.

Similarly, Subject L_1H reported "Summarising" although he reported this strategy less frequently than did Subjects H_1H and H_2H. Further, like Subjects H_1H and H_2H, Subject L_1H reported "Confirming Understanding" (Strategy 10). This suggests that the subject was aware of the need to make sure of his comprehension. In addition, Subject L_1H reported "Revising the Text" (Strategy 38) and this may have helped him to retrieve more ideas from the text. Considering that Subjects H_1H, H_2H, and L_1H had reported "Showing Awareness" (Strategy 39) amongst the most frequently reported strategies (See Table 9.7), it is possible that they were aware not only of the purpose for which they were reading but also of what other strategies they should use to attain a better understanding.

The next comparison examines the ranks of the strategies reported by the low scoring subjects. Table 9.8 shows the strategies.

Table 9.8. Ranks of strategies of Subjects H_3L, L_1L and L_2L

High language level		Low language level			
Subject H_3L		Subject L_1L		Subject L_2L	
Strategy Types	F	Strategy Types	F	Strategy types	F
39	43	39	41	36	33
36	18	36	23	15	13
17	8	15	12	3	11
25	7	34	8	39	9
40	6	25	6	35	5
3	6	44	3	23	3
9	4	28	3	38	2
35	3	20	3	20	2
46	3	39	3	28	2
22	2	31	2	40	2
15	2	44	2	21	1
32	1	17	2	9	1
51	1	41	1	13	1
30	1	50	1	50	1
41	1	13	1	30	1
5	1	3	1	38	1
20	1	20	1	N = 16	88
N = 17	108	1	1		
		N = 18	109		

In contrast to the high scoring subjects above, the low scoring subjects did not report "Summarising" (Strategy 43), which is an appropriate strategy (Table 9.8). Similarly, none of the low scoring subjects reported "Confirming Understanding" (Strategy 10). Further, Subjects L_1L and L_2L did not report "Checking Comprehension" (Strategy 5), and Subjects L_1L and H_3L did not report "Revising the Text" (Strategy 38). It is important to note that two strategies "Re-reading Problematic Parts Only" (Strategy 36) and "Going Back before Problematic Parts and Reading from there" (Strategy 15) were reported most frequently by the two low-level low scoring subjects (Subject L_1L and Subject L_2L). It appears that Subject L_1L and L_2L, because of their low language level, were grappling with the text more frequently than were the other subjects. As the purpose of reading, summarising, requires the identification of main points, it is possible that the focus on the problematic parts rather than on summarising might have contributed to the lower scores achieved by Subjects L_1L and L_2L. This suggests that the subjects were either unaware of an appropriate strategy to use or

lacked a repertoire of alternative effective strategies to help to cope with the text and eventually make a summary of it. It is also possible that the subjects' low language level contributed to the lack of summarisation.

The comparison above has shown that the high scoring subjects at the high and low levels reported not only using an appropriate strategy but also other strategies such as "Confirming Understanding" and "Revising the Text". It can be argued that these strategies are likely to have played a compensatory role in increasing the subjects' understanding of the text. Furthermore, the subjects also most frequently reported "Showing Awareness" (Strategy 39).

Concerning awareness or metacognition, Baker and Brown (in Carrell, 1989:122) note: "knowing that (declarative knowledge) is different from knowing what (procedural knowledge), and *that* a particular strategy is useful (awareness) *precedes* its routine use…". It is important to emphasise that the low level and low scoring subjects, like the high level and high scoring subjects, reported "Showing Awareness" (Strategy 39) amongst the most frequently reported strategies (See Tables 9.7 and 9.8). Although this suggests that the subjects were aware of their comprehension problems and/or failure of their strategies, it does not explain why they differed in their reading scores. A mere comparison of the ranks of the strategies cannot fully explicate whether or not the reporting of "Showing Awareness" was responsible for the differences in comprehension scores between the high and low scoring subjects. In addition, the strategy ranks can only show a linear relationship between and/or among the strategies and hence they fail to show the subjects' interactive strategy use. In order to investigate how awareness interacted with strategy use and to provide an insight into the effective strategy use of the subjects and its relationship to reading comprehension,

the think-aloud protocols of the subject cited in the Case Study (See Section 9.6.1) are examined.

The first comparison examines the effective strategy use of the high and low scoring subjects not only in coping with the text but also in processing the text beyond the problematic parts and in making a summary of the text. To maintain consistency parallel examples will be selected from the think-aloud protocols of the high and low scoring subjects.

Subjects H_1H and H_2H

As the protocols of Subject H_1H and H_2H show, both subjects used similar strategies to resolve a comprehension problem caused by a new word. Subject H_2H said (Appendix 45, lines 3-5), "[agropastoral] what does it mean? I am thinking, pastoral means animal raising, agro means agriculture, so agropastoral means both animal and agriculture" (Strategy 47). An inspection of his protocol reveals that as the subject read on he immediately confirmed the meaning he had guessed using textual clues as follows (lines 8-9): "It defines [agropastoral], it says, [cultivation combined with herding] (Strategy 10), I have understood the meaning of agropastoral (Strategy 39), so I will keep reading." As the following excerpt from the reading text shows, the definition for [agropastoral] is provided in a defining relative clause immediately after it: [Pastoral systems, and agropastoral systems in which cultivation is combined with herding, have changed little over the centuries.]

Similarly, Subject H_1H resolves her comprehension difficulty caused by the same word as follows (Appendix 44, lines 9-11): "[pastoral and agropastoral systems], it seems a kind of system sort of water irrigation system (Strategy 47), I don't know (Strategy 39), let me look

it up in the dictionary (Strategy 51) … These pastoral and agropastoral are not very clear (Strategy 39), let me continue (Strategy 25)." While reading on, the subject said: (lines 24-25) "[Pastoral and agropastoral} which I didn't understand have come here, yes (Strategy 10), this is a combination of cultivation and herding". It is important to underline the similarity of the strategies used by the two subjects.

It was clear to see that Subjects H_1H and H_2H were not only aware of their comprehension problems but also used alternative effective strategies to arrive at the meaning of the new word and confirmed the meaning of the word using the context.

Subject L_1L and L_2L

In contrast, the protocols of Subjects L_1L and L_2L show clearly that the subjects lacked an awareness of effective strategy use. For example, Subject L_1L said (Appendix 48, lines 7-12), "[pastoral and agropastoral] I don't know what [pastoral] itself means, what [agropastoral] itself is (Strategy 39). Let me continue if I can find it from the next idea (Strategy 25), wait, let me read it again beginning from before [pastoral and agropastoral] (Strategy 15). I could not find them (Strategy 39), but I think [pastoral and agropastoral] are [systems] we use for crop production (Strategy 17), let me pass on taking it in this sense. Well here the sentence before it [pastoral and agropastoral] says it is suitable for crop production and before it mentions that it is a useful system."

As the protocol of Subject L_1L showed, the subject tried to use different strategies to get the meaning of the words and still did not get the exact meaning. The lack of awareness of alternative effective strategy use by this subject is shown clearly in her next protocol in

which she reported using the same strategies which had not helped her to get the exact meanings of the same problematic words. She said (lines 29-31), "As I don't understand [pastoral and agropastoral] (Strategy 39), let me read the sentence again from the beginning (Strategy 3). I still don't understand it (Strategy 39). Let me read it again (Strategy 36) slowly (Strategy 28) beginning from where it says [pastoral and agropastoral]." As her protocol above shows, despite the fact that going back and re-reading did not help her, the subject continued to use the same strategy. There were alternative ways to get the meaning – the defining relative clause and/or the dictionary.

It is important to emphasise that arriving at the meaning of a new word is not merely a matter of having high language level, but also of having the ability to use it strategically, that is strategic reading. This can be well demonstrated from the protocol of Subject L_1H. The subject reported (Appendix 47, lines 12-15), "The words [pastoral and agropastoral], I don't understand them" (Strategy 39). After "Showing Awareness" (Strategy 39) the subject employed another strategy as follows (line 14): "let me go back and read it again (Strategy 36), I see, it's some sort of system or way (Strategy 17)." Like Subjects H_1H and H_2H, Subject L_1H confirmed the meaning he had guessed using the context – using the defining relative clause as follows (lines 16-17): "[pastoral and agropastoral systems in which cultivation is combined with] aha, it's a combination of the two" (Strategy 10). It is important to emphasise the similarity of the strategies which the three subjects used to understand the word.

In order to stress that effective strategy use is not merely a matter of having a high language level, an additional example from Subject H_3L will be given next. Subject H_3L said

(Appendix 46, lines 5-8), "What does it mean by [pastoral and agropastoral systems]?… [agropastoral systems evolved as...], how can I know this thing, let me, I think, read the sentence again (Strategy 36). I can't know them (Strategy 39), let me read ahead any way (Strategy 25)." Here despite re-reading the problematic text part (Strategy 36) and reading ahead (Strategy 25) the subject appears convinced that there was no way of finding the meaning. Indeed, his subsequent reading illustrates the above point. Subject H_3L said (lines 17-18), "[Those pastoral and agropastoral] have come again, I didn't understand them then, let me read on any way (Strategy 25)." While reading on, the subject came across another new word and this was what he said (lines 42-43), "What is poultry? Let me read on and see (Strategy 25), there is no point in going back, it's all I know."

The subject clearly lacked an awareness of alternative effective strategies despite the fact that other alternatives such as contextual clues in the text and the dictionary were available. Interestingly, the subject's thought just before he handed in the passage was (lines 48-49), "I don't know how I could understand [pastoral and agropastoral]." It is difficult to say that the subject lacked the language to resolve his comprehension problems. Indeed, as his next protocol shows, the subject was able to use the context of the text to arrive at the meaning of another new word. He said (lines 45-48), "I don't understand this word [sprung up] (Strategy 39), let me try and understand it from the sentence (Strategy 17). Let me read the sentence again (Strategy 36)… I think he means they emerged (Strategy 17)."

Let us now examine additional examples in order to illustrate a recurring pattern of strategy use by the subjects above.

Subjects H_1H and H_2H

As in the examples above, the protocols of Subjects H_1H and H_2H show a remarkable similarity of strategy use by the two subjects to arrive at a new word. For example, Subject H_2H said (Appendix 45, lines 29-31), "[Agroecological zone], what does it mean? I think agro means something related to agriculture and ecology is the surrounding [sic] (Strategy 47), so agriculture in the habitat in which the people are living." Here the subject related the root words with his prior knowledge to arrive at the meaning. Similarly, Subject H_1H arrived at the meaning of the same word as follows (Appendix 44, lines 34-38): "[Agroecological zone], let me get the precise meaning from the dictionary (Strategy 51). There is no [Agroecological] as a word, so I could only find its meaning from the sentence (Strategy 39). Maybe [agro] is derived from the word agriculture, let me think, what was ecology? In biology lessons it means the interaction between the environment and living things, [Agroecological] is possibly about agriculture and the relation with people sort of."

Subject L_1L

It is interesting that earlier Subject L_1L had failed to guess the meaning of [agropastoral] but as her next protocol shows, she attempted, although she did not get the meaning, to guess a similar compound word - [Agroecological] - by examining its root words. The subject said (Appendix 48, lines 43-48), "I don't understand [Agroecological zone] (Strategy 39), let me go back and read again (Strategy 36), now I am rereading the word (Strategy 36), but I don't understand it (Strategy 39), now let me try and separately see [agro] and [ecological], I think it should be about some area, some thing, some suitable weather condition, [agro] is related with agriculture (Strategy 47) though I don't understand [ecological] (Strategy 39), it's about agriculture and about [zone], [humid agroecological zone] it must be some agriculture

weather condition, I think." It is clear to see the subject's lack of awareness of transferring her strategy here to a similar problem earlier when she failed to guess the word [agropastoral]. Had the subject used the dictionary for the word [pastoral] and guessed [agro], as she did for [agroecological] she would have found the meaning for [agropastoral].

The low scoring low-level subjects' lack of awareness of how to use alternative effective strategies can be highlighted using the following examples. For example, Subject L_1L experienced difficulty with a new word and this was how she tried to resolve the problem (lines 12-14): "I don't understand the word [herders] (Strategy 39), wait, I am continuing to the next sentence, it might give me the meaning (Strategy 8). Now I am going to read it again (Strategy 36), reading it with the sentence before it hadn't given me the meaning either (Strategy 39)" At this point I asked her if she understood what she had read so far and she confirmed her understanding. It is important to emphasise the fact that subject failed to make use of even the most basic linguistic clues such as the plural marker 's' in 'herders' to guess that it is a noun.

It should be noted that the subject shows her awareness that one of her strategies (Strategy 36) had not worked but as her next protocol shows she continued to grapple with the same word using the same strategy that had failed. The subject said (lines 14-20), "again I am going to read it beginning from before the word (Strategy 15), I still don't understand its meaning (Strategy 39). Again I am going to read it beginning from before the word (Strategy 15). When I try to relate it the idea keeps slipping from my mind (Strategy 39), and I am going to have to go back from before the word and read again (Strategy 15). Now I am going to re-read where it reads [where feed could be found] (Strategy 36) to know the meaning of

the clause alone. Now let me try and relate the clause with that before it (Strategy 34). Generally, I have understood the idea of the sentence (Strategy 39). Though [herders coped] is not directly clear (Strategy 39), I have understood from the sentence for what reason it {she means [herders]} is used."

As the examples above demonstrated the subject attempted to use two strategies (Strategies 36 and 15) again and again sequentially despite the failure of these strategies to resolve her comprehension difficulties. It is interesting to observe that every time these strategies failed, the subject showed her awareness of a lack of understanding but she did not show an awareness of how to select other effective alternative strategies nor did she evaluate the failing strategies (Strategies 15 and 36). Even after using an alternative strategy (Strategy 14), which did not result in the correct meaning, she still though she had understood but did not check the meaning she had derived. As can be seen from the protocol above, [herders coped] does not mean "for what reason it is used".

It is important to emphasise that Subject L_1L could have used the dictionary to resolve the problem. It was noted earlier (See Table 9.8 above) that in comparison to the low-level subjects the high level subjects reported "Using the Dictionary" (Strategy 51) more frequently than "Guessing Unknown Words' or Phrases' Meaning Using Context" (Strategy 17). One would expect the subjects at the high language level to cope with the text and not to resort to dictionary use more frequently than did the subjects at the low language level. As the following protocols of Subjects H_1H and H_2H show the subjects did not appear to want to settle for the meanings they derived from the text and cross-checked their understanding of the meaning with the dictionary. For example, Subject H_1H reported (lines 20-22), "[severe

droughts] I know this but let me be very certain (Strategy 10) and I think I will understand it, let me look it up in the dictionary (Strategy 51). Similarly, Subject H_2H said (lines 43-44), "I have a doubt about the meaning of [poultry], I could not understand it from the context (Strategy 39) and I will refer the dictionary. (Strategy 51)."

A further example from Subject H_1H underlines the subject's desire to cross-check meaning. The subject said (Appendix 44, lines 18-20), "[mortality in herds is extensive following severe drought], it is not clear to me (Strategy 39), let me try to read slowly (Strategy 28) and get the relationship of each word to each other." Afterwards the subject said (lines 20-22), "Let me be very clear about the meaning of each word (Strategy 10), [severe drought] I know this but let me be very certain and I think I will understand, let me look it up in the dictionary" (Strategy 51). And then she continued (line 22), "Let me be very sure about the meaning of [extensive] (Strategy 10) let me look it up in the dictionary (Strategy 51)". It is important to note that the two words which the subject looked up in the dictionary were in the sentence which she found unclear and were words which she wanted to examine in relation to other words. This shows that the subject translated her awareness of what to do by employing those strategies, and she did get the meaning.

The repertoire of alternative strategies which Subject H_1H was able to bring to bear on her comprehension problems can be seen clearly in her protocols. For example, the subject said (lines 45-47), "[It was at the margins between the wetter and drier areas] meaning neither dry nor wet (Strategy 46). I think this thing is [sub-humid], it is found in highlands. [it] I think means sub-humid zone (Strategy 17)". While revising the paragraph in which she guessed the meaning of [it], Subject H_1H rejected her earlier guessed-meaning of [it] as her next

protocol shows (lines 85-86), "[it was at the margins…] wait, wait, wait, no no, [it] does not indicate [sub-humid] (Strategy 32), I am wrong (Strategy 39), it is just for starting a sentence (Strategy 48)". Another example shows how she employed an alternative strategy for a failing one (lines 5-7): "[rangeland] variation in land? (Strategy 47) let me look it up in the dictionary (Strategy 51), it is not there, there is [range] though, it means sort of variation, [rangeland] should mean sort of variation of land in a continent". The think aloud protocols of Subjects H_1H and H_2H illustrate not only the subjects' awareness of their comprehension difficulties but that they selected alternative strategies that were effective in resolving those difficulties.

9.6.2. Summary

The comparisons above signify two points. The first is that the use of an appropriate strategy, "Summarising", appears to be related to higher reading comprehension score. This relationship can be illustrated by the striking similarities between Subjects H_1H and H_2H on the one hand and Subjects L_1H and L_2H on the other all of whom reported "Summarising" and had high reading comprehension scores. Furthermore, these subjects reported "Revising the Text" (Strategy 38), and it can be argued that the subjects may have been able to get more ideas from the text and hence consolidated their understanding. Similarly, the failure to use an appropriate strategy, "Summarising", appears to be related to a lower reading comprehension score. For example, Subjects L_1L and L_2L did not report using this strategy. Moreover, the subjects did not report "Checking Comprehension" (Strategy 5) nor "Confirming Understanding" (Strategy 10).

The second point is that alternative effective strategy use, that is strategic reading, does not

appear to be related only to high levels of language proficiency. As was shown in the examples above, the high level subject (Subject H_3L) not only failed to use an appropriate strategy but also lacked the awareness to employ alternative effective strategies to resolve his comprehension problems. This subject's strategy use, as shown in the examples, was similar to the low level low scoring subjects (Subjects L_1L and L_2L).

The comparisons and discussions so far have mainly shown vocabulary problems. Although on the surface the problems examined above appear to be confined to vocabulary, they were also responsible for disrupting the coherent text processing especially of the low scoring low level subjects. This point will be examined in the next section.

9.6.3. Ineffective strategy use and fragmented text processing

It is important to emphasise the effect of the frequency of the vocabulary problems which were shown in the examples above and their disrupting effect on the overall pattern of coherent reading especially of the low scoring low level subjects. As will be shown in the following sample protocols, ineffective strategy use caused frequent saccades in the subjects' reading and was responsible for fragmented text processing. Further, as the following examples show, disrupted coherent processing of the text hindered the subjects from making a summary of the text, which was the assigned purpose. To maintain consistency, similar examples from the protocols of the above subjects will be discussed.

Subject L_2L

The protocol of Subject L_2L shows that the subject's unaltered ineffective strategy use and his failure to employ alternative effective strategies for a comprehension problem caused by

a new word resulted in a disjointed processing of the text. The subject said (Appendix 49, lines 5-9), "[In these systems herders] [In these systems herders] (Strategy 36). What is herders? [In these systems herders coped with the changing weather condition by moving animals to areas in which feed could be found.] (Strategy 36). Let me read this sentence (Strategy 36); it is not clear (Strategy 39). [In these systems herders] (Strategy 36), [herders] (Strategy 36), [In these systems herders coped with .... the .... changing .... weather .... condition .... by .... moving .... carrying of .... the .... range] (Strategies 28 and 36)." (The four dots in the above sentence indicate slow reading). As the protocol above shows, the subject not only failed to get the meaning of the word, but also lacked an awareness of an alternative effective strategy for the failing strategy (Strategy 36) which he used six times. More importantly the subject did not show an awareness of the need to check whether or not he had understood the sentence. As a result of his continuously repeated use of an ineffective strategy, the subject's processing of the text was severely disrupted thus preventing him from going beyond the problematic parts and making a summary of the text.

Subject H_1H

In contrast, the protocol of this subject shows how she effectively tackled the same word and how this limited the disruption to her text processing. Subject H_1H said (Appendix 44, lines 11-15), "[herders] I think I know this word but I can't remember it, let me refer it in the dictionary (Strategy 51). It's people looking after cattle. Let me read on it might explain it in the next sentence (Strategy 25). Let me reread the sentence and continue (Strategy 36). Let me reread this sentence, it must be about those who lead the cattle. How do they cope when the weather changes? By moving the cattle." Unlike Subject L_2L, Subject H_1H not only employed an effective strategy "Using a Dictionary" but also sought clarification of the

meaning within the sentence. Indeed, as her protocol shows next, Subject H_1H finished the paragraph and summarised the ideas, including the sentence which contained the difficult word (line 25): "I have got the idea of the paragraph but if I read it again well it will be clear to me. ... (lines 29-31) And these herders cope. Let me check, how do they cope? (Strategy 5), they live somewhere and when the weather changes they move to places where they find food (Strategy 43), OK it means nomad life! (Strategy 47)"

The examples above emphasise important differences between the two subjects. Subject L_2L lacked an awareness of him ineffective strategy use and that this was hindering him from processing the text in a way that would help him to attain the level of comprehension suited for the assigned purpose. In contrast, Subject H_1H not only limited the disruption to her text processing by using effective strategies but also remembered to summarise the text after she had coped with the problematic text parts.

Returning to Subject L_2L, his protocol next further illustrates the fragmented nature of his reading which was caused by the subject's lack of effective strategy use. He said (Appendix 49, lines 9-14), "[Mortality] what is mortality? Let me see it in the sentence, to make it clear let me read the sentence again. [Mortality in herds is extensive following severe] (Strategy 36) [Mortality in herds is extensive following severe droughts] (Strategy 36) [is extensive following severe droughts] (Strategy 36). This mortality is in areas affected by droughts (Strategy 21), er let me go back and read again (Strategy 36). [but built up during periods of adequate moisture] (Strategy 36) so [animal number increases when there is adequate moisture] (Strategy 36). I have understood it a bit (Strategy 39)." Here too the subject failed not only to realise that the strategy was not working but also to seek an alternative effective

strategy to get the meaning of the word. Further, the subject neither attempted to check and confirm whether he had understood the sentence nor tried to summarise it in his own words.

Let us now establish the pattern of reading shown in the examples above by taking parallel examples from the other two subjects - Subject L_1L and Subject H_2H.

Subject L_1L

As the protocol of this subject shows next, it is clear to see how a lack of effective strategy use for a difficult word contributed to a fragmented processing of the text and limited the subject's comprehension. Subject L_1L said (Appendix 48, lines 23-28), "Here I don't understand [Mortality in herds] (Strategy 39). Let me continue to the next sentence if I can understand it (Strategy 25). No idea even after reading on (Strategy 39), better if I read it again (Strategy 36). I can't get the ideas because the sentence as a whole is not understandable (Strategy 39). Let me read it again (Strategy 36). Now I have understood the idea a bit (Strategy 39) by relating it to the preceding word (Strategy 34). For example, [mortality in herds is severe following severe droughts] here, and [following severe droughts] sort of what [mortality] of [herds] is like, sort of how it brings about because of [mortality]". The protocol of the subject shows clearly that she did not get the meaning. Furthermore, it is important to emphasise that the subject's lack of awareness of how to seek an effective alternative for a failing strategy (Strategy 36) inhibited her from going beyond processing only the problematic part to make a summary.

A further example from this subject illustrates a similar pattern of reading. For example, after the subject had finished the paragraph in which she found [mortality] she attempted to re-

read the paragraph again. The subject said (lines 28-29), "Now let me read the paragraph because I want to get its meaning and to retain some ideas." Here the subject set herself two purposes for re-reading that paragraph - to understand the idea and to memorise. However, as her next protocol shows, she decided to focus on the latter purpose - to remember. She said (lines 37-38), "Now I am trying to remember what I had read, what it {she meant [livestock]} is used for and stuff". What the subject was intending to remember was the list of uses which livestock provide. Then the subject went back to the same word [mortality] and, as she did earlier, employed the same strategy (Strategy 36) as her protocol next makes clear (lines 38): "Now I am rereading from [mortality in herds] (Strategy 36). Even after having reread it, still it's the same (Strategy 39). And again I will reread beginning from the words (Strategy 36). I tried to relate [mortality in herds] with what is after it (Strategy 34) but now I have gone where it says [mortality] (Strategy 36). I don't understand [herds] (Strategy 39)." At this point I asked the subject if she understood what she had read and she said "yes". Then she continued (lines 41-42), "Now I am going to read from [mortality] (Strategy 36), I don't understand the words (Strategy 39). Again let me read it beginning from [mortality in herds] (Strategy 36)".

As her protocol showed the subject made no attempt to reflect on how she could have made a summary. It is quite clear to see the effect of the lack of an effective strategy use on the coherent text processing and summary making of the subject. Not only did the lack of effective strategy use interfered with what the subject was asked to do (summarise) but also with what she wanted to do (retain).

Subject H_2H

In contrast, this subject not only guessed the meaning of the same word [mortality] but also summarised the idea of the sentence containing the word. Subject H_2H said (Appendix 45, lines 5-7), "[mortality] [mortality in herds] (Strategy 36) what does it mean? May be I should read on (Strategy 25), I will understand it later. Animal numbers are built up, so mortality means some kind of death (Strategy 17). So adequate moisture must be the main factor for the increasing number of the animals in this area after they die out due to drought (Strategy 43)" The difference between Subject H_2H and Subject L_1L is that Subject H_2H not only summarised the idea of the sentence after guessing the meaning of the word [mortality] but also later on as he revised the passage summarised the same sentence again hence consolidating his understanding. Subject H_2H said (lines 26-28), "I can see that the number of animals is not constant, during the dry season they die out and during the adequate moisture season they build up again."

The examples above have demonstrated important differences between the high and low scoring subjects. As was shown the high scoring subjects were aware not only of their reading problems but also sought alternative effective strategies that helped them cope with their difficulties. In contrast, the low scoring subjects failed to evaluate their failing strategies. The high scoring subjects showed an awareness of how to get the meaning and to summarise those text parts which caused them comprehension problems after they had resolved the problems. But the low scoring subjects continued to employ the same failing strategies for the problematic text parts and did not show an awareness of how to get the ideas of the problematic text parts and to make a summary.

9.6.4. Awareness of reading purpose

The protocols of Subject H_2H in the examples above showed how the subject, after coping with problematic text parts, was aware of how to summarise the idea of those text parts. It is important to emphasise that not only did the subject pick up main ideas as he went along but also, as his protocols show, he also summarised the passage. The subject said (lines 22-24), "I have finished reading and I would like to read it again. I don't know why but I don't feel comfortable leaving it just as it is, I don't seem to have understood it as I had hoped I would, I think its my lack of concentration (Strategy 39)." The protocol shows the subjects' awareness of the status of his comprehension of the text. His protocol also demonstrates the subject's intention to confirm his comprehension by reading the text again. After the subject had finished the text, he said (lines 42-43), "I think I am done. I have slight doubts (Strategy 39); I will just go through it (Strategy 38)" Here too the subject's awareness of consolidating his understanding is clear to see. Afterwards, the subject showed not only an awareness of his comprehension of the text but also the purpose of reading (lines 44-45) "I have understood the passage (Strategy 39), but I would like to summarise it again (Strategy 43)."

Subject H_1H

Similarly, Subject H_1H said (Appendix 44, lines 77-83), "OK, let me begin the passage from the beginning. Let me try and remember the role. What do we see in this region? (Strategy 5) Weather patterns are highly changeable and pastoral and agropastoral systems are effective for living in the harsh area (Strategy 43). Ok, let me say to myself what I have understood so far. The cattle, their number decreases during drought but they build up when there is enough moisture (Strategy 43). These pastoral and agropastoral systems have not changed for a long time (Strategy 43). OK, this is the idea of the first paragraph. The first paragraph talked

about dry areas but this is about areas with high rainfall. OK, what is the idea here: livestock did not thrive in the humid and sub-humid areas because of this disease (Strategy 43). Then she said (lines 87-88), "Let me summarise each point in the three paragraphs (Strategy 43)." After summarising the paragraphs, the subject showed an awareness of needing to check for any overlooked ideas. She said (lines 89-90), "What else is left? let me check (Strategy 6)." Then, she reported that she had understood the text (line 90): "Ok, I have finished. I have understood (Strategy 39)."

Subject L_1L

This subject's protocol shows not only a lack of clarity of what the subject intended to achieve by setting two conflicting purposes (getting the idea and memorising) but also her failure to summarise the text despite having re-read the problematic text parts earlier. The subject said (Appendix 48, lines 29), "Now let me read the paragraph again because I want to get its idea and to retain some ideas...." Having read the paragraph, the subject said (lines 34-35), "Now let me read the paragraph from the beginning, I could not retain the idea, but I have partially understood what has been talked about…." Here the subject appears to have read the paragraph not to summarise but to retain it. At one point the subject appeared to attribute her difficulty to the methodology of the research. She said (line 36-37), "Now I am going to read the paragraph from the beginning again because as I was talking I began to … [she did not finish what she was saying]". But immediately afterwards the subject made her reading purpose clear (line 37): "er, now I am trying to remember what I have read".

The subject's own awareness of how much she has understood was illustrated by her next protocol (lines 42-43): "Now I have understood what the idea of the first paragraph is,

though not all." One would expect the subject to revise the paragraph as did Subject H_1H but she did not. The same pattern of lack of awareness was observed for the second paragraph. The subject said (lines 53-55), "I don't fully understand the second paragraph. I can't relate one idea with the other, and most of the time I understand it if I reread it and it is then after this that ideas come to me. I don't understand here, I will leave it and continue" The subject appears to be aware that re-reading would help her get the ideas but immediately she skipped reading and continued to the next paragraph. As in the first paragraph, where the subject showed her reading purpose (to retain it), she also reported a similar purpose for the third paragraph. The subject said (lines 61-62), "I have finished the third paragraph but I have not retained much of it" The subject's difficulty with distinguishing between understanding and remembering is shown clearly in her next protocol (line 62): "I understand the idea but I can't retain it." The subject appears unaware that she has not understood the text. More importantly, the subject did not attempt to direct her reading so as to achieve the assigned purpose.

Subject L_2L

Similarly, after finishing the passage Subject L_2L said (Appendix 49, line 42), "To get the idea, let me read it again." What is interesting is that the subject's intended purpose "to get the idea" and what he actually focussed on were contradictory, as his protocol next shows (lines 42-43): "I have seen that livestock in sub-Sahara have various uses, [providing sustenance, transport and protection]". The subject's lack of awareness that he was not reading to summarise was shown clearly in the next protocol in which the subject continued to re-read textual parts which he had already read. He said (lines 43-44), "[In the drier areas not suited to crop production] (Strategy 36) [In the drier areas not suited] (Strategy 36) [In

the drier areas not suited....] (Strategy 36)." The next protocol confirms the subject's purpose, to memorise the list of uses. He said (line 45), "so far I am looking at the uses of livestock".

The lack of clarity of what the subject intended to achieve and the strategies he employed to achieve it is clearly demonstrated in his next protocol. The subject said (line 50-51), "I am trying to get the main idea of the third paragraph" and what he did to achieve it was as follows (lines 51-54): "[Today the integrity of the rangelands of …] let me read it again (Strategy 36) [Today the integrity of the …]. Now I am thinking how I could generalise it. Let me read it again (Strategy 36) [Today the integrity of the rangelands …] [Today …..] (Strategy 36)." Finally, he said (line 62), "I read it sort of disconnectedly." Here the subject appears to be aware of the fragmented nature of his reading but as his next protocol shows, he did not attempt to employ strategies that would help him correct the problem and achieve a coherent processing of the text. Indeed, as the subject's protocol next shows, what the subject did to counter the discontinued nature of his reading was to re-read in a disjointed manner. He said (lines 62-63), "Let me read the passage again. I have tension. [In the drier areas] let me go back. [pastoral and agropastoral] what is this? Let me read it again." The subject's lack of awareness that he had lost track of his reading purpose was well illustrated in his next protocol (line 63-64): "I am reading to memorise some things." The subject's decision to memorise highlights his inability to determine whether memorising would effectively correct his disjointed reading and enable him to make a summarised form of the text. In fact, the subject's final thoughts in the protocol regarding his understanding reflect the lack of success of his way of reading. He said (line 64), "I have understood it a little."

But one might wonder why he did not go back and try to summarise.

9.6.5. Summary

The discussions above have emphasised that the low scoring subjects lacked an awareness of how to use effective strategies. The subjects also failed to seek effective alternative strategies for the failing strategies to help them attain the purpose for which they read the text. In contrast, the high scoring subjects showed an awareness of not only of effectiveness of their strategies but also employed alternative strategies to cope with the reading problems. Lack of awareness of strategy use during reading appears to be the main difference between the high and low scoring subjects. However, it is important to examine whether the subjects at the two levels had differences in awareness regarding their strategy use before they read the text.

Chapter Ten examines the views of the subjects about their strategy use in the metacognitive questionnaire and compares them to the strategies reported during reading.

CHAPTER TEN

RESULTS 2

10.1 Introduction

This chapter first examines the strategies which the subjects said they would use in the questionnaire before reading. Then it compares these strategies to the strategies the subjects reported using in reading in order to shed light on the relationship between awareness of strategy knowledge and actual use of strategies. Finally, the chapter investigates the reflections of the subjects about their own reading strategies and reading performance in the round-up interview and compares them to the strategies before and during reading.

10.2. Awareness of strategy use before reading

Awareness (metacognition) has been shown to relate to reading comprehension (Carrell, 1989). The discussions above have demonstrated that the subjects who were aware of their comprehension difficulties, who selected appropriate strategies and who employed effective alternative strategies had higher reading performance than the subjects who did not. This suggests a relationship between strategy use awareness and the actual use of strategies. It is important to remember that the subjects' views about how they read (metacognitive awareness of strategy use) was elicited using the metacognitive questionnaire. The question is to what extent is the subjects' awareness (metacognition) of their own strategies reflected in the actual strategies which the subjects reported using when reading? To examine this relationship, first the views of the subjects in the questionnaire regarding how they thought they would read will be discussed. Afterwards, these views will be compared to the strategies

which the subjects reported in reading the text.

Before analysing the views of the subjects in the questionnaire, the subjects' responses are classified into two categories for ease of interpretation (See Carrell, 1989). Responses which relate to sound-letter, word-meaning, or sentence-syntax aspects are classified as 'local' or 'bottom-up'; those that relate to text gist, background knowledge and text organisation are classified as 'global' or 'top-down'. Based on these classifications and depending on which items in the questionnaire the subjects agreed or disagreed with, the subjects will be categorised, as 'bottom-up' and 'top-down' strategy users.

Table 10.1 shows the subjects' views regarding their awareness of their ability to use strategies.

Table 10.1. Awareness of ability to employ strategies

Language Proficiency Level	Able to Anticipate Information in Text		Able to Recognize Main Points from Details		Able to Relate Preceding and Subsequent Information		Able to Question Truthfulness of What the Author Says		Able to Use Prior Knowledge		Able to Sense One's Own Understanding or Lack of It	
High	12 A	1 D	13 A		11 A	2 D	9 A	4 D	12 A	1 D	11A	2D
Low	9 A	4 D	12 A	1D	10 A	3 D	10 A	3 D	10 A	3 D	8A	5D

Total number of subjects = 26; High = 13; Low = 13

A = Agreement; D = Disagreement

As Table 10.1 shows, most of the high level subjects appear to think that they have abilities to employ the strategies. The responses suggest that the majority of the subjects appear to be confident about their abilities in reading. Similarly, the majority of the low-level subjects indicated their awareness of their ability to use the same strategies as those chosen by the high level subjects (Table 10.1). According to the subjects' responses in Table 10.1 it

appears that there is little difference between the subjects at the high and low levels concerning their awareness of ability to use strategies.

The second aspect in the questionnaire relates to strategies which the subjects at both levels said they would use to repair their comprehension difficulties. The responses of these subjects are presented in Table 10.2.

Table 10.2. Awareness of repair strategies

Language Proficiency Level	Keep on Reading for Clarification		Reread Problematic Parts in the Text		Go Back Before Problematic Parts and Read from There		Use a Dictionary for Unknown or Difficult Words		Give Up or Stop Reading	
High	7 A	6 D	13 A		13 A		6 A	7 D		13 D
Low	7 A	6 D	12 A	1 D	12 A	1 D	10 A	3 D	2 A	11 D

Total number of subjects = 26; High = 13; Low = 13

A = Agreement; D = Disagreement

Table 10.2 shows that all the high language level subjects said they would use two repair strategies: "Reread Problematic Parts in the Text" and "Go Back Before Problematic Parts and Read from There". This suggests that these two strategies are the most helpful ones for these subjects. In addition, all of the high level subjects appear to be resolute in their reading approach as evidenced by the fact that none of the thirteen admit to giving up reading when experiencing a problem. It appears that the subjects at the high level seem to think that establishing link with preceding text, that is "Go Back Before Problematic Parts and Read from There" and focussing on a problematic part, that is "Re-read Problematic Part" are helpful. On the other hand, some high level subjects (7) seem to think that repairing comprehension difficulty by using subsequent text, that is "Keep Reading for Clarification", is useful (Table 10.2). Regarding the use of dictionary most of the subjects seem to find it less helpful.

Like the high level subjects, most of the low level subjects said that they would employ the two strategies, "Re-read Problematic Part" and "Go Back Before Problematic Part and Read from There" to repair their comprehension difficulties. This suggests that the subjects find these two repair strategies the most helpful. In addition, most of the low-level subjects seem to have a determined stance on proceeding with their reading despite facing comprehension crises. Unlike the high level subjects, most of the low-level subjects said that they find using a dictionary a helpful strategy for repairing comprehension problems. As can be seen from Table 10.2, it appears that for the low-level subjects choosing to use a dictionary may be as important as re-reading problematic text parts or going back before problematic part and reading from there. As is shown in Table 10.2, a high proportion of the subjects at both levels agree on using the following four strategies: "Keep on Reading for Clarification", "Re-read Problematic Parts", "Go Back Before Problematic Part and Read from There", and "Give Up or Stop Reading". This suggests that most of the subjects at both levels think they use similar strategies to repair their comprehension problems.

In what follows, the subjects' responses regarding strategies which they perceived to be effective for comprehension problems will be discussed. Table 10.3 shows the responses. For ease of interpretation the responses are classified into 'Local' and 'Global' strategies.

Table 10.3. Awareness of effective strategies

	'Local' or bottom-up strategies												'Global' or top-down strategies					
Language Proficiency Level	Focus on Mentally Sounding Out Parts of Words		Focus on Understanding Meaning of Each Word		Focus on Details		Focus on Pronouncing Each Word		Focus on Grammatical Structures		Focus on Using a Dictionary		Focus on Getting Overall Meaning of Text		Focus on Relating Text with One's Own Prior Knowledge		Focus on Text rganisatio	
High	6 A	7 D	4 A	9 D	9 A	4 D	2 A	11D	4 A	9 D	13 A		9 A	4 D	9 A	4 D	8 A	5D
Low	5A	8D	3 A	10 D	8 A	5 D	2 A	11 D	8 A	5 D	13 A		10 A	3 D	9 A	4 D	11 A	2D

Total number of subjects = 26; High = 13; Low = 13
A = Agreement; D = Disagreement

As Table 10.3 shows, most high level subjects said that they would use more 'global' than 'local' strategies to read effectively. For example, of the nine strategies, the high level subjects agreed (9A, 9A, 8A) they would use the three 'Global' strategies, and said they would not (7D, 9D, 11D, 9D) use four 'local' strategies. However, a large number of the high level subjects said that they would use two 'local' strategies "Focus on Details" and "Focus on Using a Dictionary" as effective strategies (Table 10.3).

Similarly, most of the low-level subjects said that they would employ 'global' strategies. For example, out of the nine strategies (Table 10.3), the subjects agreed (10A, 9A, 11A) that they would use the same three 'global' strategies. They also disagreed (8D, 10D, 11D) that they would employ three of the 'local' strategies. However, they said that they found three 'local' strategies, "Focus on Grammatical Structures", "Focus on Details" and "Focus on Using a Dictionary" effective for reading. There was one 'local' strategy "Focus on Grammatical Structures" which the high level subjects did not regard as effective but which subjects at the low level did (Table 10.3). Except for these differences, the subjects at the two levels appear to be aware of the effectiveness of more 'global' strategies. From the responses, it appears that most of the subjects at both levels are top-down strategy users when they come to resolve their comprehension crises.

The next table presents the responses of the high and low level subjects regarding aspects which they perceive to cause them difficulties in their reading (Table 10.4).

Table 10.4. Awareness of difficulty causing aspects

	'Local' aspects										'Global' aspects					
Language Proficiency Level	Individual Sounds of Words		Pronunciation of Words		Recognizing Words		Grammatical Structures		Alphabet		Relating Text to One's Prior Knowledge		Getting Overall Meaning of the Text		Text Organization	
High	2 A	11 D		13 D	7 A	6 D	5 A	8 D		13 D	7 A	6 D	5 A	8 D	7 A	6D
Low	5 A	8 D	7 A	6 D	11 A	2 D	6 A	7 D	2 A	11 D	6 A	7 D	9 A	4 D	12A	1D

Total number of subjects = 26; High = 13; Low = 13

A = Agreement; D = Disagreement

As Table 10.4 shows, there is a similarity between the high and low level subjects. The responses of most of the high level subjects to the 'Local' difficulty aspects show that the subjects did not agree that most of the 'Local' aspects (4 out of 5) cause them difficulty in their reading. However, the subjects' responses to the 'Global' aspects show that the subjects seemed to find two of the three 'Global' aspects difficult. Similarly, most of the low level subjects said that they did not regard three of the four 'Local' textual aspects as causing them difficulty in reading. The low-level subjects also agreed that out of three 'Global' aspects caused them difficulty.

Judging by the pattern of responses so far most of the subjects at both levels appear to think they use 'global' strategies. Further, the comparisons of the views of the high and low level subjects have shown that there were no major differences between the subjects' views of what strategies they would use. This shows a lack of substantial difference between the two levels regarding their awareness of strategy use before reading. In addition, the actual strategies reported by the subjects at the two levels also showed no significant difference between the two levels in the types and frequency of the strategies. However, as was shown in Section 9.6.1, there were differences between the two levels in their reporting of

appropriate and effective strategy use. In order to investigate whether the subjects' awareness of strategy use before reading was also reflected in the actual strategies they reported during reading, the subjects' views in the questionnaire were compared to the strategies they reported in reading (Section 10.3).

10.3. Strategy awareness before reading vs. actual strategy use

Two comparisons will be made. First, there will be an overall comparison of the subjects' views at both levels about their strategy use before reading and what they actually reported using in the think-aloud protocols. The second will focus on the sample of subjects in the Case Study (See Section 9.6.1).

10.3.1. Overall comparison of strategy use awareness and actual strategy use

Although there were some similarities between the high and low level subjects' perceived strategy use and actual strategies reported, there were also a number of differences. A comparison of the views of the subjects regarding their strategy awareness of strategy use before reading and the strategies they reported during reading shows some striking similarities. For example, one of the repair strategies which almost all high and low level subjects said in the questionnaire they would use was to "Go Back Before the Problematic Parts and Read from There" (See Table 10.2). The ranks of the most frequently reported strategies in Table 9.6 shows that "Going Back Before Problematic Parts and Reading from There" (Strategy 15) was the most frequently reported strategy by the subjects at high and low levels. Most of the high and low level subjects in the questionnaire said that they would not "Focus on Mentally Sounding out Parts of Words" and "Focus on Pronouncing Each

Word" to read effectively (Table 10.3). As Table 9.6 shows, the subjects at both levels did not report these two strategies.

Furthermore, most of the high and low level subjects said they would not "Focus on Understanding Meaning of Each Word" as an effective strategy (Table 10.3) and the high level subjects did not reported "Reading Word for Word" (Strategy 30) and the low level subjects reported it amongst the least frequent strategies (Table 9.6). In addition, the majority of the subjects at the low and high levels indicated in the questionnaire that they would question the truthfulness of what an author says (Table 10.1). As can be seen from the rank of strategies in Table 9.6, the subjects at both levels reported "Questioning the Author's Meaning" (Strategy 24).

Similarly, all high level subjects said in the questionnaire that they would not "Give up or Stop Reading" to repair their comprehension difficulties (Table 10.2) and as Table 9.6 shows, they did not report "Skipping" (Strategy 41). In addition, most of the high level subjects agreed in the questionnaire that they would "Focus on Getting Overall Meaning of Text" (Table 10.3). As Table 9.6 shows, the high level subjects reported "Skimming" as one of the most frequently reported strategies.

In contrast to the similarities, there were some differences. For example, an equal number of subjects at the high and low level said in the questionnaire that they would "Focus on Relating Text with One's Own Prior Knowledge" (Table 10.3). However, in comparison to the high level subjects, the low-level subjects rarely reported "Using Background Knowledge" (Strategy 47). In addition, all the high and low level subjects agreed in the questionnaire that they would "Focus on Using a Dictionary" as an effective strategy (Table

10.3). However, during reading it was the high level subjects who used the dictionary (Strategy 51) more often. Further, most of the high and low level subjects in the questionnaire agreed that they were "Able to Relate Preceding and Subsequent Texts" (Table 10.1). However, during reading it was the high level subject who reported "Relating Preceding and Subsequent Text" (Strategy 34) more often. (Table 9.6). Interestingly, most of the low level subjects said in the questionnaire that they were "Able to Anticipate Information in Text" (Table 10.1). However, they rarely reported "Anticipating Text Content" (Strategy 2).

An equal number of high and low level subjects agreed in the questionnaire that they would "Keep on Reading for Clarification" to repair their comprehension crises (Table 10.2). But, the low-level subjects reported "Reading Ahead for Clarification" (Strategy 25) more frequently than did the high level subjects (Table 9.6). Most high and low-level subjects in the questionnaire agreed that they would "Reread Problematic Parts in the Text" to repair their comprehension difficulties (Table 10.2). However, the low-level subjects reported "Rereading Problematic Text Parts Only" (Strategy 36) far more frequently than did the high level subjects (Table 9.6).

The comparisons above have shown that the high and low level subjects did to some extent translate their pre-reading strategy use awareness onto their reading. However, it must be noted that the high level subjects more frequently employed the strategies when they were reading.

10.3.2. Case Study subjects' strategy awareness vs. actual strategy use

First, the high scoring high and low level subjects' views in the questionnaire will be compared to the ranks of the strategies they reported (See Section 9.6.1). The comparison will not examine all the strategies in the questionnaire and/or in the tables. Instead, it will focus on those strategies in the questionnaire that matched the actual strategies in reading. Second, the low scoring high and low level subjects' views will be discussed. (Note that only Subjects H_1H, H_2H, L_1L, and L_2L are discussed.)

Subject H_1H

As shown in Table 9.7, Subject H_1H reported most frequently "Showing Awareness" (Strategy 39) and "Using the Dictionary" (Strategy 51) in the questionnaire she agreed that she had "a good sense of when I understand something and when I don't" and that when she did not understand something, she would "look up unknown words in a dictionary" and focus on "looking up words in the dictionary" to read effectively. The Subject reported "Summarising" (Strategy 43) as the third most frequently used strategy and in the questionnaire she said she would focus on "getting the overall meaning of the text" to read effectively. As Table 9.7 shows, the subject did not report "Skipping" (Strategy 41) and in the questionnaire she disagreed that she would "give up and stop reading" if she does not understand something.

The subject reported "Re-reading Problematic Text Parts" (Strategy 36) as the seventh most frequently used strategy and in the questionnaire she agreed that if she does not understand something, "I Reread the Problematic Part". The subject also reported "Using Grammar Knowledge" (Strategy 48) amongst the least frequently reported strategies (nineteenth place,

Table 9.7) and in the questionnaire she disagreed that she would focus on "the grammatical structures" to read effectively. Subject H_1H reported "Going before Problematic Text Parts and Reading from there" (Strategy 15) in ninth place (Table 9.7) and in the questionnaire she agreed she would "Go Back to a Point before the Problematic Part and Reread from There" if she did not understand something. However, there were minor mismatches between what the subjects said she would do in the questionnaire and what she reported in her reading. For example, she reported "Reading Ahead for Clarification" (Strategy 25) but in the questionnaire had said she would not "Keep on Reading and Hope for Clarification Further on" if she did not understand something. The subject also reported "Relating Preceding and Subsequent Text" (Strategy 34) among the least frequent strategies (in fifteenth place Table 9.7) but had agreed in the questionnaire that she was "Able to Relate Information which Comes Next in the Text to Previous Information in the Text"

Subject H_2H

Table 9.7 shows that Subject H_2H reported most frequently "Showing Awareness" (Strategy 39) and in the questionnaire he had agreed that he had "A Good Sense of When I Understand Something and When I Do Not". The subject also reported "Summarising" (Strategy 43) as the second most frequently reported strategy (Table 9.7) and in the questionnaire he had agreed he would focus on "Getting the Overall Meaning of the Text" to read effectively. He reported "Using Background Knowledge" (Strategy 47) as the fourth most frequent strategy and in the questionnaire he agreed that he was "Able to use my prior knowledge and experience to understand the content of the text…". He also reported "Rereading Problematic Text Parts Only" (Strategy 36) and had agreed in the questionnaire that he would "Reread the Problematic Part" if he did not understand something. Subject H_2H

reported "Using a Dictionary" (Strategy 51) only once (Table 9.7) and in the questionnaire he said that he would not "Look up Unknown Words in a Dictionary" to read effectively. The subject did not report "Skipping" (Strategy 41) and in the questionnaire had said that if he did not understand something he would not "give up and stop reading."

Subject L_1L

As Table 9.8 shows, Subject L_1L reported most frequently "Rereading Problematic Text Parts Only " (Strategy 36), "Going before Problematic Text Parts and Reading from there" (Strategy 15) and "Relating Preceding and Subsequent Text Parts" (Strategy 34). Similarly, in the questionnaire she had agreed that she would "Reread the Problematic Part", "Go Back to a Point before the Problematic Part and Reread from there" and was "Able to Relate Information which Comes Next in the Text to Previous Information in the Text". As Table 9.8 shows, the subject did not report "Using a Dictionary" (Strategy 51) and "Grammar knowledge" (Strategy 48) and in the questionnaire she had said that she would not focus on "the Grammatical Structures" and "Looking up Words in the Dictionary" to read effectively. However, although there were fewer mismatches between the strategies in the questionnaire and the actual strategies of Subject L_1L, unlike the minor mismatches observed with Subject H_1H, those seen with Subject L_1L were related to the most frequently reported strategies. For example, Table 9.8 shows that Subject L_1L reported most frequently "Showing Awareness" (Strategy 39) but in the questionnaire she had said she did not have "A Good Sense of when I Understand Something and when I Do Not." The subject also reported "Reading Ahead for Clarification" (Strategy 25) as fifth most frequently used strategy but in the questionnaire had said that if she did not understand something she would not "Keep on Reading and Hope

for Clarification Further on".

Subject L_2L

As Table 9.8 shows, Subject L_2L reported most frequently "Rereading Problematic Text Parts Only" (Strategy 36) and "Going Back before Problematic Text Parts and Reading from there" (Strategy 15). In the questionnaire he had agreed he would "Reread the Problematic Part" and "Go Back to a Point before the Problematic Part and Reread from there". The subject also reported as the fourth most frequent strategy "Showing Awareness" (Strategy 39) and in the questionnaire had agreed he had "A Good Sense of when I Understand Something and when I Do not". Table 9.8 also shows that the subject did not report "Skipping" (Strategy 41) and in the questionnaire he had said he would not "Give up and Stop Reading".

However, there were some mismatches. Table 9.8 shows that Subject L_2L did not report "Using a Dictionary" (Strategy 51), "Grammar Knowledge" (Strategy 48), "Summarising" (Strategy 43). However, he had agreed in the questionnaire that he would focus on, "Looking up Words in the Dictionary", "the Grammatical Structures" and "Getting the Overall Meaning of the Text".

The next section examines the post-reading reflections of the subjects about their strategy use and reading performance and then compares the views to the subjects' views in the questionnaires and reported strategies in reading.

10.4. Round-up interview: post-reading views

A summary of the views of the subjects from the interview is given in Table 10.5 below. Question 1 was intended to elicit the subjects' awareness of the effectiveness of their reading. Question 2 was aimed at eliciting the subjects' evaluation about the effectiveness of their strategy use in reading the text. Question 3 was intended to get at the subjects' awareness of their repair strategies. Question 4 was designed to gain insight into the factors that might have prevented the subjects from employing the strategies which they said they would have liked to have used. Questions 5 was intended to assess the role of interest in the text or lack of it in the subjects' reading. Questions 6 and 7 were aimed at eliciting the subjects' own evaluation of their reading achievement in the light of the effectiveness of their reading and repair strategies. Questions 9 and 10 were aimed at finding out/ discovering the possible interference of the methodology of the study on the reading and reporting of strategies respectively. The last question was intended to throw some light on the effective strategies which the subjects believed they used in their reading.

Table 10.5. Summary of subjects' views from the round-up interview

Questions	Replies	High	Low
Why did you read the text the way you did today?	To understand	8	8
	It's my usual reading method	2	2
	To remember or retain	0	2
	It helps me for the test	3	1
Do you say your way of reading helped you understand the text?	Yes, 100%	4	5
	Mostly	4	2
	Some times	2	2
	A bit	0	2
	Did not help me	3	2
Thinking back now, how else would you have liked to have read the text?	Would not have read it any differently	1	0
	Should have concentrated more	3	0
	Should have used the dictionary for new words	1	1
	Should have written, taken, related main ideas	3	0
	Should have skimmed through it and then read in detail	2	0
	Should have checked what's summarised or skimmed	2	0
	Should have remembered each point	0	1
	Should have re-read it in detail	0	5
	Should have retained it	0	4
	Should have differentiated different places in the text	0	1
	Should have asked my self questions as I read along	0	1
	Should have read each statement related paragraphs	0	1
Why didn't you read the text the way you say you would have liked to?	Didn't occur to me at the time	3	4
	Didn't expect such questions	2	1
	Lack of experience	1	1
	Don't know why	0	2
	My fault	0	1
	Thought I was doing ok	3	1
	Wanted to develop quick-exam-finishing skill here too	0	1
	Would have been a waste of time	1	0
	My attention was on using what I thought was working	1	1
	Aimed to but could not do it	0	1
How strong was your level of interest?	High throughout	6	6
	Moderate throughout	2	0
	Low throughout	0	3
	High then low	4	3
	Low then high	1	1
How did you do on the Summary Test?	All of it	1	1
	Almost	5	0
	Some of it	6	4
	A bit	1	8
How did you do on the Short Answer Reading Comprehension Test?	Almost	7	2
	Some of it	4	1
	A bit	2	10
Did the think-aloud interfere with your reading and understanding?	Interfered with my reading, but understood text	10	10
	Did not interfere and I understood text	3	3
Did the Metacognitive Questionnaire influence your reading?	Influenced my reading	0	1
	Did not influence my reading	11	12
	I did not remember	2	0
What would you say was your most effective strategy for reading the text today?	Rereading	5	1
	Getting the general idea	4	1
	Revising	1	0
	Skimming	1	3
	Relating textual parts	0	2
	Memorising	0	1
	Reading for detail	0	1
	Only keeping what I've understood first time	0	1
	Relating the text with my background knowledge	0	1
	Using the dictionary	1	0
	I didn't use a strategy that helped me	1	0
	Critically reading the text	0	1
	Getting each sentence's meaning	0	1

Question 1: ***awareness of strategy effectiveness***

Most of the subjects at both levels (8 at high and low) said that their reason for using the strategies they reported when reading the text was to understand the text. The subjects' responses signify an important problem of awareness: some subjects appear to be unable to evaluate their reading performance, that is it appears that even the low scoring subjects thought they had used strategies that helped them to understand the text. This problem can be illustrated using the following contrasting views between the high scoring subjects (Subjects H_1H and H_2H) and low scoring subjects (Subjects L_1L and L_2L) from the Case Study (See Section 9.6.1).

When Subject H_1H was asked why she read the text the way she did, she replied (Appendix 44, line 92), "to understand it well." The subject's reply not only shows her awareness of the effectiveness of her reading strategies but also, as will be shown in Questions 6 and 7, reflects the subject's own evaluation of her reading achievement on the two tests. Similarly, Subject H_2H said (Appendix 45, line 47), "I am used to reading that way and has helped me understand it. [sic]" The subject's reply shows that he was aware that his reading strategies were efficient and sufficient for assigned purpose.

In contrast, Subject L_1L, when asked about the effectiveness of her strategies, replied (Appendix 48, line 64), "to understand it." It should be noted that earlier (See Section 9.6.1) the subject's protocols had shown that the subject thought she had understood the text when in fact she had not. Her reply demonstrates the subject's inability to determine the effectiveness of her strategies for understanding the text. Further, the subject's reply contradicts not only why she thought she used her strategies, which was "to understand" the

text, but also her low achievement on the two reading tests. Similarly, Subject L_2L said that his reason for using the strategies was (Appendix 49, line 66) "to get the ideas that were not clear to me". The subject's response also shows a similar problem of awareness to establish whether his strategies had helped him "to get the ideas that were not clear".

The examples above demonstrate that the low scoring subjects appear to be unaware not only of the effectiveness of their reading strategies but also whether they were using them to understand or to memorise the text. In contrast, the high scoring subjects showed their awareness of the effectiveness of the strategies. As Question 2 shows, the low scoring subjects not only lacked awareness but also failed to evaluate whether they thought the strategies they had used helped them to understand the text. .

Question 2: ***evaluation of strategy effectiveness***

The majority of the subjects (8 at high and 7 at low) said that they thought the strategies they had used had mostly helped them and/or had always helped them to understand the text. It is important to note here that earlier in Question 1 most subjects had said they thought their reading was effective and that they had used strategies which had helped them to understand the text. The responses of the subjects to Questions 1 and 2 clearly show the difficulties, especially for the low scoring subjects, in evaluating the success of their understanding in the light of the strategies which they thought they had used to achieve it. The following comments from the following Subjects illustrate the difference between the high and low scoring subjects. When asked whether she thought her way of reading had helped her "to understand it well", Subject H_1H replied (line 94), "yes". Similarly, Subject H_2H also agreed (line 48), "I think so, yes, almost all. There were areas I could not remember or recall. I don't

know why my method has not helped me to remember all." The subjects' not only supports their views on the effectiveness of their reading strategies (Question 1) but also, as will be shown in Questions 6 and 7, confirm the subjects' evaluation of their reading achievement on the two tests.

In contrast, for example, when asked about her evaluation of the effectiveness of her reading strategies, Subject L_1L replied (lines 66-67), "It didn't help much. I understood it but after a while I could not remember the idea." The subject's reply here illustrates an important problem: the subject appears unaware of whether she had used her strategies to understand or to remember. Furthermore, her reply underlines the subject's problem of her own conceptualisation of comprehension, that is she thought she had understood the text when in fact she had not. This problem is reflected clearly in her assessment of her own reading achievement on the two tests (See Questions 6 and 7).

Question 3: ***evaluation of repair strategies***

As Table 10.5 shows, all the low-level subjects and most (12 out of 13) of the high level subjects acknowledged on retrospection that they would have read the text differently. A close inspection of the type of repair strategies identified by the high and low level subjects reveals important differences. Almost all the strategies that the low-level subjects said they should have used are not identified by the high level subjects as helpful. Further, the strategies which most of the high level subjects recognised as the ones they should have used to repair their comprehension problems closely relate to and complement the appropriate strategy, summarising, for which the subjects read the text.

In contrast, the strategies which were identified by most of the low-level subjects as the ones they should have used do not relate to the assigned reading purpose. It should be emphasised that the two strategies identified by most of the low level subjects in Question 3 (re-read it in detail and retain) were the very same ineffective strategies which most of the low level and the low scoring subjects used in their reading. Furthermore, the two strategies were mostly responsible for the fragmented text processing by the low level subjects which eventually hindered the subjects from achieving the assigned reading purpose – to summarise the text. It must be noted here that the "Rereading Problematic Text Parts Only" and "Memorising" strategies were more frequently reported by the low level (See Table 9.6). Given that the low level low scoring subjects in particular had earlier (Questions 1 and 2) thought they had used strategies which had helped them to understand the text, it appears that the subjects lacked an awareness in evaluating their own strategy use (metacognitive strategy use) as well as of their comprehension crises. To exemplify this point, the following views from Subjects H_1H, H_2H, L_1L, L_2L will be cited.

Asked how else she would have read the text, Subject H_1H replied (Appendix 44, lines 96-97), "I can't think of any new way for the summary but for the Short Answer Test when I think about it now, I should have not taken things the way I read and understood them; I should have said 'this means this' and after reading I should have checked what agreed with what and what did not. I expected very direct questions." The subject's replies underline two important points. First, the subject was aware of what repair strategies she would have liked to employ. Second and more importantly, the subject was aware of which of her two reading achievements required what repair strategies. The subject clearly knew which test she had

done well at and what should have been done to improve her performance on the other test.

In contrast, Subject L_1L said (Appendix 48, lines 72-73), "If I had tried to retain it well. If I had tried to focus on some areas where he {the author} gives solutions {the subject was referring to textual parts which contained answers, the list of uses, the name of the disease, factors that brought about degradation of the sub-humid and humid agroecological zone)". The subject's assessment of her repair strategies highlights the inappropriateness and ineffectiveness of the strategy she identified – the same strategies which had failed to help her to understand the text according to the assigned purpose.

Question 4: evaluation of factors inhibiting effective strategy use

As Table 10.5 shows, there is no single factor which most subjects at both levels identified as having hindered them from using the strategies which they said they should have used. However, some differences can be seen between the factors identified by the two levels. For example, perceived good performance at the time, lack of awareness, and the unexpected nature of the questions in the test were identified by more high level subjects as being the reasons why the subjects did not employ other alternative strategies. In contrast, more low level subjects identified a lack of awareness of what they should have done as being the reason.

Question 5: *interest*

Table 10.5 shows that most of the high level subjects said they were interested in the text they were reading and only a few (4) said they had a low level of interest. Whereas, equal numbers of low and high level subjects (6) said they had a high and/or a low interest in the

text. As the view of Subject L_2L shows, the difficulty of the text may have been responsible for the low interest which some of the low level low scoring subjects developed in their reading. The subject said (Appendix 49, lines 76-77), "at the beginning it was a lot but later on once I started to come across new words it decreased a bit. I felt I would not understand this thing, sort of apprehension." In contrast, the view of Subject H_1H shows that her high interest appears to be related to her increasing understanding of the text. She said (line 101), "At first it was moderately high but later it engaged me even more as I began to understand it." Subject H_2H also said (line 52), "yes, and as I read I thought the passage was fascinating." However, the view of Subject L_1L suggests that the subject's low interest does not appear to be caused by the difficulty of the text. The subject said (lines 69-70), "I read it just because it was given to me. I wasn't that much attracted by it, just because I had to read it. My interest remained the same all through." Although it is possible that the subject may not have been interested in the text, considering that she not only volunteered to participate in the research but also more importantly showed determination to try and understand the text, her reason appears implausible.

Questions 6 and 7: ***evaluation of reading performance***

The evaluations of the high and low level subjects about their achievement on the two tests show a remarkable contrast. For example, most of the high level subjects appear to have felt that they had done well, whereas, most of the low level subjects felt that they had failed. It is interesting to note that the number of subjects who felt they had not done well increased for the Short Answer Reading Comprehension Test, where it is to be recalled, that the scores decreased (See Appendix 43, Table 4).

The subjects' lack of ability to evaluate their own reading achievement emphasises a crucial problem: the low level subjects appear only to have discovered their weak reading performance at the time of taking the test, that is when they experienced the difficulty of the questions, not when employing the strategies in reading. This problem can be well illustrated by the fact that most low-level low scoring subjects thought they had used strategies that had helped them to understand the text when in fact they had not. Further, the subjects failed to recognise the failure of their strategies; this is evidenced by the lack of effective alternative strategy use (See Section 9.6.1). This problem is well demonstrated in the following examples.

The view of Subject H_1H shows that the subject's awareness of her reading effectiveness was clearly reflected in her evaluation of her achievement on the two reading comprehension tests. Regarding her performance on the Summary Test, the subject said (line 103), "I think I feel I have missed one or two points, because I forgot them." Her assessment here and her score on the Summary Test show comparability. Concerning her performance on the Short Answer Reading Comprehension Test, the subject said (lines 105-106), "There were some questions on the test which I had not rehearsed as I read the text. It would have been better if I had related the first with the second and also said 'this means this'; I would have understood it" As the subject's reading score on the Short Answer Reading Comprehension Test shows, the subject had missed some points and her evaluation reflected this. It is important to emphasise that the subject's evaluation of her performance on the two tests shows her awareness of her different performances on the two tests.

In contrast, Subject L_1L for the Summary Test said (line 77), "I understood about half the

points of the text but when I tried to write them I could not remember." It is important to note that the subject's evaluation that she had understood about half the points of the text contradicts her score on the test. Regarding her performance on the Short Answer Reading Comprehension Test, she added (line 79), "I would not say I have answered. I could not remember. I didn't understand the last paragraph." Finally, asked about her most effective reading strategy, the subject replied (line 86), "Rereading. I don't know why there was apprehension in me. I did understand what I read but when I tried to remember it would not come." The subject's response emphasises her difficulty in accurately evaluating not only her own reading achievement but also her inability to determine whether a problem of understanding or remembering caused her to achieve a low reading score.

Question 8: ***effect of think-aloud on text processing***

As Table 10.5 shows, most of the high and low level subjects said that the think-aloud protocol had interfered with their reading but maintained that they were able to understand the text. In contrast, fewer subjects from both levels said the methodology did not interfere with their reading and understanding of the text. Despite the indication of a problem with the procedure, it is important to emphasise the measures which the subjects took to counter its effect on their reading. For example, Subject H_1H said (lines 108-109), "it did not disturb me a lot, but at times I forgot to think-aloud and this has slightly affected it, I think. I understood what I read. There were some points I forgot but these I tried to go back and read again." Similarly, Subject H_2H added (lines 64-66), "it has disturbed me. I think I was more concerned about what I was going to say. I understood what I could not understand when speaking after I had read it again. I understood and got the meaning of the passage." Further, Subject L_1L said (lines 81-82), "when I thought aloud I had to go back to the beginning

because it swept away my ideas. I could understand the meaning of what I read."

Question 9: ***effect of metacognitive questionnaire***

Most of the subjects at the high and low level said that the metacognitive questionnaire had not influenced how they read. This suggests that the three-week time buffer had substantially reduced a possible carry-over effect of the metacognitive questionnaire to the strategies reported by the subjects.

Question 10: ***evaluation of effective strategy***

The views of the subjects at both levels concerning their evaluation of an effective strategy show interesting aspects about the subjects' evaluations. For example, "Getting the general idea", "Revising Text", and "Skimming" were identified as having been effective strategies by more high level than by the low level subjects. It should be noted here that these strategies directly contribute to making a summary of the text. The identification of these strategies suggests that more high level subjects were aware of using strategies which were effective in helping them to attain the assigned purpose. It is important to remember that in Question 3 re-reading was identified by more low than high level subjects as one of the strategies which they said they should have used to repair their comprehension problems. Interestingly, the low level subjects' evaluation shows that they did not identify re-reading as an effective strategy despite the fact the subjects reported using this strategy more frequently than strategies such as "Summarising", "Checking Understanding", and "Confirming Understanding" (See Table 9.6 above). The next example illustrates the differences. For example, asked about her most effective strategy, Subject H_1H said (line 113), "revising what I have read and checking I have understood it" Similarly, Subject H_2H added (line 68),

"reading it again by summarising." In contrast, Subject L_1L said (line 86), "rereading." Subject L_2L also added (line 90), "slowly and deeply reading new words with special attention to where they were."

Chapter Eleven discusses the results of the present study in the light of similar findings from the literature and then draws some conclusions. Finally, it points out the limitations of the study and suggests areas for further study.

CHAPTER ELEVEN

DISCUSSION AND CONCLUSIONS

11.1 Introduction

This chapter first discusses the findings of the study by relating them to similar findings of research reviewed in the literature and then draws some conclusions based on the insights gained from the results and discussion. The chapter concludes with limitations of the study and suggestions for future research and points out some pedagogical implications. Although a limited interpretation of the results was offered in Chapters 6, 7, 9, and 10, this was simply to integrate the findings into a coherent whole for the subsequent analyses and to give the reader the opportunity to absorb the data analyses. In this chapter, an in-depth discussion of the findings is given.

In order to focus the discussion, first the research questions are re-stated, and then a summary of the answers to the questions is given.

11.2. Research Question 1A: *Are there differences in the strategy types reported by the subjects at the high and low levels of language proficiency?*

The answer to this question is that the subjects at the high and low levels of language proficiency were not substantially different in the number of strategy types they reported, although slightly more varied strategy types were reported by the high level subjects.

11.3. Research Question 1B: *Are there differences in the frequency of use of the strategy types reported by the subjects at the high and low levels of language proficiency?*

There was no significant difference (p = > .05) in the frequency with which the subjects at the high and low levels of language proficiency used their strategies.

Overall from the results of the present study, it appears that the subjects at different language levels do possess and share a similar repertoire of strategy knowledge. Further, the fact that the subjects were not significantly different in the frequency with which they used their strategies suggests that frequency of strategy use is not the underlying cause of differences in the reading performance of the subjects at the high and low level language proficiency or of the subjects who achieved high or low scores on the reading comprehension test. These results corroborate the findings of other studies (Anderson, 1991).

11.4. Research Question 2A: *How appropriate are the strategies reported by the subjects at the high and low levels of language proficiency for their purpose?*

The investigation of this question has shown that the subjects at the high level of language proficiency used an appropriate strategy and its complementary strategies more frequently than did the subjects at the low level of language proficiency (See Section 11.6.1.below for details). Furthermore, the subjects at the high language level achieved higher reading comprehension scores than did those at the low level. However, it must be noted that not all the high level subjects achieved high reading comprehension scores.

11.5. Research Question 2B: *How effective are the strategies reported by the subjects at the high and low levels of language proficiency for their purpose?*

The answer to this question has shown that the subjects who utilised their strategies effectively achieved higher reading comprehension scores than the subjects who did not (See Section 11.6.2. below for details). It must again be emphasised that the subjects who achieved high reading comprehension scores or who employed their strategies effectively were not necessarily from the high language level; they were also from the low language level.

In the present study, the key causes of the differences between the subjects appear to be related to the presence or absence of an awareness of strategy use, deficiency in the L2 language and processing difficulties, each of which is explained (See Sections 11.6 and 11.7). It should be emphasised that these causes are not independent; one influences the other and a discussion of one will inevitably involve implications for the other. However, for the sake of convenient presentation they are discussed separately.

11.6. Awareness of strategy use

In the present study, an awareness of strategy use involves two interrelated aspects: (1) an awareness of the appropriate strategies to use and how to use those strategies effectively; (2) the actual utilisation of these strategies. Since an awareness of any strategy precedes the use of that strategy (Baker and Brown, in Carrell, 1989) and since purpose influences an appropriate strategy choice and use, the results that relate to the first aspect are discussed first.

11.6.1. Awareness of appropriate strategy use

Research into reading strategies has shown that differences between successful and less successful readers lie not in the frequency and/or types of the strategies used but in how appropriately the strategies are used (Vann and Abraham, 1990). This study has shown that

the subjects at the high and low language levels were different in their awareness of use of strategies that were appropriate for the assigned reading purpose. A greater degree of awareness of appropriate strategy use by the high level subjects was clearly reflected by the number of times they reported using a purpose-indicating strategy – "Summarising" (See Table 9.6). The more frequent prioritisation of this strategy than the inappropriate strategy "Memorising", also signifies the subjects' awareness of an appropriate strategy. In addition, complementary strategies (strategies which contribute to the attainment of the reading purpose – summarising) such as "Skimming", "Taking Main Ideas " (Table 6.10) and "Confirming Understanding" "Revising Text", "Checking Understanding" "Checking for Any Overlooked Ideas" (Table 9.6) were more frequently used by these subjects than by the low level subjects. In sharp contrast, the low level subjects lacked an awareness of an appropriate strategy, as illustrated by the smaller number of times they used these strategies (See Tables 6.10 and 9.6).

In addition to the indication from the rank of the strategies, the protocol analysis (See Section 9.6.1) also revealed that the high level subjects were observed summarising, revising the text, checking their comprehension, confirming their understanding and checking for any overlooked ideas as they read and after they finished reading the text. This demonstrates clearly the subjects' intention of achieving the assigned purpose. In contrast, the low level subjects rarely summarised, mostly failed to try to check whether they had identified the main points or had overlooked any points before handing in the text and doing the test. However, as shown in the protocols, not all the high or low level subjects were equally aware of an appropriate strategy. This suggests that the differences between these subjects might not entirely be a function of language ability. That is, the subjects who showed their awareness of

an appropriate strategy did not do so solely because of their high or low language levels.

Although it can be argued that the high level subjects more often summarised because of their better L2 command and that the low level subjects did not because of their deficiency in the language, the fact that the high level subjects revised a text, or checked comprehension or checked for any overlooked ideas in the text is an indication of an awareness of an appropriate strategy rather than language ability or deficiency. Support for this was obtained when the rank of strategies of the successful and less successful subjects at both language levels were examined (See Tables 9.7 and 9.8). It was shown that the successful subjects from the high and low language levels used an appropriate strategy and its complementary strategies, whereas the less successful subjects from the high and low language levels did not (See Table 9.8). This suggests that appropriate strategy use is not merely a matter of possessing a high language level.

The discrepancies in the awareness of an appropriate strategy and its complementary strategies occurred despite the fact that all the subjects were clearly and specifically informed of the nature of the reading purpose (Purpose 1 Pilot study and for the Main study). Therefore, it is difficult to attribute the subjects' lack of an awareness of purpose or their failure to use an appropriate strategy to a lack of understanding of what the assigned reading purpose was. Indeed, there is evidence (See Garner, 1985; Hidi and Anderson, 1984) to show that even school-age children, let alone college or university level students, are aware of what summarisation involves. Further evidence that college students can summarise is also shown by Taylor's study (1983). The fact that the high and low level subjects in the present study were also able to summarise is further evidence that a lack of knowledge of the task demand

(what summarisation is or involves) was not a key factor in these subjects' failure to produce good summaries.

Although, as will be shown in 11.7, appropriate strategy use is partly a function of language ability, the fact that the successful subjects from the low language level prioritised an appropriate strategy and its complementary strategies more than did the less successful subject at the high language level, lends some support to the argument that appropriate strategy use is indeed related to an awareness of effective strategy use.

11.6.2. Awareness of effective strategy use

Evidence of differences in effective strategy use between the high and low level subjects as well as between the successful and less successful subjects from both levels was obtained at the various stages of the data analysis. For example, the first indication came from the comparison of the strategies which were reported only by the high and low level subjects in which more of the strategies of the high level subjects were metacognitive in nature (See Sections 6.2.1 and 9.2.1). This suggests that an overseeing or controlling of strategies appears to be an aspect that characterises strategy use of the high level subjects. In contrast, more of the strategies of the low level subjects lacked this aspect.

Further revealing insights into the differences in effective strategy use of the subjects' was gleaned from the protocol analysis of a sample of successful and less successful subjects at the high and low levels. It was shown (See Section 9.6.1), for example, that the *successful* subjects at both levels sought alternative effective strategies when a strategy failed and that they did not keep using the failing strategy. The protocols also showed that these subjects

were aware of the incorrect meaning they had given and came back to check and correct it. In addition, the subjects were successful in transferring a strategy they had used for solving a particular problem to a similar problem in another part of the text. In contrast, the *less successful* subjects did not seem to know that they had given conflicting meanings to the same words (See Section 6.7.1.1). Indeed, the fact that the subjects could not determine the accuracy of meaning points to a problem of awareness of effective strategy use or critical or analytical reading. Although it was clearly language problems which led to the low level subjects' inability to use strategies effectively, there were instances in which even the most basic linguistic or syntactic clues (guessing using 's' as a plural noun marker) were not made use of in attempts to resolve comprehension crises (See Section 9.6.1). Further, resources such as the dictionary or transferring a previously successful strategy were not fully and effectively utilised. As Baker (1985) argues, less skilled readers lack an executive or high level mechanism against which to check or monitor their own strategy use and reading performance; the less skilled subjects in the present study lacked this mechanism.

An additional contrast in the awareness of strategy use between the successful and less successful subjects was observed in the protocol analysis (See Section 9.6.1). The successful subjects showed their awareness of the incorrect meaning they had given by re-checking and re-analysing the problematic parts - including the parts that they had earlier passed over or accepted incorrectly. They were able to do this because they were continuously checking the progress of their reading as they went along. Furthermore, the crucial difference between the successful and less successful subjects was that the successful subjects, as opposed to the less successful subjects, first detected the problem and then used their knowledge of the language

to resolve the problem.

As was shown in the protocol analysis, the less successful subjects at the low language proficiency level, partly because of a lack of an awareness of effective strategy use, focussed their processing of the text on local textual features. The subjects' heavy reliance on local textual aspects did not help them to go beyond these features to attain the higher level of text integration which is a key component of summarisation. The end result of the lack of effective strategy use was that the less successful subjects could not summarise and hence achieved very low scores on the summary test. The less successful subjects' reading was typical of the weak readers whom Block (1986) described as Non-Integrators.

In contrast to the low level less successful subjects, the high level successful subjects, because they were more effective in their strategy use, rarely needed to rely on local level text processing and were hence able to focus on a higher level of text information integration. These subjects resemble what Block (1986) characterised as Integrators. The two important cognitive operations in summarisation - selection and reduction of incoming text information - were markedly absent from the less successful subjects' readings. Hidi and Anderson (1986) have noted that low language competence does not by itself lead to poor summarisation. Instead they argue that the lack of an appropriate selection of what is important and an inability to integrate information in a text are responsible. It is clear that some of the prerequisite mental operations which are central to making a summary, such as understanding individual propositions and creating a coherent link between them and remembering them (Hidi and Anderson (1986) were not achieved by the low level less successful subjects in the present study.

As Johnston and Afflerbach (1985) have shown, expert readers not only construct main ideas but also revise a text when they feel unhappy or when they are not content with the ideas they have gathered. Such readers also check the progress of their reading and use appropriate strategies depending on the situation. The successful subjects in the present study also exhibited the characteristics of these expert readers and they achieved high reading comprehension scores.

Additional evidence for the differences in an awareness of effective strategy use was also found from the comparison of the post-reading reflections of the subjects during the round-up interview (See Section 10.4). The high level subjects' reflections showed that they did recognise the effectiveness of their strategies and their own reading performance. This was illustrated by the subjects' views that the strategies they had used had helped them to read effectively and that they had understood the text. Further, the subjects' awareness of effective strategy use was shown in the strategies which they suggested, in retrospect, they should have used. The suggested strategies consisted of those that would have helped to achieve the assigned purpose.

In sharp contrast, the low level subjects did not know that the strategies they had used had not in fact helped them to attain the designated purpose. This was shown by the fact that they remarked that they had used strategies that had helped them and by the fact that they thought they had understood the text when they had not. The subjects' problems of awareness of effective strategies became even more apparent when they suggested, in retrospect, the same unsuccessful strategies that had not helped them to attain the reading purpose. Their suggestions point to the serious difficulty these subjects had in determining what other

effective strategies would have worked better. Further, the subjects were not even able to assess, in retrospect, why they did not use the strategies they said they should have used. The subjects' reflections also showed that they appeared to discover the ineffectiveness of their strategies only when they took the test. This post-reading awakening, as it were, highlights the difficulty the subjects had because they were not able to judge the ineffectiveness of their own strategy use and reading performance at the time of reading.

A lack of an awareness of strategy use was also observed in the comparison of the subjects' views of strategy use (in the questionnaires) and the actual strategies they reported. It was shown (Sections 7.3.7 and 10.3) that the low level subjects' reported awareness of what strategies they would use before reading was not translated to the actual reading to the same extent as that of the high level subjects.

The above discussion has shown that an awareness of appropriate and effective strategy use was to some degree responsible for the differences between the high and low levels as well as between the successful and less successful subjects from both levels. However, as will be shown in Section 11.7, deficiency in the L2 also played a part.

11.7. Deficiency in the L2 Language

Research into the linguistic threshold hypothesis has demonstrated the contribution of L2 proficiency to L2 reading (See Section 2.6) and as Alderson (1984) has argued reading in a foreign language is a language problem for readers at a low level of language proficiency and a reading problem for those at an advanced language level. From the results of the present study, the problem for readers at a low language level appears to be not only that they lack an

awareness of strategy use (See Section 11.6 for details) but also that they experience language deficiency and processing difficulties as will be discussed below (See Section 11.8). A lack of sufficient language clearly handicapped the low level subjects' effective reading. An initial indication that this might be the case emerged when the strategies reported only by the low level subjects were examined (See Sections 6.2.1. and 9.2.1) and it was shown that more of the strategies indicated problems with language than with effective strategy use. Further evidence from the protocol analysis (Section 9.6.1) that these subjects were struggling with their language comes from the fact that the students were not able to get the meaning a sentence even after re-reading it. The subjects also lacked a sufficient grammar knowledge to analyse problematic text parts and to check meaning. Because of their deficiency in the language, the low level less successful subjects were unable to detect and resolve meaning ambiguity and to use their background knowledge to interpret the text accurately.

The comparison of the strategy ranks (See Tables 6.10 and 9.6) showed that making use of background knowledge was reported more by the high than the low level subjects. The lack of background knowledge use at the low language level is similar to that observed with the subjects studied by Clapham (1996) and Ridgway (1997) who found that their linguistically poor readers were not able to benefit from their background knowledge. Lack of language also forced the low level subjects in the present study to attend unduly to lower text aspects rather than to derive meaning and integrate information in the text at the high level. This was shown in the frequency with which the subjects grappled with the text as they attempted to dissect sentences into smaller units to cope with comprehension problems. Since they relied heavily on lower level processing, the subjects were unable to construct a coherent representation of the main propositions the text – a critical requirement for summarisation (Kintsch and van

Dijk, 1978). A failure to link ideas and transform them into macro-propositions, which characterised the "underprepared" subjects in John's study (1985) (See Section 2.9), was also a key problem for the low level and less successful subjects of the present study.

The frequent reliance of the low level less successful subjects on bottom-up rather than top-down strategies emphasises the lack of balance which an interactive reading model proposes for effective reading (See Section 2.4.3). Compensatory strategy use as a mechanism for coping with reading difficulty when one source of processing fails was lacking in the strategy use of the low level less successful subjects. As was shown (See Section 6.7.1.1), one of the subjects failed to use her grammatical knowledge to check the erroneous meaning she had provided based on her prior knowledge. It appears that below a certain level of language proficiency, even the possibility of compensatory processing might be difficult to achieve. As the protocol of that subject clearly illustrated, she was not able to compensate for the inappropriate background information had she used to interpret the text. This subject's difficulty is typical of what Carrell (1990) characterised as a problem of background interference which readers at low language level experience when they, because of their low language level, attempt to use the closest schemata available to interpret a text.

In contrast, the high level successful subjects did not struggle with language; this is exemplified in their ability to get sentence meanings with relative ease without having to re-read them in a disjointed manner. They were able to utilise their linguistic knowledge to deal with problematic text parts and to detect and resolve meaning ambiguities. Further, they used their language ability to reconcile and check meaning problems resulting from a lack of background knowledge (See Section 9.6.1). Because these subjects had sufficient language,

they did not heavily resort to processing the text at the lower level. And as they were able to get sentence meanings easily, they managed to construct the main ideas or macro-propositions by condensing the information in the text using their own words. Therefore, their reading rarely suffered from frequent segmentation of the text into smaller units and this enabled them to focus on integrating the information in the text. The summary making strategies of the high level successful subjects in the present study were characteristic of the summary making processes of fluent readers in other studies (See Johns, 1985).

The lack of dictionary use by the high and low level subjects in the pilot study was intriguing. It can be argued that the high level subjects, because of their better command of the language, did not need to use the dictionary. However, considering the low level subjects' deficiency in the language one might have expected them to compensate for this deficiency by using a dictionary. Interestingly, the lack of dictionary use in the pilot (Table 6.10) was in contrast to its frequent use in the main study in which the high level subjects as opposed to the low level used the dictionary more frequently (Table 9.6). As the protocol analysis showed (See Section 9.6.1), the more frequent use of the dictionary by the high level successful subjects was not due to lack of language but to a perceived need to cross-check meaning.

Essentially the low level and less successful subjects' reading difficulties were compounded by a combination of the lack of an awareness of appropriate strategy use and deficiency in the language. In addition, as will be shown next, the subjects' processing difficulties, which were a by-product of a lack of an awareness of strategy use and deficiency in the language, had a disrupting effect on the subjects' reading.

11.8. Processing difficulty

The processing difficulties of the subjects in this study were clearly evident in the disjointed nature of their reading of the text and in their inability to maintain an integrated and condensed interpretation of the text in their working memory while continuing to process the text. The problems were considerably greater for the low level less successful subjects than for the high level successful ones. As was shown in the protocols (Section 9.6.1), because of language deficiency and ineffective strategy use, the low level less successful subjects had to backtrack frequently and break difficult textual parts into smaller units. This resulted in a heavy disruption of the rhythm and coherent flow of their reading. Consequently, they not only had to re-read the difficult parts in order to get the meaning but also, because they could not retain a coherent representation of the information in the text in their working memory, to resort to cramming the text. By doing so, the subjects tried to place un-synthesised text chunks in their memory as an alternative for reading for meaning and thus over stretched their working memory capacity.

Since only recently held information in the working memory is available for access and since it is retained accurately for only a brief period of time (Kintsch and Van Dijk, 1995), by the time the subjects had backtracked to the problematic parts, the crammed information would have disappeared. Further, by re-reading dissected text parts these subjects were not reading for meaning. To offset this problem and since what ever they had read had decayed in the working memory, the subjects were mostly seen re-reading problematic parts in a disjointed manner. Inevitably, this method of processing did not help them to get a coherent interpretation or meaning of the text (a necessary component of summarisation) and since meaning stays longer in the working memory than does the surface or visual image of the

structure of a text (See Section 2.3), it is not surprising that the subjects could not remember what they had read. This problem was illustrated in the frequent remarks made by the subjects that they had forgotten what they had read and had to go back and re-read.

The situation with the high level successful subjects was quite different. The high level successful subjects' reading was not marked by a frequent disjointed processing of the text and there were fewer instances of disruptions. Because of their sufficient language level and their awareness of effective strategy use, the subjects were able to keep an integrated and coherent interpretation of the information in the text. This was shown by the relative ease with which they understood the sentences and by the frequent summarisations they made as they read. The subjects also did not need to backtrack and re-read by breaking up difficult textual parts because they were mostly able to get a sentence's meaning from one reading. This substantially limited major disruptions to the rhythm and flow of the subjects' reading. As the subjects' had good language command, they were able to read for meaning as opposed to cramming the surface structure of the text. This is likely to have reduced the congestion on the limited capacity of their working memory because condensed meaning rather than unsynthesised text chunks was placed in it. Their superior language ability permitted them to focus on getting macro-propositions of the text and hence they were able to attain integrated representations of the text information. As the protocols showed (Section 9.6.1), the high level successful subjects did not complain of forgetting the meaning of what they had read. It is not surprising that these subjects achieved high scores on the summary test.

Since strategy choice is affected by purpose, the effect of purpose, whether assigned or assumed, on the choice of an appropriate strategy in the present study needs to be pointed out.

As was shown in the pilot study (See Section 6.5), the subjects' lack of clarity as to what they were expected to do for Purpose 2, appears to have contributed to the frequent reporting of memorising. Further, based on their pre-university experiences of examination questions, the subjects' assumptions of what the test questions (Purpose 2) would require them to do also seem to have encouraged the generation of an inappropriate strategy – memorisation. It is to be recalled that a few subjects in the pilot study had indicated their lack of interest in the reading material and the tasks (See Section 7.4.3). Although this was a minor problem, it does nevertheless merit mentioning because motivation, be it extrinsic or intrinsic, has a role in influencing processing (See Fransson, 1984). As Fransson has shown, less motivated readers reading for the sake of an exam (extrinsic motivation) channel their reading to a surface level processing of texts and they fail to remember what they have read. One less successful subject in the pilot study did express his lack of motivation in doing the tasks during the round-up interview (See Appendix 35). It is possible that his lack of motivation might have, to some degree, influenced his strategy choice - frequent memorisation.

Section 11.9 draws some conclusions from the findings and discussion of the previous chapters and then it points out the limitations of the study as well as suggestions for future studies.

11.9. Conclusions

This study set out to investigate the reading strategies of a sample of undergraduate students at high and low levels of language proficiency. The findings show that these subjects were not markedly different in the types of strategies they used, and the frequency with which they used them. The findings corroborate those of other studies (Anderson, 1991). The present

study demonstrates that the key to successful reading is not the mere possession of knowledge of varied strategy types and/or more frequent use of them. Nor is it a matter of merely a high language proficiency level. Although most strategy research points to appropriate strategy use as distinguishing between skilled and less skilled readers, the present study gives further insights by showing that success in reading is related to a combination of an awareness of appropriate and effective strategy use and language ability. The fact that there was no correlation between the comprehension scores of the subjects and the strategy types and their frequency of use further supports the argument that differences between good and poor readers are not the result of simply knowing about strategies.

Some researchers (Alderson, 1984) have argued that at a low language level reading in a foreign language is more of a language problem. The results of the present study also show that the reading problems of low language level students are indeed partly a result of a lack of sufficient knowledge of the English language. However, the problems are not confined solely to language proficiency; they are a result of a combination of interrelated aspects: a lack of an awareness of strategy use, deficiency in the language and processing difficulties. Although these factors interact with each other, the first two factors (lack of an awareness of strategy use and deficiency in the language) are inseparably linked, while the third factor (processing difficulties) appears to be a by-product of either and/or both factors. For the subjects at a high level of language proficiency, the problems appear to be more the result of reading ability or effective strategy use and processing difficulties rather than deficiency in the language.

This study shows that less successful subjects at a low language level can use, to a limited extent, their strategies effectively. However, it appears that their efforts to do so may be

compromised by a lack of sufficient language ability. Although the interference of low language level on the transfer of reading skill from L1 to L2 reading has been shown by some studies (See Section 2.7), its effect on effective strategy use of readers at a low proficiency level is not well understood. The argument that language deficiency can affect the effective strategy use of readers at a low language level is supported by the protocol analyses in the pilot and main studies. The protocols have shown that while the high level successful subjects were able to get the meaning of sentences with relative ease and could condense or summarise them, the low level successful subjects could not do so. Further, the fact that the high level successful subjects obtained higher reading comprehension scores than did the successful low level subjects also lends some support to the argument that sufficient language ability plays a supportive role in effective strategy use.

From the present study, there appears to be a threshold level below which readers fail to make use of their strategies effectively. Yamashita (1999) has proposed three thresholds (lowest, minimum and maximum) and has argued that below the lowest threshold the L2 fails to have any effect on reading. As the pilot study has shown, one of the subjects at the low language level appeared to be at the lowest threshold level and could not use her linguistic knowledge to process the text. It must be remembered that this subject was not included in the present study because she was exceptionally weak (note that she achieved a C grade in the ESLCE – a grade for entrance to colleges and universities in Ethiopia.) Therefore, her processing difficulties give an indication of the extent and nature of the processing difficulties which other similar less successful students who enter higher education in Ethiopia could experience. Moreover, the study has also shown the difficulty of the less successful subjects in determining the effectiveness of their own strategy use before or during reading. As the post-

reading reflections of these subjects have shown, the subjects' realisation of a lack of success appears to be instigated by external-stimuli (the reading comprehension test) rather than an integral part of their strategy use. In contrast, the successful subjects appear to possess a mechanism for checking the effectiveness of their strategy use as an integral part of their strategy repertoire.

The fact that the processing difficulties experienced by the subjects are a by-product of strategy awareness and language ability inevitably makes them non-alterable dimensions of less successful or indeed successful readers' processing capabilities. Unfortunately, it is difficult to increase the working memory capacity of readers through training although it is possible to explain how it works and what its limitations are. The present study suggests that for less successful readers, who are deficient in the language, processing difficulties still remain as non-negotiable aspects. The problems of memory capacity can only be alleviated if the pressure from language deficiency is eased and/or if learners are alerted to an awareness of their own strategy use.

As was shown in the present study, in comparison to the less successful subjects, the successful subjects appeared to be more resolute in trying out different strategies when the ones they had used were unsuccessful. Indeed, as evidenced from the smaller number of times the successful subjects gave up or skipped problematic parts, perhaps a more persistent approach to reading and to language learning might be an important element in successful reading because without it other alternative strategies might be left unexplored and hence the desired effect on reading performance not obtained.

Although the present study has attempted to explore reading strategies and has provided some

answers to the research questions, it has its own limitations.

11.10. Limitations of the study and suggestions for further research

No research can claim to cover a problem completely. Nor is it possible for any research to be complete in its methodology or the procedures it uses to investigate the problem. The present study, therefore, has some limitations. They are presented together with suggestions for improvements to be incorporated in future studies.

One obvious limitation of using think-aloud protocols is that they do not tap automatised cognitive processes that a reader uses to comprehend a text. Consequently, any such processes that the reader might use to understand a text will remain obscured. In this respect, the results of the present study, which were elicited from a think-aloud, should be understood as reflecting only the conscious and deliberate processes that the readers employed to understand a text.

Since the focus of the present study was on the investigation of strategy differences in the light of overall language proficiency, the study has not examined the strategies in relation to differing *reading* proficiency levels. Such an investigation would also provide additional insights into whether differences of strategy use are the result of overall language ability and/or reading ability.

The aim of the present study was to investigate in detail similarities and differences of strategy use, so a classification of strategies into broader categories might have glossed over the specific nature of strategy uses and differences between the subjects. For this reason, strategies were not categorised and were not analysed in depth although a limited grouping of

strategies was made where it was deemed that such a grouping explained certain relationships or comparisons.

Amharic was used to elicit the strategies of the subjects. It should be noted that for some of the subjects Amharic was a second language although the subjects were judged to be quite fluent in the language and certainly more fluent than in English. Although the decision to use the Amharic was a pragmatic rather than a procedural decision, the use of subjects' L1, rather than Amharic, to elicit think-aloud data might limit any difficulties some of the subjects might have experienced in thinking-aloud in Amharic.

With an increasing number of studies showing that strategy type and frequency differences are not the fundamental sources of differences between proficient and less proficient reader, future research needs to focus more on detailed analyses of protocols of larger number of successful and less successful subjects. The benefits of focussing on such readers has been shown in the present research in which an investigation of successful and less successful readers at high and low levels provided revealing insights into the strategy use of these readers and the reasons for their success or failure in reading.

The present study used a questionnaire for eliciting the subjects' perceived strategy use before reading. Though useful, the questionnaire only related to a limited number of the strategies the subjects actually used. A more comprehensive insight into readers' awareness of strategy use would be obtained by turning the strategy types identified in this study into a questionnaire and using them to elicit the pre-reading strategy knowledge of readers for comparison with actual strategies the readers use.

11.11. Pedagogical implications for the Ethiopian educational system

It is difficult to give a comprehensive list of pedagogical implications based on the findings of this study. However, the following key points can be made.

11.11.1. Raising awareness of strategy use across the educational system in Ethiopia

This study has demonstrated clearly the difficulties of students at freshman level in using their reading strategies effectively and appropriately. It has also shown the students' lack of awareness in evaluating their own reading performance. These difficulties strongly point to the lack of strategy use awareness input in the Ethiopian educational system, especially in regard to how students can examine critically their own strategy use and how they can seek explanations for the lack of success in their reading comprehension. In view of these problems, therefore, it is important to suggest the following points to raise an awareness of strategy use in the Ethiopian educational system.

- As reading strategy use is an important component of the broader aspect of learning, and since the starting point for this learning is at the lower levels in schools, it is crucial that young learners in Ethiopia be primarily targeted to help them become aware of their own strategy use. This can be achieved through a classroom curriculum component in which teachers (See Section 11.11.2.1 on teachers' training in strategies) give simple explanations and learning tasks to their young learners regarding what strategies are and how strategies can change or be adapted from one learning activity (e.g. reading) in one situation to another for a given learner. It is important to emphasise that strategy awareness - a cognitively complex notion for young learners - needs to take account of the level of cognitive development of these learners. Therefore, explanations and tasks should

be very simple and should be based on the learner's own strategies.

- At the higher levels (high schools and colleges and/or universities) where the cognitive development of the students is higher, students can be gradually introduced to how they can evaluate not only the success or lack of it of their reading comprehension (product), but also their strategy use (process). They should also be made aware of how they can evaluate why certain sets of strategies are working and why others are not working for them and on the basis of this evaluation how they can modify, and if necessary, reject some strategies. In addition, it is important to help these learners to be aware of the need to evaluate and assess how much they have or have not comprehended in the light of the learning objective set either by themselves or by their teachers.

- In order for teachers to raise the awareness of their students, it is necessary that they too be familiar with issues of strategy awareness, that is how strategies influence the process and out come of a given learning activity (e.g. reading) and how strategies relate to other factors such as language proficiency and cognitive processing capacity.

- Educators and policy makers also should be informed by insights from practical classroom strategy awareness issues as well as by those from this and other studies.

In order to materialise the above suggestions, it is important to devise ways of incorporating them into actual classroom situations. Section 11.11.2 briefly deals with some of the ways of implementing strategy training in the Ethiopian educational system.

11.11.2. Implementing strategy training across the educational system

11. 11.2.1. Teacher education

Teachers in our educational system are primarily responsible for imparting knowledge and are the first closest contacts to students. In this regard, their knowledge in issues of strategy awareness and use is crucial. However, teacher education in Ethiopia places greater emphasis on equipping would-be teachers as well as those in-teaching with knowledge of the subject matter in which these teachers specialise. There is therefore a lack of training in the way of how these teachers can help their students with their strategy use in classrooms. Training of teachers also needs to show, as indeed have the findings of this study, that the sources of the difficulties of students are not merely caused by the students' deficiency in the English the language; they are also the result of a lack of awareness of effective strategy use and processing difficulty (a by-product of language and strategy use).

In addition to formal training of teachers in strategy awareness, it is important to organise seminars and workshops in which teachers across the country can exchange their experiences in strategy awareness in their classrooms so that they can develop insights into the problem from different perspectives in different teaching and learning conditions.

11. 11.2.2. Development and design of teaching materials

Another important component of strategy training is the design and development of teaching materials in the Ethiopian educational system. It is no use to train teachers in strategy use if the teaching materials they use do not provide the framework for translating strategy use awareness. Existing teaching materials place heavy emphasis on product-oriented approach to

learning outcome (comprehension) in the form of comprehension questions and/or in few cases on helping students activate their background knowledge. Therefore, teaching materials should provide in-built guidelines to help our students to reflect on why they are successful, why they are not successful and if not successful to evaluate why and then determine effective or alternative strategies in the place of those strategies which do not help. Teaching materials should also contain guidelines or exercises to help students to evaluate how much they have or have not comprehended and to investigate the reasons for their lack of success in their reading and learning.

11.11.2.3. Classroom teaching of reading

This study has shown the differences in strategy use between high and low level subjects as well as successful and less successful subjects. In this regard, it is important to re-examine the demands which most reading activities aimed at a whole class would have on students of varying levels of language and strategy use. From whole-classroom reading exercises to individualised intensive preparatory readings which students do for their examinations, it is important to take account of the problems which less successful readers experience in these situations.

The high level successful subjects who were cited in the Case Study (Section 9.6.1) happen to come from private schools considered to be the best in the country. On the other hand, the low level less successful subjects in the same study came from rural schools with limited resources. It is important to emphasise that these students are often treated as if they were homogeneous groups in reading classrooms in tertiary levels and are expected to accomplish reading tasks and even examinations on equal footing. This approach does not take account of

the enormous differences between these students.

That the less successful subjects needed a stimulus (the test) before they could gauge the effectiveness of their own strategy use has a pedagogical implication: these and other similar subjects are less likely to prepare well for their exams. It is, therefore, crucial to help less skilled readers develop a way of evaluating the effectiveness of their reading strategies before they sit for examinations.

The value of training learners in strategy use has been shown by research (See Section 3.5). Considering the fact that the less successful readers in the present study were not aware of the ineffectiveness of their strategies and their own poor reading performance, it is possible that these subjects can be helped to be more sensitive to how they read. They can also be helped to check and evaluate their reading performance in the light of their difficulties and in relation to their reading purpose. It must be noted that using individual strategies in training is likely to be less useful because a strategy which works for one reader under one condition might not be useful for another in a different situation. Therefore, a self-directed strategy use awareness and a monitoring component in students' studying (reading), supplemented by teachers' input, should be incorporated in existing classroom readings. Considering the realities of limited classroom times for reading practices and exercises, such a component should be easily adapted to reading sessions in which the students take away from the class guidelines on how to monitor and improve their reading during their studies outside the classroom.

Considering the limiting effect of language deficiency on the effective use of strategies of the less successful readers, more focus on improving the linguistic ability of these learners should

be given. For readers at a high language level, however, the emphasis should be on effective strategy use.

11. 11.2.4. Cultural influences on strategy use

Culture exerts an influence on how learners learn and this is true of Ethiopian learners who pass through a modern educational system that is still influenced by the values of our traditional cultural educational system that places high importance in rote learning (Haileselassie, 1999). Therefore, it is important to take into account that the choice of certain strategies, such as memorisation, by our students may not solely be the result of language deficiency or lack of awareness of strategy use; it could also be the influence of the long-rooted reflection of our culture on the learning styles of our students. It is, therefore, crucial to carry out further research into the relationship between strategy use and culture, more particularly on the influence of culture on the choice of strategy use for reading in particular and for learning in general.

11. 11.2.5. Links with wider issues in learning theory

Learners in Ethiopia bring with them a vast array of learning styles, skills and experiences when they study in colleges and universities. In view of this, it is important to integrate reading strategy awareness into the wider issues of learning in the Ethiopian educational context in which learners with varying and diverse ways of learning are involved. Considering the difficulty of identifying and catering for the unique ways by which every learner learns within a curriculum, it is crucial to address the various ways in which students in Ethiopia may be pre-disposed to work by the style of their own in-built thinking patterns. This would help to develop and enhance the inherent potentials of our students and maximize the

efficiency of the contributions of our teachers and teaching materials. Furthermore, more research is also needed looking at the various ways in which learners in Ethiopia learn and how these differences contribute to effective strategy use in reading and learning.

Finally, it is hoped that the findings of this study will contribute to the understanding of the reading strategies of students who enroll in higher learning institutions in Ethiopia.

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Appendix 1: Passages used for the subjects in the Pre-pilot Study

SHEET EROSION

Soil movement resulting from raindrop splash and surface runoff is often called sheet erosion. Sheet erosion removes the lighter soil particles, organic matter, and soluble nutrients from the land and is thus a serious detriment to the maintenance of soil fertility and productivity. Since sheet erosion occurs rather uniformly over the slope, it may go unnoticed until most of the productive topsoil has been removed. For this reason, sheet erosion must be considered as most serious.

As the surface water accumulates, it moves downslope. This water rarely moves as a uniform sheet over the surface of the land. It would move in this manner if the surface were smooth and uniformly inclined, which is seldom the case. The surface is almost always irregular. Surface areas a few feet square generally exhibit in miniature the drainage pattern of a major watershed. Each small portion of the runoff water takes the path of least resistance, concentrating in depressions and gaining in velocity as the depth of water and the slope of the land increases.

The erosiveness of flowing water depends upon its velocity, turbulence, and the amount and type of abrasive material it transports. Velocity increases as the depth of flow and the slope of the land increases. Turbulence of flow increases as the rainfall becomes more intense and as the surface flow concentrates in depressions. Abrasive capacity of the runoff depends upon the energy of the flowing water and the amount and type of suspended material in the water.

Soil particles are detached by a combination of rolling, lifting, and abrasive action. When flowing water moves over a soil surface, horizontal forces act upon the particles in the direction of flow. These forces detach particles from the soil mass by rolling or dragging them out of position. As the surface flow concentrates in depressions, the flow becomes more turbulent, and the different velocities and pressures cause vertical currents and eddies. The upward movement of the water past the soil particles detaches them by a lifting action. Soil detachment by abrasion occurs when particles already in transit in the flow strike or drag over particles on the soil surface and set them in motion.

Soil particles are transported by a combination of surface creep, saltation, and suspension. The horizontal forces of water flowing over the surface transport soil particles by rolling or sliding them along in contact with the land surface. This is called surface creep. Movement by saltation occurs when forces due to turbulence lift the particles from the surface and move them along by a continuous series of steps or jumps. When the upward velocities in the flow exceed the settling velocities of the detached particles, transportation by suspension occurs. Particles transported by suspension may travel long distances before settling to the land surface.

The amount of material transported depends upon the transporting capacity of the runoff and the transportability of the soil. The transportability of the soil is influenced by the size, density, and shape of the individual soil particles, and by the retarding effect of vegetation and obstructions. Soil that is moved downslope by the action of the raindrops and by shallow flow over the soil surface consists of the smaller and lighter particles. The larger and heavier soil particles are more difficult to transport, hence they are not moved as great a distance.

RESPIRATION IN WATER

All living organisms use energy which they must obtain from outside sources. Most plants capture the energy of sunlight and use carbon dioxide from the atmosphere to synthesize sugars and subsequently all the other complex compounds that make up a plant. Animals, on the other hand, use energy from chemical compounds which they obtain from plants, either directly by eating them or indirectly by eating other animals that in turn depend on plants. The chemical energy that animals use is therefore in the end derived from the energy of solar radiation.

Most animals satisfy their energy requirements by oxidation of food materials. A small number of animals can, in the absence of oxygen, utilize chemical energy from organic compounds, but the complete oxidation of these compounds makes available roughly ten or twenty times as much energy. The bulk of most animal food consists of three major groups of compounds, carbohydrates, fats, and proteins. The oxidation of carbohydrates and fats yields carbon dioxide and water as the only end products, protein oxidation yields small amounts of other end products in addition to carbon dioxide and water.

The uptake of oxygen and release of carbon dioxide is called respiration, a word that applies both to the whole organism and to the processes in the cells. Animals take up oxygen from the medium they live in, and give off carbon dioxide to it. Aquatic animals take up oxygen from the small amounts of this gas dissolved in water, terrestrial animals from the oxygen in atmospheric air. Many small animals can take up sufficient oxygen through the general body surface, but most animals have special respiratory organs for oxygen uptake. As the cells utilize oxygen for oxidation of foodstuffs, carbon dioxide is formed and follows the opposite path, being released through the general body surface or the respiratory organs. The water formed in the oxidation processes merely enters the general pool of water in the body and presents no special problems.

The most important and sometimes the only physical process in the movement of oxygen from the external medium to the cell is that of diffusion, i.e., the gas moves as a dissolved substance from a higher to a lower concentration. The movement of carbon dioxide in the opposite direction also follows concentration gradients. The diffusion is often aided by a bulk movement (such as the circulation of blood), but this does not change the basic fact that concentration gradients provide the fundamental driving force in the movement of the respiratory gases. To understand respiration, it is therefore necessary to have a basic knowledge of the respiratory gases, their solubility, and the physics of diffusion processes.

Life presumably originated in the sea, and it is convenient to discuss aquatic respiration first and afterwards deal with respiration in the air. The air-breathing animals (primarily vertebrates and insects) are among the most complex organisms; however, the largest number of animals, especially many of the less highly organized invertebrates, are aquatic. After a brief review of the respiratory gasses and a bit of basic physics, this chapter deals with the problems of aquatic respiration.

IMPORTANT CHARACTERISTICS OF SOIL

Composition

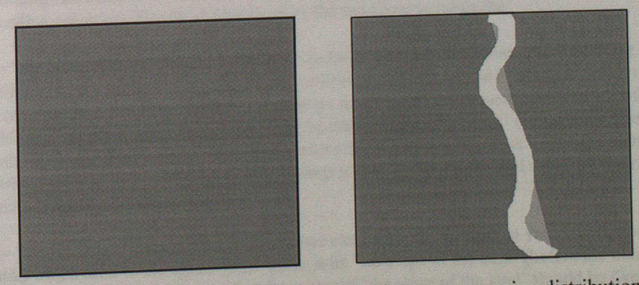
Soil is a complex system consisting of varying proportions of four principal components. These are the mineral or rock particles and the nonliving organic matter that form the solid matrix, and the soil solution and air that occupy the pore space within the matrix. In addition to these four components, soil usually contains numerous living organisms such as bacteria, fungi, algae, protozoa, insects, and small animals that directly or indirectly affect soil structure and plant growth.

Mineral particles are the chief components of most soils on a volumetric basis, except in organic soils such as peat, and they are also the most stable. They consist of rock particles developed in situ by weathering or deposited in bulk by wind or water. Nonliving organic matter usually constitutes less than 5% of the volume, except in the surface layer in peat soils, but it can vary considerably in a given soil with cultural practices. Organic residues consist of a wide variety of materials ranging in size from large root fragments through rootlets and litter to colloidal products of decomposition.

The most conspicuous property of the soil matrix is its particulate nature. In contrast, the pore space forms a continuous but geometrically complex system which usually constitutes 30-60% of the total volume (see Fig. 3.1). It may be filled entirely with water, as in saturated soils, or largely with air, as in dry soils. In agricultural soils at field capacity, the water fraction usually ranges from 40 to 60% of the pore space. The high degree of continuity in the water phase is of great importance in respect to water and salt movement in the soil and to roots.

In addition to these nonliving components, the soil is permeated by living roots and contains large populations of microorganisms, especially in the surface layers and in the vicinity of roots, the rhizoshpere. Soil organisms play an important role in decay of organic matter and release of nitrogen and mineral nutrients, which then become available for reabsorption. They also tend to deplete the oxygen content and increase the carbon dioxide content of soil, thus modifying the soil atmosphere in which roots grow. Organic products of decomposition are said to play a significant role in cementing soil granules together, thereby improving soil structure. The roots, together with small animals such as earthworms (see Barley, 1962), insects, and tunnelling vertebrates, exert important effects on soil water relationships, particularly the infiltration and distribution of water in the soil. The role of insects and the soil microflora was discussed in detail by Russell (1972) and Donahue et al. (1977), and the role of soil organisms in plant disease was covered in a symposium by Baker and Snyder (1965).

Fig. 3.1



The physical characteristics of a soil depend chiefly on the texture or size distribution of mineral particles, on the structure or the manner in which these particles are arranged, on the kind of clay minerals present and the kind and amount of exchangeable ions adsorbed upon them, and on the amount of organic matter incorporated with the mineral matter.

Appendix 2: Deletion process for blanks in the gap-filling task

Exact response	Deletion processes for each response
Sheet	B1= The blank requires the candidate to relate cues such as, 'soil movement' and 'sheet erosion' in the definition of sheet erosion (in the first sentence) with clues such as, the words 'erosion' after the blank and 'removes the lighter soil particles' (in the subsequent sentence) that explain about the type of erosion already mentioned and one that moves or the soil. The blank also requires the candidate to relate the title of the text with the second sentence which contains the blank and which talks about sheet erosion.
Land	B2= The blank requires the candidate to relate clues such as, 'removes the lighter soil particles' (in the second sentence) with clues such as, 'over the slope (in the third sentence) which mentions the place where sheet erosion occurs. The blank also requires the candidate to use cues such as 'from the' and the definite article 'the' immediately before the blank, and relate these clues with the place where erosion occurs (mentioned in the third sentence)
Soil	B3= The blank requires the candidate to use clues such as, 'is thus a serious detriment to the maintenance of' (which indicates that the subject is erosion and its effect on something) with clues about soil i.e., 'fertility and productivity' after the blank, and 'until the most of the productive topsoil has been removed' (in the subsequent sentence)
Reason	B4= The blank requires the candidate to seek a clue for a reason why 'sheet erosion must be considered as most serious' (after the blank) by using the clue 'this' (before the blank) as a signal to an idea mentioned already, i.e. a reason (damage from sheet erosion being difficult to see until it is too late)
Water	B5= The blank requires the candidate to relate the clue 'it moves downslope' (in main clause after blank) which refers to preceding information about something that accumulates on the surface with 'This water rarely moves' (in the subsequent sentence) which signals preceding information about water and its movement.
Surface	B6= The blank requires the candidate to relate clues such as, 'It would move in this manner' which indicates a less likely uniform movement of water only possible given an opposite surface i.e., 'were smooth and uniformly inclined' (after the blank) with preceding information already mentioned i.e., the nature of movement of water over a particular type of surface (in the preceding sentence) i.e., 'This water rarely moves as a uniform sheet over the surface' (in the preceding sentence). The blank also requires the candidate to relate the
Irregular	B7= The blank requires the candidate to relate the two contrasting ideas, one describing the less likelihood of the surface being smooth and uniform (the if-clause) and 'which is seldom' and the other talking about the surface being always irregular (in subsequent sentence after the blank) and supply a response that can describe the opposite of 'always' (in sentence after the blank) by using clues such as, 'which is' (before the blank) and 'the case' (after the blank) both of which refer to 'if ...were smooth and uniformly' which the subsequent sentence clearly signals is not always the case.
Increases	B8= The blank requires the candidate to relate clues such as, 'gaining in velocity' (before the blank) which refer to the speed of the water, with 'the slope of the land' (before the blank) and supply a response that indicates what the nature of 'the slope of the land' should be like for the 'runoff water' (before the blank) to gain in velocity.
Velocity	B9= The blank requires the candidate to use the organisation of ideas in the topic sentence of paragraph 3, i.e. the order of the factors (velocity, turbulence, and the amount and type of abrasive material) that determine velocity in the topic sentence) by using clues such as, the third sentence that explains the second factor 'turbulence'.

Abrasive	B10= the blank requires the candidate to use the organisation of ideas in the topic sentence of paragraph 3, that is the order of the three factors the second of which is explained in the third sentence of that paragraph.
Surface	B11= the blank requires the candidate to relate clues such as, 'when flowing water moves over a soil' (before the blank) with associated ideas about water moving over the soil surface 'when ... water moves as a uniform sheet over the surface' (in paragraph 2; second sentence). The blank also requires the candidate to relate subsequent information (after the blank) which refers to soil particles being detached or removed from soil surface (in topic sentence before the blank in the paragraph (paragraph 4) with references about 'the particles in the direction of flow' (after the blank).
Forces	B12= the blank requires the candidate to relate cues such as 'these' (before the blank) which refer to preceding information about the action that detaches soil particles (in first sentence before the blank) with 'detach particles from the soil' (in subsequent sentence after the blank).
Lifting	B13= the blank requires the candidate to relate clues such as, 'detaches them by' (before the blank) which suggests a preceding agent, and 'action' (after the blank) with preceding information which talks about soil detachment (in the topic sentence in paragraph 4) and which also signals the organisation of ideas in the paragraph where three actions (rolling, lifting, and abrasive) that detach soil particles are explained.
Soil	B14= the blank requires the candidate to use cues such as 'particles on the ___ surface' with preceding information that refers to 'detach the particles from the soil' (third sentence; paragraph 4). The blank also requires the candidate to relate preceding information (first paragraph) about the movement of particles over the surface 'sheet erosion removes soil particles from the land' and 'movement of soil particles over a soil surface'.
Surface	B15= The blank requires the candidate to use the clue 'creep' (after the blank) with the organisation of the paragraph which explains about the three types of forces that cause soil movement (surface creep, saltation, and suspension) in the topic sentence. The blank requires the candidate to use the order in which the three forces are explained in that paragraph.
Saltation	B16= The blank requires the candidate to relate cues such as, 'movement by' before the blank (which refers to a preceding agent) with the organisation of ideas in paragraph 5 in which the three forces or agents are explained in sequence.
Suspension	B17= The blank requires the candidate to attend to cues such as 'transported by' which refers to a preceding agent and 'particles transported by suspension' (in sentence after the blank) relate these cues with the organisation of ideas in paragraph 5 where the agents are explained in the order in which they appear in the topic sentence of that paragraph.
Transported	B18= The blank requires the candidate relate preceding information about 'soil particles transported' (in preceding paragraph - paragraph 5) with related ideas such as 'the transporting capacity' and 'transportability of the soil' after the blank.
Soil	B19= The blank requires the candidate to relate preceding and subsequent information about the transportability of soil by using cues such as the definite article 'the' (before the blank) in the phrase 'The transportability of the'.
Lighter	B20= The blank requires the candidate to relate two contrasting ideas in the preceding and subsequent sentences by using the order of the comparative adjectives 'smaller and __' and 'The larger and heavier'.

Appendix 3: Gap-filling task for the subjects in the Gap-filling Group

SHEET EROSION

Soil movement resulting from raindrop splash and surface runoff is often called sheet erosion. _____ erosion removes the lighter soil particles, organic matter, and soluble nutrients from the _____ and is thus a serious detriment to the maintenance of _____ fertility and productivity. Since sheet erosion occurs rather uniformly over the slope, it may go unnoticed until most of the productive topsoil has been removed. For this _____, sheet erosion must be considered as most serious.

As the surface _____ accumulates, it moves downslope. This water rarely moves as a uniform sheet over the surface of the land. It would move in this manner if the _____ were smooth and uniformly inclined, which is seldom the case. The surface is almost always _____. Surface areas a few feet square generally exhibit in miniature the drainage pattern of a major watershed. Each small portion of the runoff water takes the path of least resistance, concentrating in depressions and gaining in velocity as the depth of water and the slope of the land _____.

The erosiveness of flowing water depends upon its velocity, turbulence, and the amount and type of abrasive material it transports. _____ increases as the depth of flow and the slope of the land increases. Turbulence of flow increases as the rainfall becomes more intense and as the surface flow concentrates in depressions. _____ capacity of the runoff depends upon the energy of the flowing water and the amount and type of suspended material in the water.

Soil particles are detached by a combination of rolling, lifting, and abrasive action. When flowing water moves over a soil _____, horizontal forces act upon the particles in the direction of flow. These _____ detach particles from the soil mass by rolling or dragging them out of position. As the surface flow concentrates in depressions, the flow becomes more turbulent, and the different velocities and pressures cause vertical currents and eddies. The upward movement of the water past the soil particles detaches them by a _____ action. Soil detachment by abrasion occurs when particles already in transit in the flow strike or drag over particles on the _____ surface and set them in motion.

Soil particles are transported by a combination of surface creep, saltation, and suspension. The horizontal forces of water flowing over the surface transport soil particles by rolling or sliding them along in contact with the land surface. This is called _____ creep. Movement by _____ occurs when forces due to turbulence lift the particles from the surface and move them along by a continuous series of steps or jumps. When the upward velocities in the flow exceed the settling velocities of the detached particles, transportation by _____ occurs. Particles transported by suspension may travel long distances before settling to the land surface.

The amount of material _____ depends upon the transporting capacity of the runoff and the transportability of the soil. The transportability of the _____ is influenced by the size, density, and shape of the individual soil particles, and by the retarding effect of vegetation and obstructions. Soil that is moved downslope by the action of the raindrops and by shallow flow over the soil surface consists of the smaller and _____ particles. The larger and heavier soil particles are more difficult to transport, hence they are not moved as great a distance.

Appendix 4: The Metacognitive Questionnaire

Name _____ Age_____

The following statements are about silent reading in English. Please indicate the level of agreement or disagreement with each statement by circling the appropriate number: 1 indicates strong agreement, 5 indicates strong disagreement.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. When reading silently in English, I am able to anticipate what will come next in the text	1	2	3	4	5
2. When reading silently in English, I am able to recognize the difference between main points and supporting details	1	2	3	4	5
3. When reading silently in English, I am able to relate information which comes next in the text to previous information in the text	1	2	3	4	5
4. When reading silently in English, I am able to question the significance or truthfulness of what the author says	1	2	3	4	5
5. When reading silently in English, I am able to use my prior knowledge and experience to understand the content of the text I am reading	1	2	3	4	5
6. When reading silently in English, I have a good sense of when I understand something and when I do not	1	2	3	4	5
When reading silently in English, if I don't understand something,					
7. I keep on reading and hope for clarification further on	1	2	3	4	5
8. I reread the problematic part	1	2	3	4	5
9. I go back to a point before the problematic part and reread from there.....	1	2	3	4	5
10. I look up unknown words in a dictionary.....	1	2	3	4	5
11. I give up and stop reading.....	1	2	3	4	5
When reading silently in English, the things I do to read effectively are to focus on					
12. mentally sounding out parts of the words	1	2	3	4	5
13. understanding the meaning of each word.....	1	2	3	4	5
14. getting the overall meaning of the text.	1	2	3	4	5
15. being able to pronounce each whole word	1	2	3	4	5
16. the grammatical structures	1	2	3	4	5
17. relating the text to what I already know about the topic	1	2	3	4	5
18. looking up words in the dictionary.....	1	2	3	4	5
19. the details of the content	1	2	3	4	5
20. the organization of the text	1	2	3	4	5
When reading silently in English, things that make the reading difficult are					
21. the sounds of the individual words.....	1	2	3	4	5
22. pronunciation of the words.....	1	2	3	4	5
23. recognizing the words.....	1	2	3	4	5
24. the grammatical structures.....	1	2	3	4	5
25. the alphabet.....	1	2	3	4	5
26. relating the text to what I already know about the text.....	1	2	3	4	5
27. getting the overall meaning of the text.....	1	2	3	4	5
28. the organisation of the text.....	1	2	3	4	5

Appendix 5: Protocol of subject in the Retrospection-Group

Having look at this title, I approached like this {like what?}first of all with the first sentence, they say the number four and I wait for the four things, and then this middle sentence, I don't think I understand everything about this sentence but I thought I don't need to understand it because I don't know why but I just understand what I can understand and may be it's because too long I skipped, of course I read through it's not because of the word er what is the problem? hmmm, may be because this second sentence it's kind of sub-sentence, it's not most important sentence, I think so. I usually you know in any writing we will give some example, after such as or for example, or for instance, and they name a lot of things, I don't think I need to understand every thing, {tell me about this paragraph}as long as I understand the examples or instance, I just say in my mind some thing, something, something, {can you explain what you mean?} for example this phrase [such as] it is obvious that example is coming next and then I don't need to remember every thing because they are example, so I will back to the main part I mean the whole sentence to understand it, just look at them I don't think about the pronunciation or I just grab them I just see them I just catch the shape I don't need to understand them, and then I go back to the sentence I mean after this example, this part is main part I reread them {did you understand it?} yes. I think is verb is very important to understand it sometimes I myself try to reread very quickly {did you do this, that is reread it quickly in this paragraph?}yes. When I find difficult sentence {here, in this paragraph?} I didn't think this was difficult I just don't understand this. Having read this part, then what I think. The idea is not so clear for me so I just skip it and go to next part.

The first two sentences about mineral particles, I think I go to this part, [they] when I found [they] what is they I thought and I understand they are talking about this thing. I try to find the subject, for example in this case, [they] means this and next time I have [it] here I try not to miss the point the subject what they are talking about. At first just read though from beginning to end. I am sure my understanding is not 100 percent, it's case all the time, in Japanese as well, I am the person who don't think that understanding everything is important. I don't feel comfortable in English or in Japanese {in this case, tell me about this paragraph}after having read them twice I have to say my understanding of this part {which part?} the second paragraph, it's little I mean smaller than the first part. I don't think I tried to find the key sentence this time, I just understand those three parts, something new, new, new, three new things. For example, in this paragraph, the first and the second sentence are talking about the same thing so this is gonna be kind of unit you know, and then next we have something new here and this is gonna last to here, {how did you know it's new?} because they don't have pronoun. I try to get the point, I don't think I tried to understand every words, every word, but I am kind of I have some idea after reading each part so I thought I was alright, now I can answer the questions I thought.

I found some words I cannot understand in the first sentence, I just skip it and the second word which I couldn't understand is the word I saw in the second or first paragraph I found out I didn't remember anything so I skip it again. And they say something about the figure 3.1 I just try to look at them but I didn't look into it so it didn't help, {look where?} the figure. {What else did you do to understand the text?} It's difficult to remember. When I have unfamiliar word I just look at them {what do you mean?} I didn't try to imagine the meaning or I just skip it because I have never seen them. They are new to me so I didn't do anything on them. I think when I come across or came across numbers or {tell me about this paragraph} percentage yes, here, but I don't remember the exact figure. When I first reading the first bit, I tried to remember what I can answer for you question, I mean how I read this text, but it didn't last. I think my understanding is getting less and less the third paragraph, just read from the beginning of the third paragraph. I was also thinking about one of my book on reading he said any book you should read any book twice and I did it I did it twice. After reading twice my understanding was better but still is about 60 per cent or so, but I didn't try to understand 100 per cent {why not?} because it's the way I read. This time I didn't try to find the key sentence as well. I just read it from the beginning to the end. And I don't remember how many sentences there have there was in that third paragraph or how it is organised, I didn't think about the organisation.

They say at the beginning in addition to something some thing, something so then I thought how it was mentioned in the last paragraph as well paragraph three in addition to some thing some thing, and then I went through the next bit. I read them twice and after that I look back again to get the point near the end they have some example and some names and I skipped them because in academic reading when they

have some quotation or some supportive argument, they have quite long sentence just saying names and years, I don't know whether or not they are important to understand it but {tell me about this paragraph} for me in paragraph four the information about the author or authority they are not important, so I just skipped them. I think in this case because I didn't think about any organisation in the last case so I tried to think about some organisation and they have some sign posting like thus or in addition to or some thing like that, and I tried to follow these sign to understand the context. I don't remember any unfamiliar word in paragraph four. I think I have some unfamiliar words but I didn't remember anything I mean I didn't stop them, er didn't stop at them, I just read through, I didn't stop. When I read paragraph third time, I didn't do exactly the same as the first and second time, I skip or some time go back to it. The third time I just try to catch them some parts, parts, parts, the parts which I thought important.

Of course I read it from the beginning to the end, and found out that it was one sentence showing the same value on parts, on some thing some thing, on something something, on something, I think they have four that kind of phrase, and I understand it. I think after the term [on] they have some important parts in each case and I think second time or third time I just skim these parts, you know they it has got the four parts, and after [on] [on] [on] [on] they have some main part what is important and I just grab these important parts. I didn't pay attention to unfamiliar words this time as well. It was long but it was organised so I didn't lost my self at all. I just understood what the sentence said {what did you do?} I think this time the organisation of the past paragraph of the last sentence so they have first part to show what it is going to mention and then hmmm what do I remember? I don't think I tried to remember the information, to get some more idea but not to remember but just get some point as far as I can understand. Actually I tried to I remember the terms after [on] because I thought I can tell some thing on it but I didn't remember it. But I don't remember, it hard task.

Round-up interview

Q: What was your feeling of the task?
A: Because I didn't have any question to answer, I didn't seek for any points which means I didn't try to remember them but the text was not so difficult I could read through easily;…. it is not my major interest, didn't feel a strong feeling that I have to remember or I want to member so I didn't so I just read through
Q: How else could you have read the text?
A: I'd check spelling, check a word I skipped, and would like to read first and fifth paragraphs may be to find out something interesting which I mean which I can remember because I need to remember everything. I skipped them because first of all I don't er because I thought I didn't need to remember them. I don't think I have got the main points, I think I read the first and fifth paragraph because it is more likely that they have got main parts I think I am gonna read them first and fifth paragraphs. I think I didn't check 3.1 so I would check it again. I am gonna check the meaning of the word in the third and fourth paragraph.
Q: Did the questionnaire influence the way you read?
A: I answer questionnaire in my way to read, I read the passage in that way

Appendix 6: Protocol of subject s in the Introspection Group

Respiration water .{what are you thinking now?}I am reading I don't think any thing ...so it talks about energy {what are you doing now?}just reading I don't think any thing now I just tried to grasp the content so may be it is about plants with the relationship with sunlight and the use of carbondioxide er the contrast between the plant and animals er animals use reverse way silent .. yep animals yea yea get energy required by oxidation yes {what are you doing now as you are reading?} er yea I just check about the how animal do to get oxidation because it has a contrast with plants because plants make er oxygen and animals consume oxygen something like that ... I found very big word .. what word? I am not sure if it important or not er ca.. rbo ...yidrate so I skip the word...yea I have got definition of respiration er uptake of oxygen and release of carbondioxide yes ... yes ...it means the phrase says that I am thinking now about the contrast between animals and plants .. er animals take oxygen from the medium they live in ... and give off carbondioxide to it and plants take carbondioxide and produce oxygen {what are you thinking now as you are reading?} em I just I am not thinking I am just reading any thing er a very small animals may be take up up…ti..fint…ree, I am not sure ... yes may be I have to read again to get context....yes but in my process I have at what I read a whole passage and after that I try to read again. but I just reading I don't think about anything I just try to get the context… {what are you doing now?} I must reading may be it is the most important part of the text {what are you doing now ?} I am just reading, yes but I just to get the context .. {what are you doing to get the context?} er I try to get the context to read the sentence.... {what are you doing now? I am reading .. but em I am not sure about the last part of the paragraph silent ... em .... {what are you doing now?} ... I try to read again ..[he turned over the page to the first page] it is clear the second paragraph is clear third paragraph is clear er and here [the last paragraph] so I found the paragraph that I can't understand it is the fourth paragraph so I try to read the fourth paragraph...{ what are you doing as you are reading?} ... er I found the difficulties of definition of meaning of diffusion er I can't understand any thing er oh yea but after that the word says something about diffusion the gas moves at the dissolved substance from the higher to the lower concentration er .. but I am not clear about that.... yea after the sentences there are another definition about diffusion em .. but I am not sure about that... em I found another found [solubility] er I don't understand silent ... em.... the last paragraph is very clear but before the last paragraph it is very difficult for me .. {what are you doing now?} I just finished reading but I am not clear about the forth sentence. I am looking the forth sentence but yea ... er I think it is ok for me because it is not a reading test so I just finish reading ...but may be it depend on the purpose ... if I read for academic purpose or it's a reading test er I have to read and read more carefully but now I just read for any thing any purpose so it's ok for me.

Round-up interview

Q: What was your feeling of the task?
A: it's very difficult ...it was difficult because of the chemical terms ... I feel very unsatisfactory about that because I try to read again and again but so far I don't understand very well about the paragraph ... I feel very frustrated if I have time I try to read it again ...
Q: How else would you have read the text?
A: I think almost same ... I try to get context and I don't try to check the word in dictionary I try to imagine vague words what the word means what the construct of the word means er for example respiration if I don't understand respiration may be I try to guess er something respiration er a little bit similar to aspiration so the meaning is a little bit similar to aspiration
Q: Did the questionnaire influence how you read?
A: at the moment I am not influenced anything .. no because in the questionnaire I agreed the things I have already known about that for example when I put disagree in the questionnaire that totally I disagree or I have came out for the first time and I am not clear the question about it so I put neutral but in that case it doesn't influence me anything in the reading ... the things I put that I put agree influenced my reading but it is not because of the questionnaire but my reading process er strategy ... the question doesn't influence me

Appendix 7: Protocol of subject in the Introspection Group

Oh this word 'respiration' {What are you thinking now?} I am looking at the title, I am looking at a word. I would like to look it up in the dictionary, so it means breathing 'respiration in water' so has something to do with life in water that is what I am guessing so now I am coming to the first paragraph er so 'organism' {what are you doing now as you read}? I am reading the first sentence of the fist paragraph trying to get the main idea er. I think usually the first sentence is the most important so I am trying to from the second sentence I am trying to get some kind of illustration of the first one to prove the point in the first sentence and I got it . {What are you thinking now?} because all this er the words are not very familiar to me; no I am reading slowly I am not reading as fast as normal yea ehe so I see two kinds of things I got it. {can you tell me what mean by two things?, yea the first example is 'plants' and then 'the animals' because the author use the phrase' on the other hand' to introduce something else, eh? I am coming to the last sentence of the first paragraph ehm? {what are you doing now?} er yea ok 'oxidation of food materials' er I am not very sure about this word, I know it has something to do with oxygen er 'oxidation of food materials' I will go and read to find out the meaning of this,yea I am going on I am coming to the next sentence ehm {what are you thinking now?} I found then something can do without it without oxidation ehm, I come to the next sentence 'compounds' ehe; it's better now thinking aloud from the first. 'carbohydrates' yea ehm {what are you doing?} I think and then I come to this sentence 'the oxidation of carbohydrates and fats' I think I know the meaning of the meaning of oxidation in the first sentence of this paragraph yea I go back to this sentence again er the last sentence of the second paragraph, yea after I finish the first paragraph and the second paragraph er and I am not sure whether I have understood the whole thing so I am coming back again {where are you coming back again?} ehm so now I am coming back to the third paragraph. {what are you doing now?} yea 'the uptake of oxygen' er at first sight er I am thinking back, I though twice and got the meaning, yea I am continuing ehm yea I see now I got the connection between this part and the title I am continuing reading, I come to 'the terrestrial'' err oh yes after second thought I got the meaning I am still continuing and I am going back rereading this sentence I don't quite understand this sentence er it's really general 'body surface' ehm , I see yea {what are you doing when you say 'ehm'?} oh yea I think I am trying er I am relating the sentence to my background knowledge and see they don't need a kind of special organ to breath the oxygen, I am continuing . yea yea I am reading when I am reading this part I think I use a lot of background knowledge of biology .{ what are you thinking now?} Er I think I understood this part er I didn't have to go back, {what are you thinking now?} er now I come across this word 'diffusion' I am not sure about it so I continue reading { what did you mean by continue?} er I just leave it aside, yea I know it's meaning in the general context but not in this context {what are you doing now?} I am rereading the first sentence {what are you doing when you are rereading it? }er try to visualise er I am trying to visualise now ok? now I am coming to the example , I am coming to the next part er the next sentence which is example ehm and the next sentence {what are you doing?} 'concentration gradient' er it has something to do with diffusion I think er a kind of gradual process, I am continuing slowly er ok coming to the next sentence ehm {what are you doing?} and I come to the last paragraph er yea 'originators in the sea' er yea I think may be it has something to do with my background so may be it is not so difficult here for me to understand er (she mumbles some words) {what are you doing?} yea just reading it 'the air breathing animals' yea I have to think about it ehm I think I have finished, the last part I used a lot of background I think.

Round-up interview

Q: What was your feeling of the task?
A: I am not used to it er I think it is very disruptive, when you think you don't have to concentrate on your thinking you just concentrate on the material itself but when you have to think about your thinking process, then a kind of very er distracts your attention and you can't concentrate on the material itself. It is not effective reading to thinking aloud and reading, and it takes a long time but if you are well trained you are not aware of it I am not very keen on that process. I think respiration in water is not directly related to my subject so may be a bit strange or difficult but as I went on I found it not difficult
Q: How else would you have read the text?
A: may be do it in a similar manner { If I give you a test after this, do you think you can answer?} answer all the questions er I don't think so? but er the gist yea
Q: Did the questionnaire influence how you read?
A: not really, may be but I am not that sure .

Appendix 8: Round-up interview questions for the Pre-pilot Study

Q: What was your feeling of the task?

Q: How else could you have read the text?

Q: Did the questionnaire influence the way you read?

Appendix 9: List of all the strategies in the Pre-pilot Study

Background Knowledge
Context
Focus On Topic Sentence
Formulaic Expression
Guess From Context
Guess Writer's Intentions
Imagery
Infer Meaning
Lexical Cues To Guess
Memorise Important Points
Organisation Of Ideas
Overall Text Meaning
Own Style
Paragraph Development
Phrase Matching
Predict Content From Title
Read Ahead For Clarification
Read For Gist
Read Slowly
Relate Preceding And Subsequent Text
Remember Preceding Test While Reading
Reread Main Points
Reread Problematic Text Part
Reread To Confirm
Scan Examples
Show Awareness
Skim
Skip Difficult Text Part
Summarise Using A Word
Syntax Rule
Use Anaphoric Reference
Use Dictionary
Use Discourse Markers
Use Familiar Reading Method
Use Paragraph Organisation
Word Order

Appendix 10: A scoring scheme for cloze and gap-filling tasks

Exact = An item the same as that in the original text
Consistent = A lexical synonym as might be found in a dictionary or thesaurus; grammatically and semantically perfect
Acceptable = Although the meaning may vary from the original word, it makes sense in the context of the entire text and does no change the gist of the text meaning even though it is not synonym; both semantically and syntactically acceptable
Semantically acceptable = Semantically acceptable according to preceding criteria, but not syntactically acceptable
Syntactically acceptable = Syntactically acceptable in terms of sentence syntax; could stand as an acceptable sentence, although meaning differs from meaning of original word or from text level meaning
Unacceptable = unacceptable syntactically and semantically
Blank = no answer provided
Unreadable = not able to decipher what is written

Appendix 11: Protocol of Subject 1 {Gap-filling Group}

The first word is **the** this is explaining the erosion, this passage explain erosion, how erosion do something and affect or remove the lighter soil so the erosion found the previous sentence so I just put the erosion, because the previous sentence has the same word [sheet erosion] and when we repeat the same situation or the same word I put **the**.

I put **surface** this sentence it explains erosion yea the meaning is erosion remove something from some where so I just looking for the word appeared before [surface] my feeling is something concern with related to mountain, I tried to think about erosion, what will be happen in that mountain in this case the erosion case so I guess the imagination of the erosion so lighter or organic matters will be removed from some where so what is some where? So some where must be place or must be surface of the mountain

Soils I guess productive top soil, after the blank some thing to do with productivity or maintenance of I found a series of words [serious detriment to the maintenance of something, fertility and productivity] so to understand the whole meaning I have to need new information relevant this sentence so fortunately the word [productivity] is overlapping with later sentence, the next sentence, er [productive top soils] is mentioned after blank. I think it's its odd to say maintenance of something fertility and productivity because maintenance of erosion and maintenance of mountains is not clear to me and I found the same word [productivity of soil] so I though this blank has to do with some thing this productive top soil.

For this **reason**, this is what the writer want to say, for this, he explain erosions and it is serious detriment and after explaining the situation he'd like to say yes it is considered as serious so for this reason because this whole sentence before the blank is describing er explaining the reason, because those sentences above [for this___] are reasons.

[As the surface ___ accumulates] I found [accumulates] and should be not 'does' or 'will' or 'would' because it has [s], so [as the surface something accumulates, it moves down slopes] I am imagining the situation now, surface accumulate to one place and it moves down slope right but the word [the surface something] have to be noun so [surface erosion, er surface soil? Surface er no. it should be one word right? It is surface soil, no adjective but noun can come, but what noun? Yes, surface something so something relevant to surface, surface soil, surface soil, I am thinking of my past reading experience er how it appear before in my reading experience, er and I have heard the surface soil but I wonder but is not correct to put surface soil but I don't have any answer other than soil so I put soil. OK, I found the former answer is not soil but ***water*** because [this water] in next sentence says [this water] so the water appeared in the past time, [this water] so what this water? have to be mentioned before so I put soil water.

In the next blank is [something were smooth and uniformly inclined] The adjective [smooth] can be limited to some materials, I can't say everything smooth. I can't say I am smooth or TV is smooth. [The] before the dash in [the <u>something</u> were smooth and uniformly...] should be mentioned before; yea normally water can be smooth but it is better to say 'water move' and 'land smooth' from my experience so I put **surface**

[The surface is almost always ___] …this sentence is summarise of the later sentence {the sentence after the blank} I put **changing** because the later sentence [a small portion of the runoff water …] it explains, it describing [velocity, concentrating, and depressions] it gave me the imagination of rapid thing rapidly changing

[...slope of the land ….slope of the land ... slope of the land ....] I think I cut this blank the sentence makes sense

Second sentence have to follow the meaning of the first sentence ... the second sentence explains turbulence so this sentence should be by **velocity** ... because it is parallel to velocity, turbulence, and amount and type of abrasive material, I am thinking of the structure of the paragraph and the three sentences so the order to be parallel

I am thinking of the three sentences and the structure of the paragraph, the last sentence in this paragraph

have to begin with explanation of the first sentence .when I look at this sentence , it look it will going to explain amount capacity of amount material so I put the ***transport***

It will be **particles** because the first sentence talks about [soil particles] and the exact repeat in this sentence in this blank [the particles]

[These] the word 'these' have to mention former things ... so after reading second sentence I put **forces**

Yea I found a similar sentence [detachment by abrasion] ... next sentence after blank so I think the blank can be ***abrasive*** action

I put on **land** surface, because [land surface] appear before

I put **surface** this is from the first and second sentence, this sentence talk about three things- surface creep, saltation, and suspension.
I put **saltation** because it have to relate to saltation - the second one; first one has finished with surface creep

I put **suspension** because the answer depends on the structure than the meaning; paragraph five structure is firstly show surface creep, saltation, and suspension.

I put **normally** because I don't think it is an exceptional case

Soil I repeat the sentence again ... the first sentence before the blank says transportability of the soil ... is repeat of the previous of the words series

I am reading the sentence of the blank and go beyond the blank to the next and found larger and heavier soil ... in comparison so the smaller and **lighter**

Round-up interview

Q: What was your feeling of the task?
A: Like exam, like English exam, to fill out words, I haven't done this for long time after the entrance exam of the university so this time in normal case the whole sentences and not blank and I don't like it. It not so familiar with my subject and I don't have many practice about the meaning Stressful, I don't know whether the answers are correct or not
Q: How else would you have read the text?
A: It will be not the same because second time it will be easy
If there is no blanks I may continue reading even I have unclear words, but to answer those words I have to go to words back to the previous sentences, so in this case I go back and forward
Q: Did the questionnaire influence how you read the text?
A: it is my normal way

Appendix 12: Protocol of Subject 2 {Gap-filling Group}

I don't know the words in English concerning this topic ... I better look through the text first ... I am not professional in this field ... it is not Russian it's English .. I put ***This*** in order not to repeat the word sheet which comes before the blank if I put sheet again it would not be sound very good ... the style.

I put ***ground*** I think it is concerning ground soil it is all about the land ground is the word of this area the previous text is about it. ....

the next word is ***land*** because I know the expression land fertility and productivity and the same land is the word of this topic.

And the last is ***reason*** because according to the end of the sentence which sentence? the sentence after the blank ... I may guess which word should be in. I think it's ordinary grammar structure, for this reason or for this feature or something like that it is the beginning of the sentence and next part of the sentence it is some how conclusion of the previous sentence.

Runoff simply because the first passage there is an expression surface runoff so I put this ... they should be related.

And then I think the word is **surface** because this word is mentioned in the previous sentence and the next sentence ...

and next it is the opposite of the word smooth, because according to the meaning for example, ***hard*** if it can be considered the opposite because it is the structure because I looked at the previous sentence and I realise that the structure should be the opposite.

And then the last word is ***erosion*** because the same in the last paragraph because it tells us about land erosion and concerning the paragraph should be related each other so it is the consequently the word erosion. I tried to understand the general meaning ... I read it without the words because it is possible to understand the general meaning of the text. The third paragraph first I read it with blanks after I read it I had some idea what the passage is about and it is concerning the previous two paragraphs I have some picture.

The first word is the ***erossiveness*** simply because I guess from the previous sentence in this paragraph because the first sentence contains all the necessary words to be explained later and next sentence is going to be the writer tries to compare ...I found the other words which compare with an unknown word/the word for the blank, he means/ ... and it is why some how mathematics skill how to find unknown word in the sentence.

The last word is ***moving*** because if I take all three paragraphs above and it's part of it concerning movement as a process so this word is just for this place and even later, after the blank, it explains this word, movement....

particles because the first paragraph there is such expression soil particles and next paragraph four, this word, particles, appears once more after the blank in the second and half sentence and that is why I think consequently the place for this word

things because I think the word which combines the word which combination, in the previous two sentences of this paragraph above the blank.

The next word I put ***simple*** because it may explain the previous sentence it is the narrative or explanation of the process that's why I put simple because I think it may explain I one word which action .... because clearly it is an adjective for me this section, the section above pointing at the word detachment it may be considered simple.

The last is ***land*** because simply because in previous paragraphs I found such expressions - land surface - and generally all the text is about land then if we have the word surface then it is logical it should be the land.

Then the next word is ***surface*** because simply the first sentence of this paragraph there is an expression surface creep and it is explanation er of word combination then I think it is logical.
Next the word ***creep*** because I found this word in previous sentence before the blank and I think it is consequently explanation of previous word and word combination ... and even in the first sentence and the previous er twice ... .

The last is ***suspension*** simply because in the next sentence after the blank there is the word suspension and it's something about transportation, the same as it was the previous sentence and I think the last sentence explains previous process that's why they should be the same word.

The last paragraph I put the word ***move*** because in this sentence. which sentence? the first sentence of the last paragraph there are two words -transport and transportability- and then it is something to do with movement that's why I put this word so I looked the word after the blank.

The next word is ***soil*** simply because such expression –transportability of soil - I found before in the previous sentence that's why consequently, if I take into consideration the structure of the text then next sentence explain the previous ones er logical so I put soil because there is such expression in the previous sentence above the blank.

The last word I put ***lighter*** because in the sentence. which sentence? within the bland we have two comparative adjectives -smaller and lighter and in the next sentence smaller and blank and next sentence after the blank we have opposites – larger and heavier- and mathematics task smaller and larger opposites, and heavier and lighter.

Round-up interview

Q: What was your feeling of the task?
A: I feel strange text ... because for example sheet erosion ... erosion is something familiar but sheet erosion it is I don't know. I don't think every time about how I read because if the text is easy no need, like here blanks and no words there is the need to do but if the text is simple then just read for comprehension. I expect that there should be some problems but it should be difficult because I am not an expert in this field, a bit boring, it is not my interest....
Q: How else would you have read the text?
I used to follow the general techniques ... er the exception is I didn't have dictionary but in order to complete this task the dictionary is not obligatory but generally I tried to follow my usual way ....
Q: Did the questionnaire influence how you read the text?
A: no I think it is automatic

Appendix 13: Protocol of subject in the Retrospection-Group

At first I tried to find four important component, the text said something important in the soil so I tried to find out what the four important thing, and I tried to concentrate on those four, yes, that is all. I found some words which is not so familiar to me, I guessed, imagine words, imagine the meaning of the word form the context and also guess meaning from my experience, I did that in the first paragraph. When I started to read er just read, try to get information as quickly as possibly, what did I do? I just read, I just read, that's all. Normally {in this case, tell me about this paragraph} in this case, because it's first paragraph, I read very carefully in the first sentence in this paragraph because I like to know what this context er what this paragraph is about, and then I realise this is something about soil or something about scientific er some, I tried to find out what specific area in the scientific subject about, and tried to hmmm and then tried to infer the meaning infer the information from the my experience, soil from my past education in junior and senior high school I can guess something I can understand something in this first paragraph. I started from the beginning and read through.

When I first look at first word in a second paragraph I look back in the first paragraph and tried to find out there was a same words in the first word in the second paragraph and tried to connect the organisation er tried to connect these two words and I then I continue reading, because there are difficult words for me I ignored it continue reading because may be it is not necessary for me to understand the whole context, and then continue to reading and tried to understand what's all the meaning about, rough meaning of the context, and that's all. And may be when I finished reading second paragraph, I still cannot understand some point so I looked back the beginning of the second paragraph and tried to confirm my idea. First I read through quickly the sentence and then finished and then look back to confirm my idea to memorise some good some important point.

The way I read this paragraph is similar to second paragraph. I read very quickly skim, skimming, and try to get the information, the important information and some sentence or some words I cannot understand but I don't care about that because I'd like to get whole idea I mean rough idea not small detailed idea so ignored small part. May be if I write some assignment for this text, I will stop the some difficult word and some difficult idea and stop reading and think about that, but in this case I'd like to get rough idea so I didn't stop to think, just quickly read, skim it. {did you understand the text?} I think roughly, but I am not sure I can understand perfectly but I think I understand rough idea. May be I don't understand some but don't care about it. First skim it and later I will come back and {did you come back? In this paragraph?} no not in this paragraph, after I read about whole chapter {that's when you read other books, but for in this case for paragraph three?} no no I didn't do that.

First I look back in third paragraph because I forgot the content of the third paragraph while we are talking about so I looked back and come back to the fourth paragraph and tried to remember what was talked about in the third paragraph, and then tried to continued reading, and some of the idea was a little bit confusing for me and I read back I mean look back and tried to find out what this means from the context around that words, and then I can I think I can get some rough idea so I star read again continue read again. And the sentence described in fourth paragraph is very familiar to me because I learned that in junior high school in science, so I didn't read it very carefully because I think I have rough idea er basis idea so I continue reading. Last part was bit difficult and still I can't understand, but I don't care about it because I think I have the rough idea. Yes when I came across difficult words unfamiliar words in paragraph four this time I tried to stop at the words and find out the meaning around the words but still I cannot understand so I start reading, I mean I ignore that and start reading again. May be I didn't read it very carefully because I think I know some rough idea, so may be I can imagine the meaning in the fourth paragraph, and also some words are very difficult and also I'd like to get the information quickly.

This time I tried to connect fifth paragraph to the other paragraph because at first I thought this paragraph it's not connected with any paragraph described above so I was a bit confused and tried to find out relationship, I was confused because suddenly the paragraph was saying about texture so I was a bit confused because er last this paragraph was not talked about the texture of the soil, and what the soil is made about so I was a bit confused about so I try to connect and looked back carefully to the third or fourth paragraph and then continue reading, also some words I cannot understand but I'd like to get rough idea so I ignored small difficult words. And also I looked back the title to get because I like to get

the whole idea I looked at the title and also this part [soil and water] {the sub-heading}. When I first finish part er the whole paragraph reading, and look back this area, third and fourth paragraph, and then I'd like to make sure so I tried to looked it back this part. May be I glimpse at this chart, but that chart was very difficult and cannot help my understanding so I ignored.

Round-up interview

Q: What was your feeling of the task?
A: This subject is very different from my interest, This text is about science, mineral, particles. My reading is not very careful; it very sloppy
Q: How else would you have read the text?
A: May be next time I read more carefully because I make my understanding perfect, next time I like to find out the difficult area and read it carefully and may be next time I will use a dictionary
Q: Did the questionnaire influence how you read?
A: It's a bit different, in my questionnaire I answered may be I didn't stop and looked back I didn't do that in the questionnaire, I think so. But actually I stopped and looked back many times. And also but most of my idea and answer in questionnaire were very similar.

Appendix 14: Cloze test used for assessing language proficiency (Pilot Study)

Instruction: Complete the following task by putting in ONLY ONE WORD in each blank.

1.2 Matter and Energy

Matter, by definition, is anything that occupies space and has mass. All the objects in the universe, _____ they occupy space and have mass, _____ matter. The property of occupying space _____ often easily perceived by our sense _____ sight and touch. The mass of _____ object pertains to the quantity of _____ that the object contains. The force _____ to change the speed at which _____ object moves, or to change the _____ in which it moves, is a _____ of its mass.

Matter can exist in three different _____ , which are designated solid, liquid, and _____. Each state can be distinguished by _____characteristics. A solid is rigid, possesses _____ definite shape, and has a volume _____ is very nearly independent of changes _____ temperature and pressure. A liquid flows _____ thus takes the shape of its _____ , except that it assumes a horizontal _____ surface. Liquids, like solids, are only _____ compressible and so, for practical purposes, _____ definite volumes. A gas takes both _____ shape and the volume of its _____. Gasses are readily compressible and capable _____ infinite expansion.

Energy can be defined as the _____ for doing work, where work is _____ the process of causing matter to _____ against an opposing force. For example, _____ we pump up a bicycle tire, _____ are doing work - we are moving _____ (the air in the pump) against _____ opposing force of the air already _____ the tire.

Like matter, energy exists in different _____. The energy for running the pump _____ carry out the work of pumping _____ a tire could be chemical energy _____ in our muscles as we use _____ hand pump, electrical energy used to _____ an electric motor on a compressor, _____ heat used in a steam engine _____ a compressor. Light is also a _____ of energy. Solar cells can convert _____ into electrical energy, which could run _____ compressor or do other work.

Energy can be further classified as _____ potential energy or kinetic energy. A _____ of matter is said to possess _____ energy by virtue of its position, _____ , or composition. Water at the top _____ a waterfall possesses potential energy because _____ its position; if it falls in _____ hydroelectric plant, it does work that _____ to the production of electricity. A _____ spring, because of its condition, possesses _____ energy and can do work such _____ making a clock run. Natural gas _____ potential energy. Because of its composition, _____ will burn, producing heat, another kind _____ energy. When a piece of matter _____ in motion, it also has energy, _____ capacity for doing work. The energy _____ a piece of matter possesses because _____ its motion is called kinetic energy. _____ water falls from the top of _____ waterfall, its potential energy becomes kinetic _____.

Appendix 15: Marking criteria for speaking test

Adequacy of vocabulary for purpose

0 Vocabulary inadequate even for the most basic pats of the intended communication

1 Vocabulary limited to that necessary to express simple elementary needs; inadequacy of vocabulary restricts topics of interaction to the most basic; perhaps frequent lexical inaccuracies and/or excessive repetition.

2 Some misunderstandings may arise through lexical inadequacy or inaccuracy; hesitation and circumlocution are frequent, though there are signs of developing active vocabulary

3 Almost no inadequacies or inaccuracies in vocabulary for the task. Only rare circumlocution

Grammatical accuracy

0 Unable to function in the spoken language; almost all grammatical patterns inaccurate, except for a few stock phrases

1 Syntax is fragmented and there are frequent grammatical inaccuracies; some patterns may be mastered but speech may be characterised by a telegraphic style and/or confusion of structural elements

2 Some grammatical inaccuracies; developing a control of major patterns, but sometimes unable to sustain coherence in longer utterances

3 Almost no grammatical inaccuracies; occasional imperfect control of a few patterns

Fluency

0 Utterances halting, fragmentary and incoherent

1 Utterances hesitant and often incomplete except in a few stock remarks and responses. Sentences are, for the most part, disjointed and restricted in length.

2 Signs of developing attempts at using cohesion devices, especially conjections. Utterances may still be hesitant, but are gaining in coherence, speed and length

3 Utterances, while rarely hesitant, are characterised by an evenness and flow hindered, rarely, by groping, rephrasing and circumlocutions. Inter-sentential connectors are used effectively as filler

Relevance and adequacy of content

0 Response irrelevant to the task set; totally inadequate response

1 Response of limited relevance to the task; possibly major gaps and/or pointless repetitions

2 Response relevant for the most part to the task set, though there may be some gaps or redundancy

3 Relevant and adequate response to the task

Intelligibility

0 Severe and constant rhythm, intonation and pronunciation problems caused by almost complete unintelligibility.

1 Strong interference from L1 in rhythm, intonation and pronunciation; understanding is difficult, and achieved often after frequent repetition

2 Rhythm, intonation and pronunciation require concentrated listening, but only occasional misunderstanding is caused or repetition required

3 Articulation is reasonably comprehensible to native speaker; there may be a marked 'foreign accent' but almost no misunderstanding is caused and repetition required only infrequently.

Appendix 16: Text 1

1

Phylum: Protozoa
Class: Rhizopoda

Amoeba

1.1 MODE OF LIFE, STRUCTURE AND LOCOMOTION. The amoeba is a bottom dweller and is usually found in the ooze in slow-moving or still-water ponds. It looks like a tiny (0.2-0.5 mm), hardly visible, colourless jelly-like clot, constantly changing its shape. The word "amoeba" means "to change". The details in the structure of an amoeba are visible only through a microscope.

The body of an amoeba is comprised of a semi-fluid *cytoplasm* containing a small bubble-like *nucleus*, i. e. it is a cell. An amoeba, like other protozoa consists of one cell, but this cell is an integral organism, leading an independent life.

The cytoplasm is in constant motion. If the current in the cytoplasm flows toward a certain spot on the amoeba's surface, a bulge appears at this spot. It increases in size and turns into a projection-a *pseudopod*. The cytoplasm flows over into the pseudopod and the amoeba moves in the respective direction. The amoeba and other protozoa capable of forming pseudopodia belong to the class Rhizopoda. This name has been attributed to them because of the external resemblance between pseudopodia and plant roots.

NUTRITION. The amoeba may form several pseudopods at once and it uses them to encircle bacteria, algae, other protozoa. The prey is enclosed in the cytoplasm, a bubble is formed, which is a *food vacuole*. Digestive juices diffuse from the cytoplasm into the vacuole.

The digestive juices dissolve a part of the substances contained in the food and digest them. The dissolved nutrients seep from the vacuole into the cytoplasm and are used for building the amoeba's body. As a rule, the food is not assimilated completely and the undigested remains are ejected through any point on the amoeba's body.

RESPIRATION. An amoeba breathes in oxygen dissolved in the water. The oxygen diffuses into the cytoplasm through the entire surface of the body, and helps to decompose the compound substances of the cytoplasm into more simple ones. Energy, which is necessary for the vital activities of the organism, is produced in this process. Simultaneously, carbon dioxide and other substances that are harmful for the amoeba accumulate in the cytoplasm

EXCRETION OF WASTE PRODUCTS AND EXCESS WATER. Harmful substances are excreted from the amoeba's organism through its body surface and through a special bubble-a *contractile vacuole*. The water surrounding the amoeba diffuses into the cytoplasm and dilutes it. Excess water containing dissolved carbon dioxide and other harmful substances, fills up the vacuole that gradually increases in size, and then ruptures and disappears. Thus the contractile vacuole periodically rids the amoeba of excess water and harmful substances.

Thus, food, water and oxygen enter the organism of the amoeba from the environment. These substances are subjected to changes as a result of the vital activities of the amoeba. The digested food is used as material for building the amoeba's body. Carbon dioxide and other harmful substances are produced and eventually eliminated from the amoeba's body. *Metabolism* occurs. Neither an amoeba, nor any other living organism can exist without metabolic exchange inside the body and with the environment.

3

The Place of Livestock in Sub-Saharan Africa

3.1. Overview

For centuries, livestock have played an important role in the lives of the people of sub-Saharan Africa, providing sustenance, transport, and protection against a harsh environment. In the drier areas not suited to crop production, where weather patterns are highly variable, pastoral and agropastoral systems evolved as the most effective ways to utilize the vast rangelands of the continent. In these systems herders coped with changing weather conditions by moving animals to areas where feed could be found. Over time the livestock populations of these areas grew until they came into relative equilibrium with the carrying capacity of the range. Mortality in herds is extensive following severe droughts, but animal numbers are built up during periods of adequate moisture. Pastoral systems, and agropastoral systems in which cultivation is combined with herding, have changed little over the centuries.

In the higher rainfall regions, the subhumid and humid agroecological zones, livestock raising did not flourish because of the presence of the disease trypanosomiasis, which is transmitted by the tsetse fly. In the portions of the subhumid zone most hospitable to people, bush-fallow crop farming became the dominant form of agriculture. It was at the margins between the wetter and the drier areas and in the highlands—areas that have high productive potential but are less threatened by animal and human diseases—where human population pressures on agricultural land increased and mixed crop-livestock farming systems evolved as a result.

Today, the integrity of the rangeland systems of livestock production in the arid and semi-arid zones is being threatened by high human populations, increased cultivation, and the cutting of trees for fuel. Not only is livestock production affected, but potentially severe land degradation is occurring as well. In the subhumid zone as human habitation, control measures for tsetse, and chemotherapy reduce the risk of trypanosomiasis, livestock production is expanding and mixed crop-livestock farming is evolving. In the highlands, rising agricultural population pressures continue to drive intensification and the adoption of mixed livestock-crop farming systems. In some highland areas, improved technology and the use of off-farm inputs is resulting in higher levels of productivity. Around major cities, especially in coastal areas where imported feed grains are readily available, commercialized systems of intensive poultry, pig, and dairy production based upon modern technologies and inputs have sprung up in recent years.

Appendix 18: Deletion processes used for each gap in gap-filling task in the Pilot Study

The blank requires the candidate to relate the definite article 'the' before the blank with the theme of the text '1.1 Amoeba' and with references to amoeba, such as, 'The word amoeba' and 'the structure of an amoeba' which are given after the blank. ***(Amoebae)***
The blank requires the candidate to relate the definition of amoeba 'to change', which is given in the subsequent sentence, with the idea of shape 'its shape', which is given after the blank. The blank also requires the candidate to relate the adverb 'constantly' with the reference about shape 'its shape' which is given after the blank, with the definition and with cues such as 'jelly-like' and 'its shape'.***(varying)***
The blank requires the candidate to relate the definite article 'the' before the blank with cues after the blank 'in the structure of an amoeba' which refer to the inside of amoeba. The blank also requires the candidate to relate the same definite article with preceding references such as 'hardly visible' and 'colourless jelly-like clot' which refer to the inside of an amoeba. The blank also requires the candidate to relate the verb' are' in 'are visible only' with plural word to do with the inside of an amoeba and relate them with the phrase 'in the structure of an amoeba'. ***(details)***
The blank requires the candidate to relate cues such as, 'tiny', 'hardly visible' and '0.2-0.5mm' with 'visible only through a ___' which is before the blank and predict a response that refers to a device for seeing 'hardly visible' organisms such as amoeba ***(microscope)***
The blank requires the candidate to relate the demonstrative pronoun 'this' in 'but this' to references about cell such as 'i.e., it is a cell' and 'an amoebae, like other protozoa, consists of one cell' which are mentioned in preceding sentences. The blank also requires the candidate to relate the demonstrative pronoun to the singular verb 'is' in 'is an integral organism, leading an independent life' ***(cell)***
The blank requires the candidate to relate the cue in 'if the current in the cytoplasm' with references about current or motion in the preceding sentence 'The cytoplasm is in constant motion'. The blank also requires the candidate to relate the definite article 'the' before the blank and relate it with the antecedent idea - the cytoplasm. The blank also requires the candidate to relate cues such as, 'the current in the ____' with references of liquid and motion '... a semi-fluid cytoplasm'. ***(cytoplasm)***
The blank requires the candidate to relate cues such as, 'at this spot' in the main clause, with the antecedent idea in the if clause which refers about the cytoplasm flowing towards a certain point on the amoeba's body. The blank also requires the candidate to use cues such as, 'flows towards a ___' which indicate movement towards a direction or position and relate them with 'at this spot' which indicates that a spot had already been mentioned. ***(spot)***
The blank requires the candidate to relate the idea of the cytoplasm flowing over into something definite as indicated by the definite article 'the' before the blank and relate this to references about the cytoplasm flowing into a psuedopoda in preceding sentence. ***(psuedopoda)***
The blank requires the candidate to relate references such as, 'The amoeba and other protozoa ... belong to the class:…' with the sub-title of the text 'class: Rhizopoda'. The blank also requires the candidate to use clues such as, the word 'class' before the blank and relate the clue with the sub-title of the text. ***(Rhizopoda)***
The blank requires the candidate to relate preceding references about amoeba and other protozoa forming pseudopodia with 'the amoeba may form several ___'. The blank also requires the candidate to use cues such as, 'several' to predict a response in plural form and one that is formed by amoeba as mentioned earlier. ***(psuedopodas)***
The blank requires the candidate to relate references of prey such as 'The prey' with 'amoeba, algea,protozoa' and relate them and references such as, 'is enclosed in the cytoplasm' with those indicating amoeba's action on prey such as, '... and it uses them to ___ amoeba, algea, protozoa' ***(enclose)***
The blank requires the candidate to use cues such as, 'a bubble is formed' and 'which is a food _____' and relate them with references of 'digestive juices diffuses from the cytoplasm into the vacuole'. The blank also requires the candidate use cues such as the definite article 'the' in '.... into the vacuole' which indicate that something 'formed' and 'which is a food' had already been mentioned. ***(vacuole)***
The blank requires the candidate to relate cues such as, 'the' and 'juices' with digested food seeping from the vacuole and relate these cues with references in the preceding paragraph which contains references of 'digestive juices' seeping from the cytoplasm. The blank also requires the candidate to relate the word 'juices' after the blank and relate it with 'digestive juices' mentioned in the preceding paragraph. ***(digestive)***
The blank requires the candidate to use cues such as, 'The dissolved ___' before the blank and relate them with references about dissolved food and dissolved substances contained in the food. ***(nutrients)***
The blank requires the candidate to use cues such as the definite article 'The' before the blank and relate them with the theme of the paragraph RESPIRATION and with references about amoeba breathing in oxygen which is mentioned in the preceding sentence. ***(oxygen)***
The blank requires the candidate references of carbondioxide and other substances before the blank with references in the subsequent paragraph which describe carbondioxide and these substances as harmful. ***(harmful)***
The blank requires the candidate to use cues such as, 'surrounding the amoeba' and relate the with references in the first paragraph which mentioned that amoeba's environment is in water. ***(water)***
The blank requires the candidate to relate references about water and wastes, i.e., excess water, carbondioxide and other harmful substances, with the theme of the paragraph - EXCRETION OF WASTES AND EXCESS WATER. ***(excess)***
The blank requires the candidate to use as cues the re-mention of summarised ideas about contractile vacuole, excess water and harmful substances after the blank which have already been explained at beginning of the paragraph and predict a response which indicates an ending of the paragraph or a conclusion or generalisation being drawn.
The blank requires the candidate to relate cues such as, 'the contractile vacuole periodically rids the _____' and 'of excess water and other harmful substances' with references about the contractile vacuole being used for the excretion of excess water and harmful substances form amoeba. ***(amoeba)***

Appendix 19: Gap-filling task from Text 1

1

Phylum: Protozoa
Class: Rhizopoda

1.1 Amoeba

MODE OF LIFE, STRUCTURE AND LOCOMOTION. The _____is a bottom dweller and is usually found in the ooze in slow-moving or still-water ponds. It looks like a tiny (0.2-0.5 mm), hardly visible, colourless jelly-like clot, constantly _____its shape. The word "amoeba" means "to change". The details in the _____ of an amoeba are visible only through a_____.

The body of an amoeba is comprised of a semi-fluid *cytoplasm* containing a small bubble-like *nucleus*, i. e. it is a cell. An amoeba, like other protozoa consists of one cell, but this _____is an integral organism, leading an independent life.

The cytoplasm is in constant motion. If the current in the _____flows toward a certain spot on the amoeba's surface, a bulge appears at this _____. It increases in size and turns into a projection-a *pseudopod*. The cytoplasm flows over into the _____and the amoeba moves in the respective direction. The amoeba and other protozoa capable of forming pseudopodia belong to the class _____. This name has been attributed to them because of the external resemblance between pseudopodia and plant roots.

NUTRITION. The amoeba may form several _____at once and it uses them to _____ bacteria, algae, other protozoa. The prey is enclosed in the cytoplasm, a bubble is formed, which is a *food* _____. Digestive juices diffuse from the cytoplasm into the vacuole.

The _____ juices dissolve a part of the substances contained in the food and digest them. The dissolved _____ seep from the vacuole into the cytoplasm and are used for building the amoeba's body. As a rule, the food is not assimilated completely and the undigested remains are ejected through any point on the amoeba's body.

RESPIRATION. An amoeba breathes in oxygen dissolved in the water. The _____diffuses into the cytoplasm through the entire surface of the body, and helps to decompose the compound substances of the cytoplasm into more simple ones. Energy, which is necessary for the vital activities of the organism, is produced in this process. Simultaneously, carbon dioxide and other substances that are _____ for the amoeba accumulate in the cytoplasm

EXCRETION OF WASTE PRODUCTS AND EXCESS WATER. Harmful substances are excreted from the amoeba's organism through its body surface and through a special bubble-a *contractile vacuole*. The _____ surrounding the amoeba diffuses into the cytoplasm and dilutes it. _____ water containing dissolved carbon dioxide and other harmful substances, fills up the vacuole that gradually increases in size, and then ruptures and disappears. _____ the contractile vacuole periodically rids the _____ of excess water and harmful substances.

Appendix 20: Gap-filling task from Text 2

3

The Place of Livestock in Sub-Saharan Africa

3.1. Overview

For centuries, livestock have played an important role in the lives of the people of sub-Saharan Africa, providing sustenance, transport, and protection against a harsh environment. In the _____ areas not suited to crop production, where weather patterns are highly variable, pastoral and agropastoral _____ evolved as the most effective ways to utilize the vast rangelands of the continent. In these systems herders coped with _____ weather conditions by moving _____ to areas where feed could be found. Over time the _____ populations of these areas grew until they came into relative equilibrium with the carrying capacity of the range. Mortality in _____ is extensive following severe droughts, but animal numbers are built up during periods of adequate _____ . Pastoral systems, and agropastoral systems in which cultivation is combined with herding, have changed little over the centuries.

In the higher rainfall regions, the subhumid and humid agroecological zones, _____ raising did not flourish because of the presence of the disease trypanosomiasis, which is transmitted by the tsetse fly. In the portions of the subhumid zone most hospitable to people, bush-fallow crop farming became the dominant form of agriculture. It was at the margins between the wetter and the _____ areas and in the highlands—areas that have high productive potential but are less threatened by animal and human diseases—where human population pressures on agricultural land increased and mixed crop-livestock _____ systems evolved as a result.

Today, the integrity of the rangeland systems of livestock production in the arid and semi-arid zones is being threatened by high human populations, increased cultivation, and the cutting of trees for fuel. Not only is _____ production affected, but potentially severe land degradation is occurring as well. In the _____ zone as human habitation, control measures for tsetse, and chemotherapy reduce the risk of trypanosomiasis, livestock production is expanding and mixed crop-livestock farming is evolving. In the _____ , rising agricultural population pressures continue to drive intensification and the adoption of mixed livestock-crop farming systems. In some highland areas, improved technology and the use of off-farm inputs is resulting in higher levels of productivity. Around major cities, especially in coastal areas where imported feed grains are readily available, commercialized systems of intensive poultry, pig, and dairy production based upon modern technologies and inputs have sprung up in recent years.

Appendix 21: Short answer reading comprehension tests

Answer the following questions by writing your answers on the space provided below each question.

1. How does an Amoeba move?

2. How does a pseudopodia form?

3. How is energy produced in the body of an amoeba?

4. How does an amoeba feed?

5. How does an amoeba remove excess water and harmful substances?

Answer the following questions by writing your answers on the space provided below each question.

1. In what way did pastoral and agropastroal systems effectively help the cattle heders to utilise most areas of the sub-Saharan Africa?

2. How did cattle herders in Sub-Saharan Africa successfully manage to live in the changing weather conditions?

3. At present, what is harming livestock production and causing land degradation in arid and semi-arid zones?

4. How did mixed crop-livestock farming evolve or come about?

5. Why is livestock production expanding in the sub-humid zone?

6. What caused livestock raising not to develop well in the sub-humid zone?

Appendix 22: Round-up interview questions for the Pilot Study

- Why did you read the text the way you did?
- Thinking back now, how else would you have liked to have read the text?
- How strong was your level of interest before and during reading?
- Did the questionnaire influence how you read today?

Appendix 23: List of all the strategies in the Pilot Study

1. Analysing Cohesion in Sentences
2. Analysing Significance of Meaning
3. Asking Oneself Meaning of Word or Phrase
4. Breaking Textual Parts into Smaller Units
5. Calming Oneself when Reading
6. Checking For any Overlooked Points in the Text
7. Checking Ones Own Confidence in Test Performance
8. Concentrating
9. Deducing from Textual Information
10. Expressing Belief on Meaning One Has Deduced or Guessed
11. Extrapolating on Text Information
12. Feeling Satisfied for Getting Answer to Question Raised Concerning Text
13. Forcing Oneself to Reread Text One Considers Important and From Which Exams Questions Would Come
14. Gauging Content Understood or Memorised
15. Going Back Before Problematic Text Part and Reading from there
16. Guessing Unknown Words' or Phrases' Meaning Using Context
17. Holding Previous Information in Mind while Reading
18. Justifying Correctness of One's Own Idea or Guess
19. Justifying Skipping Difficult Text Parts
20. Making Wrong Linking of Ideas Regardless of Connection
21. Memorising
22. Monitoring Ones Own Improvement of Reading
23. Offering Alternative Idea for Doubted Information in Text
24. Paraphrasing In Own Word in the L2
25. Paying Attention to Details
26. Paying Less Attention to Each Word
27. Predicting Content of Text
28. Pronouncing Internally Difficult Words
29. Questioning Relevance or Correctness of What the Authors Says
30. Reading Ahead For Clarification
31. Reading Each Letter of Difficult Words
32. Reading For Detail
33. Reading Slowly
34. Reading Word For Word
35. Readying Oneself before Reading
36. Recalling From Memory
37. Recognising Or Guess Author's Intended Meaning
38. Relating Each Word with Another
39. Relating Ideas In Sentence After Reading That Sentence
40. Relating Only Known Words, Phrases
41. Relating Parts Of Long and Difficult Sentences
42. Relating Preceding and Subsequent Text
43. Rephrasing Text Idea in Own Word in the L1
44. Rereading Problematic Text Parts only
45. Revising Guessed Word Meaning
46. Showing Awareness of Comprehension Problem, Source of Difficulty, Own Strategy Use
47. Showing Eagerness to Know More
48. Skimming Text
49. Skipping Difficult Textual Parts
50. Summarising Text
51. Synthesising Ideas One has just Read
52. Taking Main Ideas Form the Text
53. Translating into L1
54. Using Background Knowledge
55. Using Grammar Knowledge
56. Using Mathematical Concept of Association to Predict Words
57. Using Text Organisation or Order of Ideas in the Text
58. Using the Dictionary to Look up New or Difficult Words
59. Using Title or Sub-Title as Cue
60. Using Wrong Word Meaning
61. Verifying Correctness of Idea in Text, or One's Own Guess
62. Visualising
63. Writing Down New Word for Later Reference

Appendix 24: Marking criteria for the oral summary test (Pilot Study)

Mark the following summaries using the marking criteria in the table. Follow the guidelines below:

- Each statement should be given only one mark.
- **Do not penalise grammatical errors**.
- Repetition of same idea should not be given extra point
- Partial mention of ideas should be given full mark: e.g. Amoeba is a tiny organism and changes its shape constantly; or Amoeba changes its shape constantly; or Amoeba is a colourless, tiny organism.
- There is no word limit
- Total marks 10 points.

Sub-headings of the text	Statement
Mode of life	Amoeba is a tiny colourless organism that constantly changes its shape
Mode of life	It lives in still water, such as ponds
Mode of life	It is a single celled independent organism comprising of a semi-fluid substance called cytoplasm in which there is a nucleus
Mode of life	It can be seen only through a microscope
Mode of life	It moves by using a pseudopodia which is formed when the cytoplasm flows towards a certain spot or direction inside the amoeba
Nutrition	Amoeba encircles organisms (bacteria, algae, protozoa) into the cytoplasm by using the pseudopodia
Nutrition	It digests the organisms inside the cytoplasm using digestive juices that seep from a bubble-like structure called the contractile vacuole
Respiration	It breathes in oxygen dissolved in the water in which it lives
Respiration	The dissolved oxygen is used for decomposing food substances in the cytoplasm and for producing energy that is necessary for activities in the amoeba
Excretion	Harmful substances (excess water and carbondioxide) are removed from the body of the amoeba through the contractile vacuole which fills up and bursts to release these substances

Appendix 25: Results-tables for between-and within-subjects comparison of strategy frequency

Table 1. A between-subjects comparison of high and intermediate levels in Condition 1

- - - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

SCORE1 Strategy frequency in Condition 1
by LEVEL Language proficiency level

Mean Rank	Sum of Ranks	Cases
61.31	3862.5	63 LEVEL = 1 High
65.69	4138.5	63 LEVEL = 2 Intermediate
		126 Total

U	W	Z	2-Tailed P
1846.5	3862.5	-.6826	.4949

Table 2. A between-subjects comparison of high and intermediate levels in Condition 2

- - - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

SCORE2 Strategy frequency in Condition 2
by LEVEL Language proficiency level

Mean Rank	Sum of Ranks	Cases
62.25	3922.0	63 LEVEL = 1 High
64.75	4079.0	63 LEVEL = 2 Intermediate
		126 Total

U	W	Z	2-Tailed P
1906.0	3922.0	-.3910	.6958

Table 3. A within-subjects comparison of strategy frequency at high level for Texts 1 and 2

- - - - - Wilcoxon Matched-Pairs Signed-Ranks Test

HIGHSCORE1 Strategy frequency at high language level for Text 1
With HIGHSCORE2 Strategy frequency at high language level for Text 2

Mean Rank	Sum of Ranks	Cases
25.63	666.50	26 - Ranks (HSCORE2 LT HIGHSCOR)
20.73	414.50	20 + Ranks (HSCORE2 GT HIGHSCOR)
		17 0 Ties (HSCORE2 EQ HIGHSCOR)
		63 Total

Z = -1.3878 2-Tailed P = .1652

Table 4. A within-subjects comparison of strategy frequency at intermediate level for Texts 1 and 2

- - - - - Wilcoxon Matched-Pairs Signed-Ranks Test

INTERSCORE1 Strategy frequency at Intermediate level for Text 1
With INTERSCORE2 Strategy frequency at Intermediate level for Text 2

Mean Rank	Sum of Ranks	Cases
26.37	817.50	31 - Ranks (INTESCO2 LT INTERSCO)
25.42	508.50	20 + Ranks (INTESCO2 GT INTERSCO)
		12 0 Ties (INTESCO2 EQ INTERSCO)
		63 Total

Z = -1.4580 2-Tailed P = .1448

Table 5. A within-subjects comparison of strategy frequency at low level for Texts 1 and 2

- - - - - Wilcoxon Matched-Pairs Signed-Ranks Test

LOWSCORE1 Strategy frequency at low level for Text 1
with LOWSCORE2 Strategy frequency at low level for Text 2

Mean Rank	Sum of Ranks	Cases
17.12	222.50	13 - Ranks (LOWSCOR2 LT LOWSCORE)
16.08	305.50	19 + Ranks (LOWSCOR2 GT LOWSCORE)
		31 0 Ties (LOWSCOR2 EQ LOWSCORE)
		63 Total

Z = -.7963 2-Tailed P = .4259

Appendix 26: Rank of all the strategies reported in the Pilot Study

Condition 1, Text 1					
Strategy	High	Strategy	Intermediate	Strategy	Low
42	52	44	91	44	21
54	48	46	68	60	17
44	38	53	60	28	15
48	22	42	50	48	14
16	20	54	49	53	13
30	17	16	40	42	12
59	17	33	30	54	10
52	16	3	25	20	9
33	15	30	24	49	8
55	14	61	23	59	7
46	14	15	23	21	6
61	12	38	20	16	6
21	10	55	14	34	6
8	10	48	14	57	4
57	9	21	13	15	4
50	8	49	12	46	4
3	7	59	12	30	3
29	6	34	10	55	3
62	6	24	10	8	2
34	4	37	8	52	2
9	4	28	7	40	1
1	3	29	6	61	1
53	3	52	6	31	1
49	3	62	6	29	1
15	3	9	5	11	1
11	3	50	5	36	1
32	3	58	5	32	1
38	2	43	3	33	0
37	2	57	2	50	0
26	2	4	2	27	0
27	2	10	2	24	0
35	2	14	2	3	0
36	2	39	2	37	0
51	2	40	1	6	0
17	2	23	1	62	0
39	2	19	1	39	0
24	1	18	1	38	0
40	1	2	1	13	0
41	1	8	1	41	0
28	1	56	1	26	0
22	1	5	1	43	0
12	1	11	1	1	0
25	1	36	1	56	0
5	1	45	1	25	0
47	1	47	1	4	0
2	1	51	1	45	0
14	1	31	1	14	0
23	0	32	1	7	0
63	0	13	0	9	0
19	0	41	0	58	0
18	0	63	0	23	0
31	0	26	0	63	0
13	0	1	0	19	0
43	0	35	0	18	0
56	0	22	0	2	0
6	0	12	0	35	0
4	0	25	0	22	0
10	0	6	0	12	0
45	0	17	0	5	0
58	0	7	0	10	0
7	0	27	0	47	0
20	0	20	0	51	0
60	0	60	0	17	0

Condition 2, Text 2					
Strategy	High	Strategy	Intermediate	Strategy	Low
44	58	44	87	21	44
42	35	46	75	28	30
55	27	53	69	44	22
48	25	42	40	60	16
16	24	28	26	49	12
54	18	31	25	16	10
53	12	54	23	34	10
21	12	33	21	59	10
30	10	16	21	54	9
52	10	34	20	20	9
57	9	55	19	53	7
46	9	21	18	55	4
49	8	58	17	42	3
61	8	15	17	33	2
33	7	30	13	30	2
34	7	49	13	29	2
29	7	3	10	15	2
50	6	48	10	46	2
59	6	61	8	36	2
8	5	4	7	38	1
62	3	24	6	40	1
32	3	59	6	3	1
1	2	57	5	32	1
24	2	8	5	61	1
3	2	52	4	31	1
6	2	50	3	57	1
36	2	17	2	8	1
4	2	5	2	56	1
39	2	51	2	5	1
38	1	39	2	6	1
40	1	9	1	48	1
13	1	13	1	4	1
41	1	41	1	52	1
31	1	29	1	39	1
26	1	63	1	27	0
43	1	18	1	24	0
27	1	37	1	11	0
56	1	26	1	58	0
25	1	43	1	13	0
28	1	62	1	41	0
11	1	14	1	50	0
45	1	10	1	23	0
14	1	40	1	63	0
7	1	23	1	19	0
37	1	19	1	18	0
15	1	38	1	2	0
58	0	2	1	26	0
23	1	35	1	43	0
63	0	22	1	1	0
19	1	12	1	35	0
18	0	56	1	22	0
35	1	6	1	12	0
22	1	36	1	25	0
12	1	47	1	10	0
10	1	25	0	9	0
5	0	20	0	45	0
9	0	11	0	47	0
20	0	45	0	51	0
47	0	27	0	62	0
51	0	1	0	14	0
17	0	7	0	17	0
2	1	32	0	7	0
60	0	60	0	37	0

Appendix 27: Reading comprehension scores of subjects at the high, intermediate and low levels on the oral summary and short answer reading comprehension tests

Subjects	Language Level	Oral Summary Score 100%	Short Answer Reading Comprehension Test Score 100%
1	H	50	33
2	H	70	17
3	H	60	17
4	H	70	40
5	H	40	17
6	H	50	50
7	H	100	33
8	H	80	33
9	I	70	50
10	I	50	50
11	I	10	50
12	I	40	0
13	I	60	50
14	I	10	17
15	I	10	0
16	I	50	33
17	L	0	0
18	L	0	0
19	L	0	0
20	L	10	0

Appendix 28: Protocol of Subject 1 (Gap-filling Group)

amoeba from the topic I have understood that we are talking about amoeba, and from what is said after the blank, which says [dweller] I understood that it is talking about a living organism, so as we are talking about amoeba, I have put in amoeba

varying it says here [0.2 -0.5 mm] and thus expresses how tiny it is, [hardly visible] it is giving an elaboration for this, the other is [jelly-like] which means very soft and so its shape should vary because if we say jelly-like what can we say about its shape? from my general observation, if something very soft is touched by some thing or comes in contact with its surrounding it will not produce any reaction I mean it won't push if pushed, it will simply change its shape and counter external forces

change we have been talking about the change in its shape, and again here we have said [the word amoeba means to change] and the stress he is expressing is on change of amoeba's shape or structure

microscope [the __ in the structure of an amoeba are only visible] at the beginning we have said it is invisible, [hardly visible] and it said are visible after the blank; we can see things invisible to our eyes using a microscope, from my previous education

cell, the man is talking about cell, and here it says [an amoeba like other protozoa consists of once cell] and after this he says [but this] when he says [this] from the context in which it is put it is clear to see that it refers to [cell]

cytoplasm in the second paragraph he called cytoplasm semi-fluid and in this paragraph it is in constant motion, current means wave and this current originates from a fluid and if cytoplasm is a fluid the current comes from the cytoplasm

position [..flows toward a certain __ on the amoeba's surface] certain means some specific place and after the blank it says the amoeba's surface which means the place where the cytoplasm gets into, so the current is now going towards a certain direction, and [flows toward] indicates direction

psuedopoda we have said above that the cytoplasm flows towards a certain direction and forms a bulge, then it says [it increases in size and turns into a projection - a pseudopod], and this bulged thing is pseudopod

Rhizopoda the writer is asking what class amoeba and other protozoa belong to, and this writer has specifically started to write about the phylum and class, and since this word [class] is here and since the writer has already specified the class I went to the topic

structure it is explained above that we can find amoeba in different form, I mean the shape varies, and also from past experience, amoeba has no locomotive and moves by forming pseudopod; that it varies its shape, as said earlier, means the structure varies

capture if it is the case that birds, humans etc. can use their locomotive or hands to capture food, the changing structure also serves the amoeba to catch its food that is, algae, bacteria, and protozoa, after the blank, I mean from the sub-title of the paragraph which says nutrition

digestive because here we are talking about [nutrition] meaning about food, and after the blank there is a sentence which explains about digestive juices so there is a relationship between digestion and food.

digestive I took this from the above paragraph and what made me go there is the word after the blank [juices dissolve part of the substances contained in the food and digest them] and above we have said food digestive, so in the paragraph above and here it is digestive

food in the sentence above it said what are dissolved is food, and when it says [the dissolved ___] he means the food

oxygen we are talking about respiration, I finished the sentence because some thing that diffuses could be anything water or other, so we cannot know what will go in the blank, and continuing it says: [it helps to decompose] so it should be something that decomposes and since we are talking about respiration, it is

oxygen that helps for decomposition, this is from my previous knowledge

wastes we have said above that oxygen enters, and if oxygen gets in and energy is produced, there must be a by-product because it says here carbondioxide and other harmful substance and there is not mention that or we have not seen these enter, and it says they accumulate in the cytoplasm, and if we have not seen them enter we can guess that they were created, and from what I know previously in animal respiration carbondioxide and other things are wastes
water I read beyond the blank to get a generalised idea; we have said at the beginning that amoeba lives in water, and before the blank carbondioxide and other harmful substances should be diluted to be removed through diffusion, this means amoeba is surrounded by water

The we have said before that water dilutes carbondioxide and other harmful substances, and what we want to talk about is about the water that is already in, also earlier we have said water enters and dilutes carbondioxide and other harmful substances, and what we want to talk about is about the water which is in the cytoplasm, and to make this water definite, I have chosen to use article

generally in this sentence he is generalising about the points we talked about under excretion

wastes we have come so far talking about the things which excess water brings, and the last sentence says [rids] and so what it removes are wastes

Round up interview

Q: Why did you read the text the way you did?
A: subsequent and previous ideas should not contradict each other. I can't simply fill in, the passage should give a coherent idea. That is why I read it by going back and forth
Q: How strong was your level of interest?
A: I came here for this/taking it as my own job and I was interested
Q: Thinking back now, how else would you have liked to have read it?
A: I don't think I would have don't it otherwise
Q: Did the questionnaire influence how you read today?
A: In places I started to sound out the words mentally but remembering what I had said in the questionnaire I read without making any sounds

Appendix 29: Protocol of Subject 2 (Gap-filling Group)

water the reason I put this is that before the blank it reads [mode of life and structure] which talks about water, the meaning is, it means it has shape, taste and kind, and we can know the taste and kind of water by tasting I mean [slow moving still water] means tasting, and [slow moving] means we know

and the reason is [still water] means any water, and any water has weight meaning [hardly] and kind [colourless] and [shape] after the blank to mean they have no shape

disease before the blank it reads [amoeba means to change] it means disease, from what I have learnt amoeba is a disease, and after the blank it reads [in the structure] means the amoeba has changed, as indicated above, to disease

cheke means to try and examine, the reason I put this word is, before the blank it reads [the structure of amoeba are visible only] which means generally when we look at ameoba, and we know it by examining it, [visible only] means to know, so it is by examining it, isn't it by examining people that it is established whether that person has a disease or not?

microscope because before the blank it talks about tiny things, and after the blank it says to know these meaning [an integral organism leading an independent life] so we know by using a microscope

cell it is due to [cytoplasm] before the blank and [forward] after the blank, meaning [cytoplasm] is a kind of disease and [forward] means generally, and according to my education a cell is found in a cytoplasm, and it is saying before the blank where this cytoplasm is found and it is found in a cell

if the reason I put is after the blank it has explained about disease [on the amoeba's surface and turns into a projection] so [if] means [this] and after the blank it reads [amoebae] meaning this disease, and this disease can decrease that is [increase] it changes [turns] into a disease

only before the blank it says [the cytoplasm flows over into the] meaning this kind of disease, [only] means always, and [the amoeba move] means becoming like amoeba, and [in the respective direction] means it can change

because before the blank it mentioned about the type of the disease, that is [the amoeba and other] and after the blank it mentions that amoeba can also be found in plants

cell [the amoeba may form] means amoeba in general, [once and it uses them to] meaning there is some thing inside it, and cell means worm

amoeba the reason is [bacteria, algae] and others are parts of amoeba and [bacteria] and stuff are types of diseases, and from what I know and from what I was just reading, they are parts of amoeba

plant it is based on [digestive juices and cytoplasm] which is before the blank and [which is a food] after the blank, so [digestive juice] means that which is not visible, and before the blank it talks about food, therefore there is some thing in plants that cannot be seen, and from my knowledge there is cytoplasm in plant roots

only it means [anything] and after the blank it talks about food being digested and in my knowledge any food is digested and dissolved

and before the blank [the dissolved] and after the blank [cytoplasm and are used for building the amoeba's body] this means it can be mixed, so when we use that is [building] things that cannot be seen with our naked eyes they could introduce amoeba into us [the amoeba's body]

bacteria [an amoeba breathes in oxygen dissolved in the water] this means the amoeba is found in water, and from what I know amoeba has tiny things inside it, and after the blank it says [compound substances ..cytoplasm] this means tiny things, therefore tiny things inside amoeba are called bacteria

increase before the blank it explains about power [energy] and after the blank it says [cytoplasm] which means disease, so that means power parts and carbondioxide decrease with an increase in disease, you

know when a person is attacked by a disease his/her power is reduced and not increased

cytoplasm [harmful substances are excreted from the amoeba's organism] means things present in the amoeba's body, and one of these things is cytoplasm

Round up interview

Q: Why did you read the text the way you did?
A: To understand the passage. I understood it, except in a few places it was OK.
Q: How strong was your level of interest?
A: it was fine
Q: Thinking back now, how else would you have liked to have read it?
A: I would have reread it to get the idea because the idea was difficult for me
Q: Did the questionnaire influence how you read today?
A: Yes

Appendix 30: Protocol of Subject 3 (Retrospection Group)

At the beginning, when I was reading, the title informed me that it was about unicellular animals, and I got the hint that it would be about that, and continued reading having a hint about to which phylum and class it belonged. I know from my biology lessons that an [amoeba] is a [unicellular animal], and when I was reading, I was reading with speed, I didn't go back except at the last sentence, when I say with speed just by glancing it I think it was because the idea was easy for me, and I understood it at once, and when I was reading, as I went along I was thinking about what I understood, and I was doing this simultaneously as I was reading. I was mulling over and organising the correctness of what I read. The last sentence, I think it was about [amoeba] being not visible without a microscope, I read the last sentence at the speed with which I read the previous sentences, and I didn't understand the explanation then I read it again and understood it, when I re-read it I was thinking about what I had missed and which part I didn't pay attention to, then I looked at each word with concentration, I mean the meaning of it, and what each word wanted to convey in the context of what is being said,.

When reading the second paragraph I started it with the idea I got from the first paragraph, they have related ideas, and seeing the relationship between the idea here and the hint I earlier. I didn't reread this time, except for a word towards the end, I know the word but I didn't expect it would be used in this usage, I didn't expect it can be expressed in this way here, then I related it with the last sentence thinking it would be contextually related with it. When I was reading I was relating with the previous idea.

I read the same way here as in the third paragraph. The words were easy for me, and when I was reading I was remembering about the movement of [amoeba] and I was thinking about the stages through which the life of an [amoeba] passes, although I have not seen it before, I had the picture of an [amoeba] with water getting into it and bulging. Other than this I was reading in the same way as I read the previous paragraphs.

Reading the fourth paragraph I was remembering what I knew from my knowledge about [amoeba] and I was synthesising what is said here about the nutrition method of [amoeba] and how it exists, I didn't reread, when I started reading the paragraph, it had a sub-title about nutrition and I expected what kind of nutrition [amoeba] would have although I don't know to which category of consumers it belongs to i.e., carnivorous or other, and I was thinking about how what [amobeba] does relate to the things those consumers do, but I didn't get a hint about where [amoeba] belongs to, I was also thinking that amoeba's feeding would be different though this was not stated in the text.

When I was reading this was taking about digestion and I was thinking about how an [amoeba] digests, and I was asking how a single cell animal like [amoeba] could perform all these activities, when I started it began with digestive juices and I was asking how it was secreted, how it came about, and that sort of thing, and since the words were not difficult I didn't reread,

I had a slight hint about what it talked about when I read it first, I reread it twice, the first time I simply roughly read it just getting the idea without paying attention to what each sentence wanted to say, including whether words were difficult or not, I just took along what I understood and skipped what I didn't understand, after getting the hint, I reread words that were not familiar, I didn't skip them. after reading a sentence I would ask what the word wanted to mean, whether it could be possible or not, around the beginning it said carbondioxide and other waster products accumulate in the cytoplasm, but what I expected was it would be about how the energy process would be carried out during nutrition, and after finishing reading, I said how can it be and reread it, I brought the knowledge I had and that which I got from reading this text and concentrated when reading, my mind was following me, when I read a word I would ask what it represented and what its meaning is, and I tried to relate the idea after finishing a sentence, when I read it second time I gave concentration to every thing.

I read the seventh paragraph as I had read the previous paragraphs, I started reading with the hint I got form the sub-title in the sentence, towards the end, in the sentence before the last, there was a difficult word and I re-read it contextually with the hint I came with, I remembered the central idea of the paragraph and reread only that sentence with concentration, calmly I read that word seeing whether what that word has expressed is correct or not, after contextually getting its meaning from the sentence, I guessed its meaning, and I reread the last sentence to see if its idea would contradict with the sentence I read and got the meaning of the word from, since the last sentence proved my guess, I continued saying my guess was right. That's how I finished it.

Round up interview

Q: Why did you read the text the way you did?
A: to understand what I am reading
Q: How strong was your level of interest?
A: I was eager to find out what it was about; it didn't change
Q: Thinking back now, how else would you have liked to have read it?
A: I would not read it any differently to get the central idea, but if you had asked me to write or memorise,
I would have read every sentence two or three times,
Q: Did the questionnaire influence how you read today?
A: I didn't remember the questionnaire

Appendix 31: Protocol of Subject 4 (Retrospection Group)

First I read the title which says [amoebae] and I said to my self that the paragraph would be about it, and then I continued to read; first time I was reading at the beginning there were words separated by a hyphen and I thought they were different but the second time I read it I realised that they were joined, then I translated into Amharic each word and related their individual meaning, and since a full-stop came after them I knew they had the same meaning. On the fourth line he gave a definition for amoebae in side a bracket and it was not clear to me why he did this because he had defined it first and I didn't expect he would give a definition here. I re-read the paragraph. First time I read their sounds only so when I read them next they would not be difficult to translate; the second time I was not as fast as the first time and I read at a medium speed, for example, I kept in my mind difficult words to look up in books later, and to get the meaning of the sentence I tried to relate with my previous knowledge words I didn't know, I have also reread by relating words I don't know with those I know, when he was mentioning [0.2mm] and stuff I didn't know he was talking about the length of amoeba and when I read it second time I was able to understand from the details given below that it was talking about the structure of amoeba, and I understood the idea.

I read the second paragraph twice, first time I was reading I saw [bubble-like] and its meaning was not clear to me but when I read it second time he explained that it was a cell, it said next 'therefore it is a cell'; it was related with biology and it was not much of a problem for me; I read it second time so that its meaning will be very clear I mean when I read it first time there may have been points I didn't get so that is why; second time I read it I was not as fast and also tried to relate what I was reading to my previous knowledge and to what is in the text.

The third paragraph had words which were difficult in their pronunciation and meaning, for example, there was one word which had a spelling of pseu… but when you read it its {sidopod}I remembered its pronunciation from in my last English class where we were learning about aids and this word was mentioned then, so I remembered this and correctly pronounced it second time I read it; I reread the words twice and kept them in my mind to look them up in a dictionary later and to understand the passage, I read a sentence twice to get the meaning of a word in that sentence but it didn't, so I wrote it down to read it later, first time I read the words I didn't read their pronunciation very well but when reading the second time I carefully pronounced them in my mind, and those words I know I translated them into Amharic, but those words I don't know I correctly said their pronunciation and then wrote them down to know them later, I also tried to relate it to biology, for example, he put it as [projected – a] I tried to remember in which biology lesson I had learnt it but I could not; I didn't understand the paragraph because the words were not clear to me. On the second line of paragraph four the word 'bubble' appeared and I tried to remember, and it was explained in paragraph that it was a cell and I referred to the second paragraph; the paragraph began with 'nutrition' written in capital letters and followed by a full stop, I had expected that the paragraph would talk about minerals, but it did not explain this, then I decided that the meaning I gave to [nutrition] was not correct, it was when reading it second time that I realised that it was not talking about [nutrition] I knew this because first time I read its sounds only and second time I read it sentence by sentence and by looking at each word that is by translating each word and then generalising the idea after finishing the sentences.

In the fifth paragraph I first pronounced the words in my mind because if I didn't know how they were pronounced it might make me make a mistake when I read for meaning, when reading second time I found a word [seep].I reread the sentence in which this word was found to find its meaning. I was translating the meaning of the words before and after that word but they could not explain it to me, it could be that those I translated may not be correct, then I kept the word in my mind, also there were words - with that word - I didn't understand, and I gave then a meaning that seemed to be likely I mean a meaning I thought would go with those words I know in that sentence, I have kept in mind those words I don't know;

When reading the sixth paragraph I first read the sub-title [respiration] and I knew the paragraph would talk about that and I continued, I read their sounds first so that I wound not make a mistake when translating, second time I read sentence by sentence, I mean I read each sentence by translating each word and by keeping in my head and writing down those words I don't know, also I related those words I don't know with 'respiration'

In the seventh paragraph, in the same way as I had done before, I pronounced the sounds in my mind without understanding their meaning, second time there were difficult words and I tried to remember where I knew them but this could not explain to me and so I kept the words in my mind, there were difficult words, and the idea was to refer other books, I read it calmly when I read it first as well as second time because the words were difficult, besides this I have related with words I know to see if there is any relation, I mean by translating into Amharic those I know and then relating those I don't know with those I don't know.

Round up interview

Q: Why did you read the text the way you did?
A: to understand it well
Q: How strong was your level of interest?
A: it was very high
Q: Thinking back now, how else would you have liked to have read it?
A: I would have retained the meaning of the words
Q: Did the questionnaire influence how you read today?
A: No.

Appendix 32: Protocol of Subject 5 (Introspection Group)

I see a title unicellular animals, O.K. I know the meaning of unicellular animals from my previous knowledge in high school, the words are familiar to me, [phylum protozoa] OK, their class, aha! I didn't know that their class was Rhizopoda, [class rhizopoda]. [amoeba], [amoeba] I know the meaning. OK what does he mean by this? [mode of life str…] OK [mode of life] what is it? [structure and locomotion ... mode of life...] any way let me continue in case I find its meaning. [The amoeba is a bottom...] eh? let me go back from the beginning again. [the amoeba is a bottom dweller and is usually found in the ooze...] [ooze] what does it mean? the meaning of ooze, let me continue in case I find it .. [found in the ooze or still-pond] [in the ooze] OK I have gone back now, [found in the ooze in slow moving still water ponds] OK they are found in water pond but what is ooze? [in slow moving water or still...] ehr I know water pond ... I am rereading that word, OK they look like that, I understand now I am continuing, [0.2 to 0.5 mm] aha I understand, [hardly visible] he is saying they cannot be seen OK, they are colourless, or [jelly-like clot] yes, OK their shape changes he says, The word amoeba means OK, I have gone back, [The word amoeba means to change], aha, [the details in the structure of an amoeba are], aha it is correct I understand the details can be seen in a microscope, yes this is correct because, before this he had said they are invisible. OK now to the next sub-title in paragraph two. [The body of an amoeba is comprised of …] OK again, [The body of an amoeba is comprised of a semi-fluid cytoplasm containing a small bubble-like nucleus] yes this information is correct, I mean from what I know previously amoebae have a semi-fluid cytoplasm and a nucleus, I am familiar with this. That is a cell, they are cell from what I have understood reading above in this passage, they are unicellular and so they have cells. [An amoeba like other protozoa consists of one cell] [amoeba like other protozoa] yes [amoeba like other protozoa consists of one cell], this is correct. [but this cell is an {intijeral} {intijeral} eh? I am going back I don't understand, {intijeral} what does he mean by {intijeral organism}? one cell but, I am going back, [but this cell is an intijeral organism] [an intijeral], I don't understand what it means by {intijeral organism}, let me skip it just in case, OK wait, I know it is one cell, but I don't understand, when he says {intijeral organism} what does it mean? as I don't understand it let me skip it. [leading an independent life], is correct, no leading .. [{intijeral} organism leading and independent life], I don't understand, let me translate, I am still there, [leading an independent life] what does it mean? is it to mean they are sort of dependent, does it mean then that they lead their own life? does it mean a life which is not dependent? amoebae are dependent, one cell, I am trying to relate with the previous, it is talking about amoeba, independent life, amoeba has independent life... er I don't think it is independent, I think it depends on, since they are unicellular it is said above, they should have their own cell activity and to get food they should depend on something from what I know experience, but here it says they are independent how can this be? an amobeba, I have gone back, an [amoeba like other protozoa consists of one cell], this is correct, [but this cell is an {intijeral} organism] what does he mean? [leading an independent life], I don't think so, anyway let me continue ahead. [The cytoplasm is in constant motion[. [If the current] eh? [The cytoplasm is in constant motion], when he says constant motion, how? what do they do? [the cytoplasm it is in constant motion] OK, [if the current in the cytoplasm flows toward a certain spot on the amoeba's surface], now I am translating and I understand, [a bulge appears at this spot], what does [a bulge appears mean]? let me go back and read [when the cytoplasm flows towards a certain spot on the amoebae's surface …], I am trying to get the meaning of this word [bulge], I am going back to relate the meaning with the sentence [the cytoplasm is in constant motion]. [If the current in the cytoplasm flows toward a certain spot on the amoeba's surface], OK then what happens next? [bulge], [bulge], if a bulge appears, I am looking ahead to get what it is, [it increases in size and turns into a projection - a pseudopodia], something which is bulge, the what? I have gone back, [a bulge appears at this spot ... it increases in size], if it appears then what? [it increases in size and], eh? [and turns into a projection - a pseudopodia], aha that means the ameoba use pseudopodia, the cytoplasm flows over into I am continuing and I understand, it is some kind of either food or something which they see appearing, a bulge that is, yes I think it could be because it is when they see this bulge they move towards it using their pseudopodia. I am continuing now, [The cytoplasm flows over into a pseudopodia and the amoeba moves in the respective], I am translating I know all the words they are familiar to me, [over into a pseudopodia] I am rereading it to understand it well, [flows over into a pseudopodia and the amoeba moves in the respective direction] eh? what does this mean I don't understand it, I have gone back, [the cytoplasm flows over into the pseudopodia and the amoeba moves in the respective direction], what does it mean? the idea of the sentence, what does he want to say? if the pseudopodia flows then what? respective so then? to do what? [flows over into the pseudopodia], I am rereading the sentence, [the cytoplasm flows over into the pseudopodia and the amoeba moves in the respective direction], [respective] what? what is the connection with flowing here anyway? [the cytoplasm flows over into] I am rereading it, [the cytoplasm flows over into the pseudopodia and the amoeba moves in the respective], what does it mean? what is the idea of this sentence? that's it, let me skip it in case I find an idea related with it, does it mean that [the amoebae flow over the pseudopodia and they both flow in the same direction]? em I don't understand it but let me read ahead. [The amoeba and other protozoa capable of forming pseudopodia belong to the class Rhizopoda] I see I have read this one above when the passage started it talked about it. [This name has been attributed] [attributed], what is its meaning? [attributed] [attributed], let me go back to the beginning of the sentence, [this name has been attributed to them because of the external resemblance], let me go back again, [this name has been attributed to them because of the external resemblance ... plant roots], so it is given to them because like plant root they have resemblance. Now I am going to the second paragraph, OK nutrition, what does it mean nutrition? I am trying to translate I am familiar with the word but unfortunately I don't know its meaning, it could be something related with food, anyway let me go to the detail below, [The amoeba may form several pseudopods at once and it uses them] , what does it mean by [several pseudopods at once]? and it uses them to encircle, wait what is the meaning here? I have gone back, [the amoeba may form several pseudopods at once and it uses them to encircle bacteria], aha I

understand, that means they have pseudopoda to encircle algae and other protozoa, to kill them. I am continuing, [the prey], [prey]? what is the meaning of this word? [The prey is enclosed in the cytoplasm], what does it mean, the word [prey]? let me continue ahead just in case, [enclosed in the cytoplasm], so it is the thing which they put in circle I related it with the next idea. [A bubble is formed which is a food], [bubble is formed]? [a food vacuole, bubble] I am going back to find the meaning of that word prey, [a bubble is formed which is a food vacuole], [a bubble is formed], [a bubble is formed] OK I reread it, [a bubble is formed which is a food vacuole], what does it mean? I am trying to translate, I have gone back now beginning from [the prey, the prey is enclosed in the cytoplasm]... [a bubble is formed which is a food vacuole]; it says here a bubble is formed and it is a food vacuole, aha that food could be prey which they encircle, there is information about encircling bacteria above before the word prey and this word prey could be bacteria, algae, OK [digestive juices diffuse from the cytoplasm into the vacuole], that means something that digests flows, this is correct. I have now gone to the other paragraph. [The digestive juices dissolve part of the substances contained in the food], I am translating, and digest them, [the digestive juices dissolve part of the substances ... and digest them], correct, because before this above it had said a bubble is formed and then the digestive juice diffuses, and so it digests it, it is correct. [The dissolved nutrients seep from the vacuole into the cytoplasm], I don't understand it, [The dissolved...seep from the vacuole], what is the meaning of seep? [The dissolved nutrients seep], I have gone back, [the dissolved nutrients seep], let me continue in case, so the dissolved nutrient seeps it means from the vacuole into the cytoplasm, aha yes it means absorbed, I continue [and are used for building the amoeba's body], aha so it is useful as it is a food substance, I am translating, correct, [are used for building the amoeba's body], so the seeped thing is used to build the amoeba's body, it means. [As a rule], what does it mean? [as a rule], what? let me read ahead, as a rule, what does it want to say, I am eager, as a rule, like some kind of law? what law? [The food is not assimilated completely and...], let me go back, [The food is not assimilated...]OK, yes this is correct, I am continuing. [Respiration], it means breathing, OK it is connected with breathing, let me continue. [The amoeba breathes in oxygen dissolved in the water], I don't understand this sentence, when it says breathes in it means it goes in, why? how can it breath oxygen dissolved in the water? it means it does not use direct breathing? let me read it again, [The oxygen dissolve in the cytoplasm through the entire surface of the body], I don't understand, let me go back, [The cytoplasm dissolved in the cytoplasm...] OK, I understand, I mean I know that oxygen should diffuse into the cytoplasm as it is useful for cellular activity, it is mentioned above and it also talks about breathing and from my past experience in biology it is so. [oxygen diffuse through the entire surface of the body], what does this mean? I am rereading it, we have mentioned this earlier. [The amoebae breathes in oxygen dissolved in the water and it helps to decompose the compound substances of the cytoplasm into more simple ones], yes this is correct, I know from my experience that if there is cellular activity there is decomposition which means from larger to the smaller. [Energy which is necessary for the vital activities], energy means power, I am rereading it, [which is necessary for the vital activity], what does [vital] mean? [vital], [vital], the meaning, let me reread it, [energy which is necessary for the vital activities of the organism], [vital] what does it mean? [activities of the organism is produced in this process], what I don't, let me go back, [energy which is necessary for the vital activities of the organism], what does vital mean? wait let me reread it, [energy which], it says useful for the organism, I am trying to get its meaning, [vital activities of the organism], [vital], let me continue ahead, is produced in this process, from my previous I know it forms energy in this process, but [vital activity], I don't know its meaning, let me read ahead, [is produced .. carbondioxide and...], what does it mean? the idea of the sentence, let me reread it, [Simultaneously] means immediately OK, [carbondioxide and other harmful], what does it mean? I am trying to get the idea from the sentence, I understand what the sentence is saying but it contradicts with what is in my mind because if it is harmful how come it is stored? it should be removed from the cell, here it says it is stored, how can this be?, let me go back, [carbondioxide and other harmful substances] I don't think so because how can it be? anyway let me read ahead, [excretion of waste products and excess water ... harmful substances are excreted from the amoeba's organism through its body surface and...contractile vacuole], what is the meaning of [contractile vacuole]? I am familiar with this word before, let me go back to get the idea of the sentence, [harmful substances are excreted from], it is saying here these substances and excess water will be excreted but earlier it said carbondioxide is stored, [Harmful substances are excreted], I am rereading it, one harmful things, for example, is carbondioxide, but here it says they are removed, these two ideas are conflicting to me, from what I know carbondioxide is harmful, but here how is it so? let me continue anyway, [The water surrounding the amoeba] [excess water containing carbondioxide and other harmful] [excess water], I am rereading it, [excess water … fills up and then rip .. ripchers {in the text it is [raptures]} and disappears], what is the meaning of raptures, disappears, wait let me go back to the beginning, [The water surrounding…] OK, I understand, dilutes it, it means it is diluted, if water gets in as always. [Excess water containing...] [Excess water], I am rereading it to organise the idea, [Excess... raptures and disappears], so it means they disappear, but the mechanism of how they do this is not clear to me, let me read ahead if I find it, [Thus the contractile vacuole], aha so it is the contractile vacuole that rids or ejects, I mean from the idea so far. Finished reading the passage.

Round up interview

Q: Why did you read the text the way you did?
A: to get the main idea, and this how I read
Q: How strong was your level of interest?
A: I was interested
Q: Thinking back now, how else would you have liked to have read it?
A: unless it is to find extremely minor faults.
Q: Did the questionnaire influence how you read today?
A: yes

Appendix 33: Protocol of Subject 6 (Introspection Group)

Now there is the title and the subtitle, now I have started the paragraph, [mode of life...] I read it twice, now I have continued and I am reading slowly, I reread it to get the idea correctly, I am reading with concentration, I have continued to the next, now there is some thing that expresses size and I am paying attention to that in a way I understand it, now he is telling me about the physical appearance of ameoba, including what amoeba becomes, OK since I understand this I am going to continue to the next, now I have come across a new word and I reread it from the beginning, OK [since it is visible ..] now I have finished this, I have started a new paragraph, now I am starting slowly in a way I understand it because from the way it is put it seems to be going to explain a new idea, OK .. all right I am slowly reading to see what it wants to explain, I have slowed down now because I have found something new - it is a property or behaviour - I want to reflect slowly in my mind what it wanted to say, OK as I have understood the new idea, I am going back to the beginning to comprehend the idea so far. OK I am now continuing, now I am continuing by relating with what I have read first, now I am reading attentively by relating with the previous, as I read it with speed I am going back, now as I understand the idea I am continuing ahead, now I have just continued as it does not differ from the first idea - I didn't need a repetition, I have gone back here as the idea is new to me, now I understand the idea, I remembered what I knew as I read now, it reads [nutrition] I think it is new idea, OK now since there is new information I am going to read slowly in the way I understand it, it is a phrase here I understand it and since it is related with the first I don't need to reread, now since it is integrated with the first idea I have simply understood it, now I will continued with speed, all right I have finished, I will continued to the next paragraph, OK I read the whole sentence slowly and I was translating it into Amharic, now I am continuing, since this one is a related idea I read it slowly, again it is a related idea and I have continued with the speed with which I came, now I have continued by relating the idea here with what I know before, OK it is [respiration] and I understand what it wanted to say in relation to the title, now I have found some idea about respiration, so if this was some thing from which a question would come, it looks like one to me, so I want to store it, as there is nothing new coming I am continuing by translating into Amharic, now I easily understand this because it related to what I know in biologically, now I am continuing to the next and it reads [excretion of waste products and excess water] OK I read this in one go as it was a continuous non-stopping sentence, now I will reread it to comprehend it better because the idea was long so I could not comprehend it, now as I read it with concentration and by relating the idea I understood it, I continue, I read it by relating it with what I have earlier read and so I understand, now I reread this because I rushed over it and could not get the idea, now I understand it because I read it slowly, by applying my previous knowledge and by translating the words, now have fully understood the idea and have finished the passage.

Round up interview

Q: Why did you read the text the way you did?
A: I read it this way because I thought questions will be taken from this passage, and I gave stress to those main points that I considered important, I mean I read it in such a way that I am able to remember and answer if I am asked questions, so that is why I chose this way of reading.
Q: How strong was your level of interest?
A: I had interest to read it quickly and find out what it would talk about
Q: Thinking back now, how else would you have liked to have read it?
A: May be take more main ideas and focus on them; it would have been possible to read it by relating it to general situations I see and read about and in depth extensively without simply concentrating on the text information, if I had done this, it would have been clearer to me
Q: Did the questionnaire influence how you read today?
A: Yes

Appendix 34: Protocol of Subject 7 (Introspection Group)

I have started from the title, from its meaning, and what kind of purpose it has, now I have continued, I have understood the purpose, I have gone into the paragraph; I am looking at their meaning by relating and connecting and its difference with others, and what kind of relation the words have, when I read I am translating and retaining, I am retaining its aim, now I am translating the meaning of the sentences and retaining it, I have gone back now though I understand the words I don't understand its idea, I am reading slowly and I understand, I am connecting the words with the words next to them by translating their meaning and keeping it in my mind, I am still translating like that, now I am translating and retaining, I am going back again, I don't understand the idea although I understand the words, I am translating and storing, and I understand, I have continued, I am translating and storing, I have gone back again, I don't understand although I understand the words I don't understand the idea and aim of the sentence, now I understand what it is about, and I continue, I am translating the meaning of the words and relating with the next word and looking at what the idea is, I have gone back again I don't understand the idea, now I am rereading it slowly, I am looking at what kind of relation each word has and how it conveys an idea, I understood it now because I slowly looked at which meaning of the words is suitable to the sentence, now I have come across an unfamiliar word and I am going to use a dictionary and I know the meaning and I am going back to see what the idea is, now I am reading by relating words with themselves to provide the idea, now I understand and I am going to the next sentence, I have gone back to the sentence there is a word in the sentence which I have read before but I am trying to remember it in my mind by repeating its sound in my mind, now I understand, I have gone back, and I am reading slowly and picturing what the sentence conveys, now I understand where that thing is I have understood it from the picture I have in my mind, now I am relating their meaning and translating into Amharic, I am continuing like that, now I have gone back I don't understand what the sentence wants to say, so I am slowly relating each word with the next, now I have come across a new word, I am going to look it up in the dictionary, now I know its meaning, now I am going back to know what the idea is, now I am translating into Amahric, and relating with the next word, now I am also reading like that, now I have found a new word which I think I have seen before, I am trying to remember where I have read it by repeating its sound in my mind, I am trying to remember but I can't, I need a dictionary, I don't understand what the idea of the sentence is I am going back and translating, I am changing the meaning into Amharic but I don't understand although I know the meaning of each word I don't understand what the idea is, may be the meaning of the word I just looked up may not go with the sentence, now I am looking for its second meaning by going back slowly by changing the meaning of the words into Amharic, now I understand, now I have stopped at a word I know, it does not related with the idea of the sentence and I am going back and am slowly relating each word with the next word, now I understand, now I have come across an unfamiliar word and I am going to look it up in the dictionary, now I have put in the word with sentence and I am reading from the beginning of the sentence, now I understand, now I am translating the meaning of the next sentence, but I don't understand it, I have gone back, as I read it with speed I could not understand its meaning, now slowly I am reading by relating the meaning of each word to the next, I am now continuing like that, still like that, I don't understand the idea of the sentence, what it wants to express, the idea of the sentence contradicts my knowledge, is it me or is it him? One of us is wrong! And if it is me, I am rereading it to find out where I have gone wrong, now I am paying attention and relating what is here with what I already know, now I understand. Now I am carefully looking at what meaning the words have in the sentence, now I understand its purpose, now I am in another paragraph, here I don't understand the idea and I am rereading it, the reason is I only read half the sentence and didn't read the other half, so I am going back to the beginning and read it, now I have come across an unfamiliar word and I am going to use the dictionary, now I have substituted its meaning and read it from the beginning and now I understand it, as what I am reading now is something I know and since I am thinking about what would come next, I didn't find it that difficult; I am translating and storing the idea of the sentence, I am translating their meaning and relating with the next word, and I understand the purpose of the sentence, now I am going back I don't understand the idea of the sentence I know the words, now to understand it I am slowly connecting the words and giving their translation but I still don't understand, now I have gone back, I think the problem is I don't understand what the sentence wanted to say through those connected words, now I understand it as I reread slowly and looked at what the meaning of those words meant in the context of the sentence, as I know this I am reading it with speed and my mind immediately translated it into Amharic, as I know the next sentence I am also reading it with speed, now I am seeing the relation between the sub-title of the paragraph and the main title of the passage, because I thought at first I didn't know the reason but because it related when I reread it with the title, I have continued and accepted it. Now as I was reading with speed I didn't understand the idea of the sentence and I am going back, and when I reread it I am relating the meaning of each word to the next and considering what kind of idea it wants to give, yes I understand now when I connected it with the final word in the sentence, it's what I know and I am reading it with speed; now since I found two sentences connected with a connective, I have gone back to see what their relation is, now I have slowly read looking at the meaning but I have now gone back the idea of the sentence is not clear for me it may be that I didn't finish the whole sentence, now I am translating and storing what the idea is, now I understand by relating it with what I know before, now as I found a new word I am going to use the dictionary, well no I was about to look it up but I understood its meaning for I read it contextually in the sentence. Now I am repeating the sound in my mind of the new word which I have come across and am wondering what its meaning could be, now I am trying to find its meaning within the sentence by reading from the beginning of the sentence, now when I relate it with the next sentence it is not understandable for me so I am going to use the dictionary, I understand it and I have finished reading.

Round up interview

Q: Why did you read the text the way you did?
A: because this passage is necessary for my education I stored the idea of each paragraph, and since it is related with my education I need to store it
Q: How strong was your level of interest?
A: I was eager to understand the idea
Q: Thinking back now, how else would you have read it?
A: seeing each paragraph's ideas and its relation with what you know
Q: Did the questionnaire influence how you read today?
A: No

Appendix 35: Protocol of Subject 8 (Introspection Group)

Now I am reading the title by producing sound, now I am giving the meaning to the title, now I continue, now I am reading the first part of the paragraph by memorisation, I am still memorising as I don't know the meaning, now I recognise the words and I am reading them by producing sounds in my mind and I am trying to memorise, now I am repeating the sound of a word I don't know to get its meaning, now I know its meaning because it is connected by [or] with the next word and I went back and read the one before [or] since [or] suggests similar things, now I am reading by producing the sound and translating into Amharic, now I am trying to remember what I have read, now towards the end I have found the same word which I didn't know and I am rereading it by sounding it out in my mind and I have skipped it because I don't know its meaning; now I have started a new sentence, now I am reading by producing the sounds and memorisation, now I am reading the next by memorisation by translating each word, now I have stopped reading because I found repeated words but now I have returned where I was, now I have stopped at a new word and I am rereading it by pronouncing it but I don't know it so I have skipped it, now I am reading by memorisation and by saying the sounds; now I have gone into the second paragraph, now as I was reading by memorisation, I have found a new word and I am reading it by repeating its sound, as I don't know its meaning, I have kept the spelling and pronunciation and have moved on, now I am rereading those before that word, at first I read them by seeing their pronunciation and with out knowing their meaning, now as I know their meaning I will continue, now I am giving their meaning and reading by memorisation,. now I had passed this with out getting its meaning and now I have gone back and am reading by giving their meaning, now as I have got their meaning I have gone to the third paragraph, now I have stopped because I thought I didn't know this word but I know it and now I am going back because I stopped, now I am memorising, I am still memorising, now I am repeating the sound of the word towards the end I don't know its meaning and I have skipped it, again a new word has appeared and I am going to skip it, now the words are familiar so I am memorising, now I have found a word I don't know and I am skipping it because I don't know its meaning, now I have found a word I know before but can't remember its meaning now and I am repeating its sound to remember it but it won't so I am continuing forward by keeping the word in my head, now I am reading by memorising, now as I memorise I found a new word and I have stopped at it and am rereading it by repeating its sound but I don't know it and I am continuing by keeping the word in my head, now I have found that word which I have repeatedly found earlier and I am skipping it, now I have gone into the fourth paragraph, again that word has appeared and I am reading those next to it by memorisation, now I am giving meaning to those words I know, now a word I don't know has come and I reread it but I couldn't get its meaning so I moved on keeping it in my head, now the next sentence tells me that these words belong to the same part and so I understood them to belong in that part although I don't know their meaning, now I have found a new word after the comma and I have continued by keeping the word in my mind, now I memorised the next lot; now I have gone into the fifth paragraph, now the words are familiar and I am reading by memorising, now I am taking their meaning in Amharic and memorising them, now I have found new words and I am repeating their sounds and rereading them because I don't know their meaning, now I am continuing by producing the sounds and translating, now I am memorising, now I have stopped at a word which I knew before but for the moment is not clear for me and I am trying to remember it but I can't get it so I kept it and moved on; now I have gone into the sixth paragraph, now as I was translating I thought I didn't know the word because I read it wrongly but I have continued because I know it, now I am memorising, and I am translating, now I shook my head because I found a word I knew, now I have found familiar words and I am memorising and I am translating, now I am producing sounds as I don't know the words, now when I found that word I was a bit confused and I stopped but I have ignored and continued, now I have found a new word and I am focusing on it and rereading it to remember it, I looked up to see if it had appeared above but it has not and I am going to skip it because I could not get its meaning; now I am on the seventh paragraph, now I know the meaning of the first but it got confusing and I am trying to remember by rereading it and I have continued in case its meaning could be found from the subsequent words, now I have gone back to it and am rereading it, I had given it a meaning by looking at the subsequent sentence, now I am rereading the sub-title of the paragraph where that word is found, now I gave it a meaning from the words there I know these words from my education, now I am memorising, now I am memorising and translating, still I am memorising, now I have found a new word and I am reading by repeating its sound in my mind and now as I look ahead to get its meaning I saw that it is connected by [and] but I don't know the word after the [and] so I have skipped it, now I am reading by memorising and translating, now I know the words so I am memorising them, now I have found a new word and I am reading it by repeating its sound, I don't know this word so I skipped it, again I don't know the next word and I am reading it by repeating its sound to remember it but I can't so I skipped and continued, now I am translating and memorising, now I am translating and memorising, now I have finished the passage.

Round up interview

Q: Why did you read the text the way you did?
A: to memorise it and this is how I usually read
Q: How strong was your level of interest?
A: I did not like what I was reading
Q: Thinking back now, how else would you have liked to have read it?
A: I regret having memorised words I don't know, I should have known their meaning,
Q: Did the questionnaire influence how you read today?
A: Yes,

Appendix 36: TOEFL scores distribution, t-test and correlation results of Main Study

Fig. 1. Distribution of Scores on the TOEFL Test

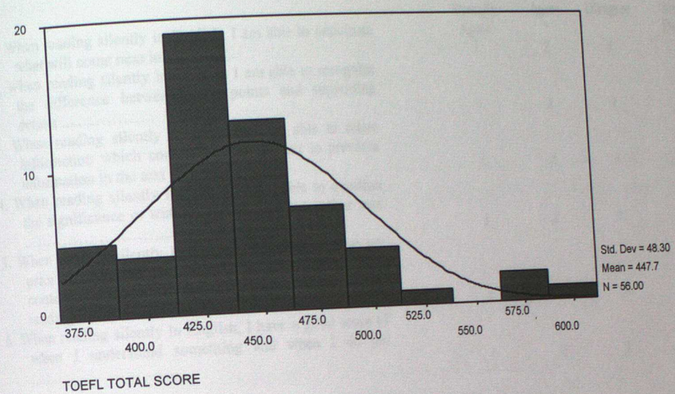


Table 1. Independent Samples T-test for Sores of subjects at high and low levels on TOEFL

		Levene's Test for Equality of Variance		T-test for Equality of Means						
									95% Confidence Interval for the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
TOEFL Total Score	Equal Variance assumed	7.234	.013	-8.844	24	.000	-119.00	13.46	-146.77	-91.23
	Equal variance not assumed			-8.8.44	15.740	.000	-119.00	13.46		-90.44

Table 2. Correlation of TOEFL total scores & TOEFL reading comprehension section scores

Correlations

		TOEFL TOTAL SCORE	Comprehension score of the TOEFL Section
TOEFL TOTAL SCORE	Pearson Correlation	1.000	.845*
	Sig. (2-tailed)	.	.000
	N	56	56
Comprehension score of the TOEFL Section	Pearson Correlation	.845**	1.000
	Sig. (2-tailed)	.000	.
	N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 37: Metacognitive Questionnaire for the Main Study

Name _____ Age_____

Sex _____

The following statements are about silent reading in English. Please indicate the level of agreement or disagreement with each statement by circling the appropriate number: 1 indicates strong agreement, 5 indicates strong disagreement.

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. When reading silently in English, I am able to anticipate what will come next in the text	1	2	3	4
2. When reading silently in English, I am able to recognize the difference between main points and supporting details	1	2	3	4
3. When reading silently in English, I am able to relate information which comes next in the text to previous information in the text	1	2	3	4
4. When reading silently in English, I am able to question the significance or truthfulness of what the author says	1	2	3	4
5. When reading silently in English, I am able to use my prior knowledge and experience to understand the content of the text I am reading.....	1	2	3	4
6. When reading silently in English, I have a good sense of when I understand something and when I do not	1	2	3	4
When reading silently in English, if I don't understand something,				
7. I keep on reading and hope for clarification further on	1	2	3	4
8. I reread the problematic part	1	2	3	4
9. I go back to a point before the problematic part and reread from there.....	1	2	3	4
10. I look up unknown words in a dictionary.....	1	2	3	4
11. I give up and stop reading.....	1	2	3	4
When reading silently in English, the things I do to read effectively are to focus on				
12. mentally sounding out parts of the words	1	2	3	4
13. understanding the meaning of each word.....	1	2	3	4
14. getting the overall meaning of the text.	1	2	3	4
15. being able to pronounce each whole word	1	2	3	4
16. the grammatical structures	1	2	3	4
17. relating the text to what I already know about the topic	1	2	3	4
18. looking up words in the dictionary.....	1	2	3	4
19. the details of the content	1	2	3	4
20. the organization of the text	1	2	3	4
When reading silently in English, things that make the reading difficult are				
21. the sounds of the individual words.....	1	2	3	4
22. pronunciation of the words.....	1	2	3	4
23. recognizing the words.....	1	2	3	4
24. the grammatical structures.....	1	2	3	4
25. the alphabet.....	1	2	3	4
26. relating the text to what I already know about the text.....	1	2	3	4
27. getting the overall meaning of the text.....	1	2	3	4
28. the organisation of the text.....	1	2	3	4

Appendix 38: Marking criteria for scoring the summary test (Main Study)

Following is the marking criteria for scoring the Summary Test. Read the notes carefully.

Notes:

- Each statement should be given one point. TOTAL will be out of 13 points.
- Tense and grammatical inaccuracies should not be used to deduct points.
- Factual error such as, combining places with unrelated events should not be given a point. E.g. if a student writes: 'Due to high disease incidence in the margins (between wetter and drier areas) livestock population is reduced', this idea should be considered incorrect because in the passage there is no mention of high disease incidence that reduces livestock in the margins.

Below are the statements. They are listed as they appear in the text.

1. Livestock plays a useful role for people in sub-Sahara Africa
2. The weather condition or pattern of the dry areas is variable
3. Pastoral and agropastoral systems are effective in the changing weather condition
4. Cattle herders coped in the changing weather by moving their cattle from place to place
5. Livestock population in dry areas continued to grow until it reached an equilibrium with the carrying capacity of the land
6. Mortality in herds increases during drought but decreases during rainy season
7. In high rainfall regions (humid and sub-humid agroecological zones) livestock did not grow well due to the disease trypanosomiasis.
8. In parts of sub-humid zone suitable to people bush-fallow crop farming dominated
9. Human pressure in the margins (between wet and dry areas) which have high productive potential and less animal and human disease incidence has led mixed crop livestock farming to evolve
10. Livestock and environmental stability/integrity is being harmed by human habitation, increased cultivation and cutting of trees.
11. In sub-humid zone control of trypanosomiasis and human pressure have brought about adoption of mixed livestock crop farming
12. In some highlands technology and off-farm inputs have given rise to high productivity.
13. Around major coastal cities commercialised poultry, pig and dairy farm production have emerged recently.

Appendix 39: Short answer reading comprehension test (Main Study)

FULL NAME _____

ANSWER EACH QUESTION BY WRITING YOUR ANSWERS ON THE SPACE BELOW EACH QUESTION

1. What is the nature of the weather pattern in areas that are not suitable for crop production?

2. Why did herders successfully manage to live in the changing weather conditions of the sub-Saharan region?

3. What checked or controlled the growth in number of livestock populations in the drier areas?

4. Why are pastoral and agropastoral systems the most effective ways to use large areas of the sub-Saharan region?

5. Why did livestock raising not flourish in the high rainfall regions of the sub-Sahara?

6. What caused or brought about mixed crop-livestock farming in areas found between the wetter and drier areas?

7. At present what is harming livestock production and bringing about land degradation in the arid and semi-arid zones?

8. Why are livestock production and mixed crop-livestock farming evolving in the humid zone?

9. Why is mixed livestock-crop farming being adopted in the highlands?

10. Why is higher level of productivity being obtained in some highland areas?

Appendix 40: Round-up interview questions for the Main Study

- Why did you read it in that way?
- Did that way of reading help you?
- What was your level of interest before and during reading?
- If you look back now at how you read this passage, how else would you say you would have liked to have read it?
- Why didn't you read it in this way first time?
- How do you see your performance on the Summary Test?
- How do you see your performance on the Short Answer Reading Comprehension Test?
- Did the introspection interfere with your reading and understanding of the text? did you do any thing to solve this?
- Did the questionnaire influence how you read?
- Did think-aloud interfere with your reading and understanding?
- What do you say was your most effective strategy in reading today?

Appendix 41: List of all the strategies in the Main Study

1. Activating Schemata
2. Anticipating the Content
3. Asking Oneself Meaning of Word or Phrase
4. Calming Oneself When Reading
5. Checking Comprehension
6. Checking for any Overlooked Points in the Text
7. Checking Ones Own Confidence for Taking the Test
8. Comparing One's Own Reading at Different Stages
9. Concentrating
10. Confirming Understanding
11. Encouraging or Forcing Oneself to Consider Guessed or Given Meaning
12. Evaluating Merit or Value of a Strategy
13. Focusing on Each Sentence
14. Focussing on List of Items, uses
15. Going Back Before Problematic Text Part And Read from there
16. Guessing Shift in Idea Development by Relating Textual Cues
17. Guessing Unknown Words' or Phrases' Meaning Using Context
18. Inferring Information from Text
19. Marking Important Text Parts for Later Reading
20. Memorising
21. Paraphrasing in Own Word in L1 or L2
22. Planning ahead for Strategy Use
23. Pronouncing Difficult Words Internally
24. Questioning Author's Meaning
25. Reading Ahead for Clarification
26. Reading for Details
27. Reading on Despite Problem
28. Reading Slowly
29. Reading through a Text Part without Synthesising
30. Reading Word for Word
31. Recalling from Memory
32. Rejecting Earlier Comprehension or Guessed Meaning
33. Relating Idea being attended to Idea –So-Far-Understood
34. Relating Preceding and Subsequent Text
35. Repeating Text Idea to Oneself Partly in L1 Partly in L2
36. Rereading Problematic Text Parts Only
37. Revising Notes
38. Revising the Text
39. Showing Awareness of Lack of Comprehension Problem, Source of Difficulty, Own Strategy Use
40. Skimming Text
41. Skipping Difficult Textual Parts
42. Spelling Difficult or Familiar-Looking but doubted word
43. Summarising Text
44. Taking Main Ideas from the Text
45. Taking note
46. Translating into L1
47. Using Background Knowledge
48. Using Grammar Knowledge
49. Using Sounds of Other Words to Aid Memorisation
50. Using Text Organisation to Resolve Incompatibility between Content and Title
51. Using the Dictionary
52. Using Title or Sub-Title as Cue
53. Using Word Order to Understand New Words
54. Weighing between strategies

Appendix 42: Rank of all the strategies by language level (Main Study)

I.D	High language proficiency level	I.D	Low language proficiency level
15	213	15	358
39	207	39	154
17	74	46	75
43	72	17	75
51	52	36	67
10	44	25	43
47	41	20	39
35	40	35	35
5	37	51	31
20	35	3	29
46	35	47	25
25	32	24	21
40	28	27	20
24	26	48	18
34	22	34	15
28	21	40	14
9	15	5	14
1	12	28	11
50	12	41	11
38	11	43	8
7	10	10	6
48	10	29	6
36	9	38	6
44	8	30	4
22	7	2	3
2	6	9	3
18	6	49	3
32	6	18	2
6	6	1	1
11	6	33	1
37	6	11	1
4	4	7	1
19	4	53	1
41	4	14	1
8	2	42	1
45	2	23	1
52	2	37	1
3	1	21	1
12	1	54	0
13	1	8	0
16	1	12	0
26	1	19	0
33	1	22	0
49	1	4	0
54	1	13	0
21	1	26	0
27	0	16	0
14	0	44	0
23	0	32	0
29	0	52	0
30	0	6	0
31	0	45	0
42	0	50	0
53	0	31	

Appendix 43: T-test results for scores on the summary and short answer reading comprehension tests (Main Study)

Table 1. Independent Samples T-test for Sores of subjects at high and low levels on Summary Test

		Levene's Test for Equality of Variance		T-test for Equality of Means						
									95% Confidence Interval for the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Summary Scores	Equal Variance assumed	.005	.942	3.905	24	.001	24.6154	6.3043	11.6040	37.6267
	Equal variance not assumed			3.905	23.908	.001	24.6154	6.3043	11.6014	37.6294

Table 2. Independent Samples T-test for Sores of subjects at high and low levels on Short Answer Reading Comprehension Test

		Levene's Test for Equality of Variance		T-test for Equality of Means						
									95% Confidence Interval for the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Short Answer Reading Comprehension Test Scores	Equal Variance assumed	11.373	.003	3.302	24	.003	21.3018	6.4503	7.9889	34.6146
	Equal variance not assumed			3.302	15.688	.005	21.3018	6.4503	7.6055	34.9980

Table 3. Mean Scores of subjects at high and low levels on the Summary Test

Language Level	N	Mean	Std. Deviation	Std. Error Mean
High	13	50.7692	16.5638	4.5940
Low	13	26.1538	15.5662	4.3173

Table 4. Mean Scores of subjects at high and low levels on the Short Answer Reading Comprehension Test

Language Level	N	Mean	Std. Deviation	Std. Error Mean
High	13	43.7870	21.6172	5.9955
Low	13	22.4852	8.5782	2.3792

Appendix 44: Protocol of Subject H_1H

The title is about livestock in [sub-Sahara] [the place of] aha, I think it is about the place they live in, let me read on I will understand it. [providing sustenance] what does it mean? let me use the dictionary. Livestock are useful for a harsh environment? let me read on if it explains. In [drier], meaning like desert and stuff. [pastoral and agropastoral] what does it mean? let me continue anyway, they are sort systems but I don't understand what they are. [rangelands] variation in land? let me look it up in the dictionary, it is not there, there is [range] though, it means sort of variation, [rangeland] should mean sort of variation of land in a continent. Let me read from the beginning of the passage. Livestock are useful to protect against a harsh environment, let me try and think how, ... nothing comes to mind, any way they are useful for that, let me continue. [pastoral and agropastoral systems], it seems a kind of system sort of water irrigation system, I don't know, let me look it up in the dictionary. Let me begin the sentence again. These [pastoral and agropastoral] are not very clear, let me continue. [herders] I think I know this word but I can't remember it, let me refer it in the dictionary. It's people looking after cattle. Let me read on it might explain it in the next sentence. Let me reread the sentence and continue. Let me reread this sentence, it must be about those who lead the cattle. How do they cope when the weather changes? by moving the cattle. [feed]? to mean food? I think that's what it wants to say, let me see it in the dictionary, ok it means food for animals, I didn't know this. The livestock grow until they reach the carrying capacity, it is not very clear, let read the sentence again. I think it is to mean the carrying capacity of different places. [mortality] what does it mean? let me finish the sentence. Let me look it up in the dictionary. [mortality in herds is severe following severe drought], it is not clear to me, let me try to read slowly and get the relationship of each word to each other. Let me very clear about the meaning of each word, [severe droughts] I know this but let me be very certain and I think I will understand, let me look it up in the dictionary. Let me be very sure about the meaning of [extensive] let me look it up in the dictionary. The animals would not be affected that much during drought as they have recovered during the rainy season already. [pastoral and agropastoral] which I didn't understand have come here, yes, this is combination of [cultivation] and [herding], let me read the sentence again. I have got the idea of the paragraph but if I read it again well it will be clear to me. In [sub-Sahara Africa] they have played a lot of role -for food, transport and protection against a harsh environment, Ok. In drier areas that are not suitable for crop production and where the weather condition varies it is [pastoral and agropastoral systems] that are effective. I don't know what these systems are but I have been told here they are systems. And these herders cope. Let me check, how do they cope? they live somewhere and when the weather changes they move to places where they find food, OK, it means nomad life! And in centuries these [pastoral and agropastoral systems] have not changed that much, this is the idea of the first paragraph. The second paragraph. In areas with high rainfall, let me think of such areas for instance, those in the equator receive high rainfall, so areas like these it means. [Agroecological zone] let me get the precise meaning from the dictionary. There is no [agroecological] as a word so I could only find its meaning from the sentence. May be [agro] is derived from the word agriculture, let me think, what was ecology? in biology lessons it means the interaction between the environment and living things, [Agroecological] is possibly about agriculture and relation with people sort of, let me continue anyway. What does [flourish] mean? let me refer to the dictionary. What did it say in the dictionary let me see it again. Livestock did not grow well why? Because of the presence of the disease [trypanosomiasis], this is disease so livestock could not live healthy. This disease is transmitted by the [tsetse fly], this fly is the vector so because of it the animals could not grow well. In the first paragraph it said cattle die due to dry weather but here there is good moisture but they could not live well due to this disease. [hospitable to people] this sub-humid zone is suitable for people. What kind of farming is [bush fallow farming]? Let me continue, wait, let me go back. The type of farming which many people use in this area is [bush fallow] but I still don't know what it means, let me read on. [It was at the margins between wetter and drier areas] meaning neither dry nor wet. I think this is [sub-humid], it is found in highlands. [It]' I think means sub-humid zone. [highland]' mountainous areas. What is [threatened]? let me see the dictionary. [occur] means let me see the dictionary. I think it means those not badly affected by animal disease, but I am not sure, let me read it again. I think it means those that are not affected by human and animal disease, if this is the case then why did he use [but]? it will contradict, let me continue any way. Let me read it again slowly. Let me start the third paragraph from the beginning. These are places found in [sub-humid and humid], and in these areas the well being of the cattle is not good because of this disease [trypanosomiasis]. What does [human population pressure] mean? let me continue. This thing is not clear let me continue to the next paragraph and I will come back to it. [integrity] what is its exact meaning? let me see a dictionary. I can't quite relate it, let me read the sentence again slowly. What else are trees used for? for house construction. If the trees are not replanted after they have been cut, there will be erosion. But with what livestock production is affected is not given in this

sentence. Why could not I retain the meaning of [integrity]? let me go back, I think it means the system is not being there in good, sufficient or full way, let me take it in this sense. This is not clear, let me go back and check in the dictionary again to make sure that I have not given the word [integrity] another meaning. I think the idea here is the range land system is affected by high human population let me take it in this sense, let me read the sentence again and continue, let me start it again. If trees are cut, will they affect animals? ya! inevitably they will. [habitation] habitat? where human live? let me go back to the beginning. I think it is place, I think it is in this sense. But what kind of farming is [mixed livestock farming]? I think it means rearing animals and crops together. What is [intensification]? if I understand it I can understand the sentence, let me refer to the dictionary. Increase in high agricultural population in the highland. I don't understand it, why? I don't know, let me read on, I ought to come back to it. [off-farm] I think is a kind of system, I don't know what it is, but it is useful for increasing high level of productivity. Wait, wait, wait, [around major cities in which...] it is a place into which grains from other places get. What? [poultry] I don't understand it, let me use the dictionary, let me read the sentence again. [around major cities especially in coastal areas] cities near the sea. [sprung up] what is it? let me see the dictionary. These methods have increased is the meaning I get when I relate the dictionary meaning and that in the sentence. I think it is better if I revise the last paragraph. I have forgotten the meaning of [intensification] no way, it should not have disappeared, let me see the dictionary, ok let me see if I can remember it, yes now I can. Let me go back and read. It says here pressure, not very clear, let me read the sentence again. Wait let me relax myself and read it calmly. This sentence is not clear, let me finish the others and I will come back to it. Ok, let me begin the passage from the beginning. Let me try and remember the role. What do we see in this region? Weather patterns are highly changeable and [pastoral and agropastoral systems] are effective for living in the harsh area. Ok, let me say to myself what I have understood so far. The cattle, their number decreases during drought but they build up when there is enough moisture. These pastoral and agropastoral systems have not changed for a long time. Ok, this is the idea of the first paragraph. The first paragraph talked about dry areas but this is about areas with high rainfall. OK, what is the idea here: livestock did not thrive in the humid and sub-humid areas because of this disease. [in the portion] it means not completely, it is the *portion* and this is what I am told here *alright*! We use bush fallow crop production here, but in the first paragraph we said [pastoral and agropastoral]. [it was at the margins …], wait, wait, wait, no no, [it] does not indicate [sub-humid], I am wrong, it is just for starting a sentence. How do I explain this thing? that's what it seems to me, so what? let me go over it once. Let me summarise each point in the three paragraphs. Let me go back to the middle of the last paragraph there are some points I should say to my self, let me try and remember the name of the disease. What else is left? let me check, OK, I have finished. I have understood.

ROUND UP INTERVIEW with Subject H1H

Q: Why did you read the text the way you did to day?
A: to understand it well
Q: Do you say your way of reading helped you understand the text?
A: yes
Q: Thinking back now, how else would you have read the text?
A: I can't think of any new way for the summary but for the short answer test when I think about it now should not have taken things the way I read and understood them; I should have said 'this means this' a after reading I should have checked what agreed with what and what did not. I expected very direct questio
Q: How strong was your level of Interest?
A: At first it was moderately high but later it engaged me even more as I began to understand it
Q: How did you do on the summary test?
A: I think I feel I have missed one or two points, because I forgot them
Q: How did you do on the short answer reading comprehension test?
A: There were some questions on the test which I had not rehearsed as I read the text. It would have been better if I had related the first and the second and also said 'this means this'
Q: Did the think-aloud interfere with your reading and understanding?
A: it did not disturb me a lot, but at times I forgot to think-aloud and this has slightly affected it, I think. I understood what I read. There were points I forgot but these I tried to go back and read again
Q: Did the metacognitive questionnaire influence your reading?
A: I didn't remember it
Q: What would you say was your most effective strategy for reading the text today?
A: revising what I have read and checking I have understood it

Appendix 45: Protocol of Subject H_2H

It is interesting title. Livestock has played important role to the people of sub-Sahara people, that' immaterial. The words are clear but the idea isn't. I should go back I think to the beginning. OK I understand the weather is not stable, it changes constantly. [agropastoral] what does it mean? I am thinking [pastoral] means animal raising, agro means agriculture so [agropastoral] means both animal and agriculture. [mortality], [mortality in herds], what does it mean? May be I should read on I will understand it later. Animal numbers are built up, so mortality means some kind of kind of death. So adequate moisture must be the main factor for the increasing number of animals in this area after they die out due to drought. It defines [agropastoral], it says, [cultivation combined with herding], I have understood the meaning of agropastoral so I will keep reading. [higher rainfall regions], which regions are these? may be I will read them later. The disease trypanomiasis decreased the number of livestock in the sub-humid and humid agroecological zones. This disease must flourish well in this area and affect the livestock in this area. I have heard of the [tsetse fly], I have previous knowledge. I know that is so in Ethiopia, these high rainfall regions must include Ethiopia also. [bush fallow crop farming], what kind of farming is it? May be I should go back to the previous sentence. I still don't understand it but I can see that it is some kind of farming. I will go back and read, I didn't pay enough attention. The highland areas have high productive potential, it is quite contrary to what I had in mind. I think I have understood this second paragraph. I will go to the third. Cutting trees in the high population areas, it is quite true. I am not paying enough attention. [coastal areas have readily available ...], how is this? I should go back and read the previous sentence. Ok due to import and export process they have readily available ... I understand some part of it but I don't understand quite clearly, may be I should read it again, I don't know why but perhaps I wasn't concentrating, I will read it with more concentration. So many facts are written here, I am trying to memorising them. I have finished reading and I would like to read it again. I don't know why but I don't feel comfortable leaving it just as it is, I don't seem to have understood it as I had hoped I would, I think it is my lack of concentration. I understand that due to varied weather conditions new method of cultivation and animal raising like [pastoral and agropastoral] have evolved. livestock population grew to the carrying capacity of the land so disease and other negative factors must have been eliminated. I can see that the number of animals is not constant, during the dry season they die out and during the adequate moisture season they build up again. But these methods of agricultural methods, [pastoral and agropastoral], have not changed technology wise. I think I have understood the first paragraph. [Agroecological zone], what does it mean? I think agro means something related to agriculture and ecology is the surrounding, so agriculture in the habitat in which the people are living. I understand that [trypanomiasis] is the main negative factor to hold at flourishment of livestock. I don't understand what [bush fallow crop farming] is but I can see that it is the dominant form of agriculture so it must have been very well fit to the people living in these sub-humid and humid areas. I don't understand the last sentence, I don't understand what it is trying to say; there are all these words I think they are mixed up, just can't tell where one point ends and the other starts. I will remind myself to write it when I have finished reading this paragraph. Due to the cutting of trees I understand that not only is the livestock affected but also the land is destroyed. The risk of the trypanomiasis is reduced due to human habitation so there must be some kind of advanced technology which can control this risk so due to this the level of livestock has increased. [Off-farm inputs], what does it mean? I must not have played enough attention to the previous. Word by word I understand the phrase [Off-farm] yet it is not clear. I am going back to the previous sentence and read. [off-farm] inputs means other income generated other than agriculture or livestock. I think I am done. I have slight doubts; I will just go through it. I have a doubt about the meaning of [poultry], I could not understand it from the context, and I will refer the dictionary. I have understood the passage, but I would like to summarise it again. I have finished.

ROUND UP INTERVIEW WITH SUBJECT H2H

Q: Why did you read the text the way you did to day?
A: I am used to reading that way and has helped me
Q: Do you say your way of reading helped you understand the text?
A: I think so, yes, almost all. There are areas I could not remember or recall. I don't know why my method has not helped me to remember all.
Q: How strong was your level of Interest?
A: High, yes, and as I read I thought the passage was fascinating
Q: Thinking back now, how else would you have read the text?

A: may be I could have read it deeply, I mean more concentration may be
Q: How did you do on the summary test?
A: all
Q: How did you do on the short answer reading comprehension test?
A: I have doubts about two. It was the places. I could not remember the facts.
Q: Did the think-aloud interfere with your reading and understanding?
A: has disturbed me. I think I was more concerned about what I was going to say. I understood what I could not understand when speaking after I had read it again. I understood and got the meaning of the passage.
Q: Did the metacognitive questionnaire influence your reading?
A: It has disturbed me. I think I was more concerned about what I was going to say. I understood what I could not understand when speaking after I had read it again. I understood and got the meaning of the passage.
Q: What would you say was your most effective strategy for reading the text today?
A: reading it again by summarising

Appendix 46: Protocol of Subject H_3L

I see, so it will talk about sub-Sahara. What does it mean by 'livestock'? I think it means living standard or condition. [providing sustenance] means what? I think its meaning is some thing like preserving, I am not sure, let me go back, I see, I think it is useful things. Let me continue, wait [transport and protection against a harsh environment] yes I understand, I had just glanced and passed it. Dry areas not suited to crop production yea, I know it. And weather patterns in such areas is variable. What does it mean by [pastoral and agropastoral systems]? Since I can't go back better if I continue because it is the end of the sentence and there is nothing I can get by going back. [...agropastoral systems evolved as ...] how can I know this thing, let me, I think, read the sentence again. I can't know them, let me read ahead any way. [herders] I don't know this word, it is better if I try to understand from the sentence, I still can't understand it let me go back and read it again. I think I jumped a line. I am unable to understand this word, let me read the sentence again, I don't understand let me use the dictionary. I have understood word which were difficult earlier and I understand the sentence. [carrying capacity] the ability to support, I understand this sentence well. Better if I read on. I don't understand this sentence, let me read it again. I still don't understand that same sentence, let me read it deeply, let me if I can understand it reading ahead. This word [severe] I can't understand it, I also can't understand it from the sentence, let me read ahead if I can understand it from other sentences. I understand this sentence a bit but it has not given me any idea about the preceding one. Those [pastoral and agropastoral] came again, I didn't understand them then, let me read on any way. I understand what this sentence says, let me continue to the next paragraph. I could not understand [pastoral and agropastoral] and after finishing this paragraph I will come back and look at it again if I can understand it. I don't understand this word [trypanoso...] in the second paragraph, this word is not clear to me, what it is better? shall I proceed? or go back? better if I proceed. Aha, it is a kind of disease transmitted by some fly. The [sub-humid zone] is favourable for live and plants. No idea so far. I am rereading a sentence I don't understand, I think it is because I didn't concentrate, let me read it again with deep concentration. Let me read it again, the sentence is very long, I know the words but I don't think I have got the correct meaning. Where is human disease prevalent? In [drier]? or in [wetter]? let me go back above and read this sentence again. I don't think I have got the correct meaning, I was reading with speed and word by word, let me read the sentence again once. I reread it beginning from the second half of the sentence, the first half I understood a bit, and I am rereading the second half. Now I have understood the sentence, as I was reading it with speed earlier I didn't concentrate. I have understood this sentence easily, I read it with speed. What I have not so far understood are these [pastoral and agropastoral], let me finish and I will come back to look at them. Let me read the first sentence again, I read it with speed. I understand this other sentence. Not only do these affect, by these I mean increased cultivation and cutting of trees. I went back and read, was reading with speed and there were some words I didn't know, let me read it again. Now I have understood the sentence I read. I don't understand this sentence, where it says [rising agriculture pressures continue to drive the intensification...] let me read it again. There are two words I don't know and I am trying to relate them with the sentence. I don't think I have understood them, let me go back again and read. I still don't understand and I am reading the whole sentence again. Slightly the ideas is forming in my mind. What does [mixed livestock] mean? let me go back if what is in my mind helps me. I think they are crops that have evolved and related with life. I am still concentrating there. I just skimmed through this sentence and I have understood it. The last sentence is not clear to me I think I just skimmed it so it is better if I read it again. So far I have understood half of the sentence. What is [poultry] mean? Let me read on see, there is no point in going back, its all I know!. I can't understand the sentence beginning from here, I don't think I will understand it if I don't read it with concentration, I know these two words but how come I don't understand it? I don't understand this word [sprung up] let me try and understand it from the sentence. Let me read the sentence again. A slight idea had come to my mind. Let me read it again. What does it want to say? I am confused, what shall I do? Let me read the last sentence with concentration. I think he means they emerged. I don't know how I could understand [pastoral and agropastoral], I have finished reading, I have understood it some 80 %.

ROUND-UP INTERVIEW

Q: Why did you read the text the way you did to day?
A: to understand it
Q: Do you say your way of reading helped you understand the text?
A:-No, the methods I used were not efficient, I think it is lack of experience
Q: Thinking back now, how else would you have read the text?
A: I should have just scanned the passage first. when I was doing the questions I had forgotten half of them. I should have checked that I had it in my memory. I didn't do this first time because I thought I had it in memory
Q: Why didn't you read the text the way you say you would have like to?
A: Didn't occur to me at the time
Q: How strong was your level of Interest?
A: I was interested to read but towards the end I became a bit tired. Otherwise, I was reading it with vigour
Q: How did you do on the summary test?
A: I don't think I have done 40 percent. I forgot half of it. {But earlier you said 80%}. yes, I had understood it but I could not remember and write it]
Q: How did you do on the short answer reading comprehension test?
A: a bit better, because when I saw the questions I remembered the passage.
Q: Did the think-aloud interfere with your reading and understanding?
A: it has disturbed me a bit. I was thinking about saying the continuously coming ideas. Of course I have understood the passage, but I forgot it.
Q: Did the metacognitive questionnaire influence your reading?
A: no influence. I said I would not use a dictionary but I used today
Q: What would you say was your most effective strategy for reading the text today?
A: I did not use a method that helped me. There are many things that I forget even in my exams. When I read for biology, like this one, I usually memorise because I don't like the subject. But I could not do so today.

Appendix 47: Protocol of Subject L_1H

[the place of livestock in sub-Sahara Africa] I must know the title first, [the place of livestock in sub-Sahara Africa]. [for centuries livestock have played an important role...] let me read it again [for centuries livestock ...] what does it mean? livestock have played a big role in sub-Sahara Africa, what is their benefit? [have played an important role...] what if, for example, I am asked what the role of livestock is in sub-Sahara Africa? what is the role? it provides transport and protection against a harsh environment, so livestock have played an important role, wait let me write this point because what should I answer if I am asked about what the role of livestock is, so if I am asked what the importance is I can answer [providing sustenance, transport and protection against a harsh environment] What is next? if I read on I can get more idea. What is [pastoral and agropastoral]? I don't understand, let me go back, [in the drier areas not suited... pastoral and agropastoral areas ... as the most effective...] what is their use? [to utilize the vast rangelands of the continent] [in these systems] means [pastoral and agropastoral]. [herders coped with changing ...feed could be found], it means by moving animals from place to place. The words [pastoral and agropastoral], I don't understand them, let me go back and read it again, I see, it's some system or way, but what is its use? [effective ways to utilize...] What does [mortality] mean? [mortality in herds is extensive following sever droughts] What does [mortality] mean? let me go back [mortality in herds is extensive following severe droughts] [pastoral and agropastoral systems in which livestock is combined with...] aha, it's a combination of the two. [agroecological zone] what does it mean? [agroecological zone] what it can be would be crop season. [in the higher rainfall regions, the sub-humid and humid agroecological zones, livestock raising did not flourish] why? why not? because [the presence of the disease trypanosomiasis] so due to this disease livestock will stop its growth. How did this disease spread? Where did it come from? if I read on I can understand. So it is this fly which transmits. [in the portion of the sub-humid zone most hospitable to people] [most hospitable to people] [bush fallow crop farming became the dominant for of agriculture] it is [bush fallow crop farming which has become dominant in the drier areas and the highlands], why? [highland areas .. less threatened by ...] means in the highland they have high productive potential, [but are less threatened by ...] [high productive potential] they have but the treatment is less. [where human population pressure on agricultural land increased and...] meaning whenever [human population pressure] increases, [mixed livestock farming] evolves, er means whenever [human population pressure] on agriculture [on agricultural land] becomes [increase]. I see, [mixed crop livestock] can be created, [mixed crop livestock] can be created [the pressure on agricultural land] er [human population] er when [human population on agricultural land] increased. Let me go to the next paragraph. What does it mean [rengeland systems of livestock production in the arid and semi-arid]? meaning [rangeland systems of livestock production] these days and this thing [in the arid and semi-arid] can be [threatened] [human population] er by [human population] by [human population]. Only there are [increased cultivation and cutting of trees] [Today] if I go back and read this thing I can understand it, wait, why didn't I understand it? [semi-arid zone ... is being threatened by high human population ...] What kind of problem must this human population have created for this [rangeland systems of livestock] to be [threatened]? Meaning [increased cultivation] I mean whenever cultivation increases, and trees are cut for fuel, because of this it means this thing is threatened. There must be something else which human population as one means must affect. [not only is livestock production affected] I see in addition the increase in [human population] [potentially severe land degradation is occurring as well] [in the sub-humid zone, human habitation, control measure for tsetse ...chemotherapy ... risk of tryp...] [in the sub-humid zone human habitation, control measures for tsetse...] I don't understand [in the sub-humid zone human habitation ... chemotherapy and tsetse…] may be if I approach forward I may understand it. [mixed crop livestock is expanding ... mixed crop livestock...] what does he want to say here? [in the highlands rising agricultural pressure continue to drive the intensification and adoption ...] what does it mean? I don't understand. let me go back and read it with concentration, [in the highlands rising agricultural ...] it means agricultural population helps in the creation of [mixed crop livestock farming] [in some highland areas improved technology and the use of off-farm inputs] [off-farm inputs] [is resulting in higher level of productivity] it means [higher level of productivity] is getting improved. [Around major cities ...] [Around major cities ...] I have finished, but I don't in general understand the idea of the passage, so to understand let me read it again. [pastoral and agropastoral] what does it mean? how come I don't understand this thing, let me go back. [in the drier areas ….], I have gone back, [the vast rangelands of ...' What does [carrying capacity of the range] mean? [carrying capacity of the range] I must go back and read. [carrying capacity] aha, it means the ability to hold, but on what basis is this said, let me go back. [over time the ... until they came into relative ...] [mortality in herds] what does [mortality] mean? [mortality in herds is extensive] what does it mean? let me continue forward I may find it, [mortality in herds is extensive following severe drought but animal numbers are built up during periods of adequate

moisture] I don't understand, [mortality] let me read ahead I could understand the idea. I don't understand this [mortality] [following severe droughts but animals numbers] I could understand it going forward. [pastoral and agropastoral systems in which] aha, [in which] means it is used to explain this, [cultivation combined with herding], let me go back and read it again. [pastoral and agropastoral systems in....] [in the higher rainfall regions ... did not flourish ... because of ...] [in the higher rainfall regions ... did not flourish...] in areas with high rainfall [livestock] [livestock raising did not flourish because of the disease trypanosomiasis[[in the higher rainfall regions ...] [in the portion of the sub-humid zone...] Is sub-humid different from humid? [in the portion of the sub-humid zone most hospitable to people] what does it mean? let me continue, [in the portion of the sub-humid...] [human population increased] why did this happen? if I go back and relate it with the idea at the beginning I could understand it. [it was at the margins between the wetter and drier...].[have you understood what you have read so far? {a bit}] I don't understand here, let me go back. [today the {intijirity} ... is being threatened ...] [is being threatened ...] let me go back. [to day the integrity of...] wait, let me write and remember this [is being threatened] by three things. [today the integrity of the rangeland is being threatened ...] What is this word? Let me go back. [in the high lands ... the integrity...] I don't understand this thing, let me go back. [In some highland areas...] this thing is not clear, let me go back, [in some highland areas...] [Around major cities] in area around the coast. [po..] [poultry] Ok what is it that I have understood from this passage? let me from the first paragraph, that people use livestock for many things, [providing {substentance} {subtensas} [providing {subtensas}, and [protection against a harsh environment] [protection against a harsh environment]' let me take notes here, let me repeat it orally. [pastoral and agropastoral systems in which...] [pastoral and agropastoral systems in which…] let me write this down. What have I understood from the second paragraph? let me write it. What does [it] refer to? I think it is [sub-humid zone]. What have I got from the third paragraph? [today the integrity of ...] these days, Let me once read the passage roughly. I have finished and understood it.

ROUND UP INTEVIEW WITH SUBJECT L1H

Q: Why did you read the text the way you did to day?
A: this the method I use before
Q: Do you say your way of reading helped you understand the text?
A: No
Q: How strong was your level of Interest?
A: I had interest to read but later it decreased because I encountered new and difficult words.
Q: Thinking back now, how else would you have read the text?
A: if I had reread it with calm, without rushing, by relating preceding and subsequent ideas.
Q: Why didn't you read the text the way you say you would have like to?
A: I didn't do this first time because I didn't think about it.
Q: How did you do on the summary test?
A: Some. I only understood three things from the three paragraphs. I didn't get fully the idea of the passage. It is my weakness.
Q: How did you do on the short answer reading comprehension test?
A: A bit. I am angry for having not related the ideas, yet having understood them
Q: Did the think-aloud interfere with your reading and understanding?
A: It didn't make me not to understand, actually it helped me, I think. I don't know what it disturbed, may be remembering?
Q: Did the metacognitive questionnaire influence your reading?
A: No
Q: What would you say was your most effective strategy for reading the text today?
A: just leaving with only what I have understood first time.

Appendix 48: Protocol of Subject L_1L

What can I understand from the title? [livestock in sub-saharan africa] I don't have any knowledge about livestock, let me go into the passage if I get an idea. Now I am going back from the beginning from [For centuries...], because having read up to the comma, I now want to relate it with that after it. I don't understand 'providing substance' let me continue if I can find it, there is nothing that explains about it, now I will go up and read if there is anything that explains about it. I don't understand its direct meaning but I will take the general idea of the sentence and go on. I wanted to relate the word [suited] with [subtenance] but they are not the same. [pastoral and agropastoral] I don't know what [pastoral] itself means, what [agropastoral] itself is. Let me just continue if I can find it from the next idea, wait, let me read it again beginning from before [pastoral and agropastoral]. I could not find them, but I think [pastoral and agropastoral] are [systems] we use for crop production, let me pass on taking it in this sense. Well here the sentence before it [pastoral and agropastoral] says it is suitable for crop production and before it mentions that it is a useful system. I don't understand the word [herders] wait, I am continuing to the next sentence, it might give me the meaning. Now I am going to read it again, reading it with the sentence before it hadn't given me the meaning either.{have you understood what you have read so far?}yes. again I am going to read it beginning from before the word, I still don't understand its meaning. Again I am going to read it beginning from before the word. When I try to relate it the idea keeps slipping from my mind, and I am going have to go back from before the word and read again. Now I am going to reread where it reads [where feed could be found] to know the meaning of the clause alone. Now let me try and relate the clause with that before it. Generally, I have understood the idea of the sentence. Though [herders coped] is not directly clear, I have understood from the sentence for what reason it is used. Now I am trying to relate what I am reading with that in my mind about what I had read. Now I will read this sentence again to relate her with the first idea of mine. Trying to relate what I remember of what I had read earlier with this. Here I don't understand [mortality in herds]. Let me continue to the next sentence if I can understand it. No idea even after reading on, better if I read it again. I can't get the idea because the sentence as a whole is not understandable. Let me read it again. Now I have understood the idea a bit by relating it to the preceding word. For example, [mortality in herds is sever following severe droughts] here, and [following severe droughts] sort of what [mortality] of [herds] is like, sort of how it brings about because of mortality. Now let me read the paragraph again because I want to get its idea and to retain some ideas. Now I am thinking and relating sentences I have read with those I had read earlier. As I don't understand [pastoral and agropastoral], let me read the sentence again from the beginning. I still don't understand it. Let me read it again slowly beginning from where it says [pastoral and agropastoral]. I am thinking, here it says [have changed little over the centuries] but earlier considering the use of [pastoral and agropastoral] how come such useful things, if they give so much benefit, if they are good systems, how come there is only little change? Now let me read the paragraph from the beginning, I could not retain its idea, but I have partially understood what has been talked about but to be able to say something about what's said. Now I understand well since I read slowly. Now I am going to read the paragraph from the beginning again because as I was talking I began to ...er now I am trying to remember what I had read, what it [livestock] is used for and stuff. Now I am rereading beginning from [mortality in herds]. Even after having reread it, still it's the same. And again I will reread beginning from the words. I tried to relate [mortality in herds...] with what is after it but now I have gone where it says [mortality]. I don't understand [herds] {have you understood what you read so far?}yes. Now I am going to read from [mortality], I don't understand the words. Again let me read it beginning from [mortality in herds]. Now I have understood what the idea of the first paragraph is though not all. I don't understanding [agroecological zone], let me go back and read again, now I am rereading the word, but I don't understand it, now let me try and separately see [agro] and [ecological], I think it should be about some area, some thing, some suitable weather condition, [agro] is related with agriculture though I don't understand [ecological], it's about agriculture and about [zone], [humid agroecological zone] it must be some agriculture weather condition, I think. Now I am reading beginning from before the word. I don't understand [bush fallow] let me read it with the word before it, I understand. Now I tried to relate it with the preceding idea. Now I am notice that he gives a solution for the above. {have you understood the second paragraph?}{yes} Now I will reread it from the middle, I didn't catch the idea because it didn't give me what I thought of. Still I haven't found the meaning as I had wanted to, I mean I sort of understand the meaning but it didn't go with it to me. I don't fully understand the second paragraph. I can't relate one idea with the other, and most of the time I understand it if I reread it and it is then after this that ideas come to me. I don't understand here, I will leave it and continue. Now the third paragraph. Now here there are words I don't understand and I have stopped, now let me go back and read from the beginning. I don't know this word [chemotherapy] and am trying to remember, but no now I will go back

to the sentence before the word and read, I still don't understand it but let me just proceed taking it just as a word. I don't understand this as a whole, there are words in it I don't know, and I am going back. Now my idea is to read slowly. I reread it with concentration. Now I have stopped in the middle, I can't retain the idea, let me go back and read it again. I have finished the third paragraph but I have not retained much of it. I understand the idea but I can't retain it. Now let me read the whole passage again. I have finished.

ROUND-UP INTERVIEW

Q: Why did you read the text the way you did to day?
A: to understand it
Q: Do you say your way of reading helped you understand the text?
A: It didn't help much. I understood it but after a while I could not remember the idea, I don't know why it didn't help me
Q: How strong was your level of Interest?
A: I read it just because it was given to me. I wasn't that much attracted by it, just because I had to read it. My interest remained the same all through.
Q: Thinking back now, how else would you have read the text?
A: If I had tried to retain it well. If I had tried to focus on some areas I mean where he gives solutions for problems,
Q: Why didn't you read the text the way you say you would have like to?
A: My aim initially was to do like this, but I found it difficult
Q: How did you do on the summary test?
A: I understood about half the points of the text but when I tried to write them I could not remember
Q: How did you do on the short answer reading comprehension test?
A: I would not say I have answered. I could not remember. I didn't understand the last paragraph.
Q: Did the think-aloud interfere with your reading and understanding?
A: when I thought aloud I had to go back to the beginning because it swept away my ideas. I could understand the meaning of what I read.
Q: Did the metacognitive questionnaire influence your reading?
A: no
Q: What would you say was your most effective strategy for reading the text today?
A: rereading. I don't know why there was apprehension in me. I did understand what I read but when I tried to remember it would not come.

Appendix 49: Protocol of Subject L_2L

[The place of livestock in sub-Sahara] what does he want to say? Let me read the passage. [For centuries livestock have...] let me go back and read the importance they give so that the passage is clearer. I am trying the pronunciation of the word [agropastoral], what is it? [agropastoral systems evolved as the most effective ways to untilize the vast rangelands of the continent]. This sentence is not clear, it has some new words in it, let me look at it again. So the range land is within the continent. [In these systems herders] [In these systems herders]. What is herders? [In these systems herders coped with the changing weather condition by moving animals to area in which feed could be found]. Let me read this sentence; it is not clear. [In these systems herders], [herders], [In these systems herders coped with... the... changing…weather... condition... by ... moving ... carrying ... capacity of .. the .. range]. [Mortality], what is [mortality]? Let me see it in the sentence, to make it clear let me read the sentence again. [Mortality in herds in extensive following severe] [Mortality in herds is extensive following sever droughts] [is extensive following droughts]. This mortality is in areas affected by droughts, er let me go back and read again. [but animal numbers are built up during periods of adequate moisture] so [animal number increases when there is adequate moisture]. I have understood it a bit. I am thinking about [agroecological zones]. What kind of disease is [trypanosomiasis]? let me look at it again [In the higher rain fall regions livestock raising did not flourish because of the presence of the disease trypanosomiasis] [In the higher rain fall regions livestock raising did not flourish because of the presence of the disease trypanosomiasis] [In the higher rain fall regions livestock raising did not flourish because of the presence of the disease trypanosomiasis] Now I have understood it, I read it deeply. […which is transmitted by the tsetse fly], I see that the disease is through tsetse fly, how can it be here? I have now gone back and looking at it. OK, the disease is transmitted by the tsetse fly. [In the portion of the sub-humid...bush fallow crop... became the dominant...] I want to get the idea of the sentence, let me look at it again, [in the portion of the ... bush fallow crop farming ... hospitable ...] to know the meaning of the word [hospitable] I am thinking er I have gone back to relate it with each word and the sentence. I am trying to get the overall idea of the sentence, let me go back and look at it again. I read it roughly, yes I have understood it, but not quite. What is [integrity]? I am trying to think about the word [integrity] [integrity of the range land] let me go back and read it again since they are connected. [... severe land degradation], [degradation], I am searching for the meaning of the word [degradation], let me go back and read the sentence again, I have found it. [... chemotherapy] it is just that I have come across a word, [chemotherapy reduce the risk of .....to drive the intensification and adoption ...] what is [intensification]? let me go back and see the sentence. [In some highland areas ... the use of off-farm inputs...]. I have finished. I have understood a bit, let me read again. To get the idea, let me read it again. I have seen that livestock in sub-Sahara have various uses, [providing sustenance, transport and protection]. [In the drier areas not suited to crop production] [In the drier areas not suited] [In the drier areas not suited to crop production ... the most effective...] [The livestock populations of these areas grew ...] so far I am looking at the uses of livestock and I have understood, I read it slowly. Animal number increases around moist areas. I am trying to get the general idea of the paragraph. [in the sub-humid and humid] I am looking at the relation between [in the sub-humid and humid agroecological zones] [sub-humid and humid agroecological zones] I have continued, let me go back and see it. What is [flourish]? I am now relating its meaning with the sentence, have gone back. Now to the third paragraph, I have roughly read and passed the second paragraph. I am trying to get the main idea of the third paragraph, let me read the paragraph from the beginning again. [Today the integrity of the rangelands of...] let me read it again [Today the integrity of the...] Now I am thinking how I could generalise it, let me read it again. [Today the integrity of the rangeland...] [Today the integrity of the rangeland ... is being threatened by...] […is threatened by] […is threatened by high human population...] […is being threatened by by high human population increased cultivation .... but potentially]. [In the ....human habitation ...] [in the .... human habitation] [In the humid zone high human habitation...], I went back and read the sentence to see the meaning the [high human habitation]. I have gone back and read to get the meaning of this phrase [drive intensification] [In the highlands... to drive the...] [In the highlands rising agricultural pressure ...] […to drive the intensification ...] [In some highlands improved technology...] [In some highlands improve technology and the use of off-farm] I am searching for the meaning of [off-farm] let me go back and read the sentence again. What is [poultry]? I have finished but I read it sort of disconnectedly. Let me read the passage again, I have tension. [In the drier areas ...] let me go back. [pastoral and agropastoral] what is this? let me read it again. I am reading to memorise some things. I have understood it a little.

ROUND UP INTERVIEW WITH SUBJECT L2L

Q: Why did you read the text the way you did to day?
A: to get the ideas that were not clear to me
Q: Do you say your way of reading helped you understand the text?
A: a bit
Q: Thinking back now, how else would you have read the text?
A: reading without disconnecting the ideas. Rereading with speed, this way I think I would understand it a bit. To understand it well I should have known the meanings of new words.
Q: Why didn't you read the text the way you say you would have like to?
A: I didn't read like this at first because I didn't have the means to find the meaning of those words. I didn't reread because it didn't occur to me then
Q: How strong was your level of Interest?
A: at the beginning it was a lot but later on once I started to come across new things it decreased a bit. I felt I would not understand this thing, sort apprehension
Q: How did you do on the summary test?
A: I could not summarise all. it didn't come to my memory. I understood it then a bit but later I forgot it. I have written what I have understood
Q: How did you do on the short answer reading comprehension test?
A: well, I didn't take sufficient notes when reading. There were things I forgot. It would have been better if I had retained it all. If I had reread and reread it again. Keeping it in memory was a problem. I should have tried to retain those points I consider to be the main ideas of a sentence.
Q: Did the think-aloud interfere with your reading and understanding?
A: it has disconnected my thoughts, but I did understand what I was reading
Q: Did the metacognitive questionnaire influence your reading?
A: no
Q: What would you say was your most effective strategy for reading the text today?
A: slowly and deeply reading new words with special attention to where they were