ÇUKUROVA UNIVERSITY

INSTITUTE OF SOCIAL SCIENCES

THE EFFECTS OF USING COGNITIVE LEARNING STRATEGIES ON READING COMPREHENSION ABILITY OF TURKISH STUDENTS

HASAN BEDİR

DOCTOR OF PHILOSOPHY

in the Subject of

ENGLISH LANGUAGE TEACHING

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THE EFFECTS OF USING COGNITIVE LEARNING STRATEGIES ON READING COMPREHENSION ABILITY OF TURKISH STUDENTS

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ABSTRACT

The purpose of this study is to (1) find out the strategies English-as a-Foreign Language students use in reading comprehension, and (2) enable these students to gain cognitive learning strategies in order to facilitate comprehension. After clarifying cognitivist approach to learning and its role in reading comprehension through related literature it concentrates on cognitive learning strategies in reading comprehension. It first searches into what types of strategies English-as a-Foreign Language student use in reading comprehension courses. In the next step, with the help of a training programme, this study aims to enable students to gain cognitive learning strategies in order to be successful in reading comprehension course.

A reading comprehension lesson plan which was adapted from Jones (1991) was implemented for each lesson. The activities in this lesson plan were organised in a way that helps students use their previous knowledge in what they read. In addition, different techniques were used to stimulate their previous knowledge such as

questioning, semantic mapping, linking known to unknown, selecting the most important. Questioning is considered an integrally related activity which provide higher order level of thinking. For this reason, in questioning process, the levels in the Bloom's Taxonomy (1956) were used.

The results of the study show that there is a close relation between cognitive learning strategies and students success in reading comprehension since the students in the Experimental Group proved to be more successful than those in the Control Group. The results also support that cognitive learning training in reading comprehension enables readers to develop higher order level thinking skills and metacognitive strategies.

KEY WORDS

Cognitive learning

Metacognitive strategies

Long-term memory

Short-term memory

Meaningful learning

Schemata

Higher level thinking

Elaboration

Concept or Semantic mapping

Reading comprehension strategies

TÜRK ÖĞRENCİLERİN OKUMA ANLAMA YETİLERİNDE BİLİŞSEL ÖĞRENME STRATEJİLERİ KULLANMALARININ ETKİSİ

HASAN BEDIR

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ÖZET

Bu çalışmanın amacı (1) yabancı dil olarak İngilizce eğitim gören öğrencilerin okuma anlama dersinde kullandıkları stratejileri ortaya çıkarmak ve (2) bu öğrencilere okuma dersinde anlamalarını kolaylaştıracak bilişsel öğrenme stratejileri kazandırmaktır. Çalışma, bilişsel öğrenme yaklaşımının öğrenme ve okuma anlamada ki yerini ilintili kaynaklarla açıklığa kavuşturduktan sonra, bilişsel öğrenme stratejilerinin okuma anlamada kullanımına odaklanmaktadır. Çalışma, öncelikle) yabancı dil olarak İngilizce eğitim gören öğrencilerin okuma anlama dersinde ne tür stratejiler kulllandıklarını ortaya koymaktadır. Çalışma, sonraki aşamada, okuma anlama dersi için uygulanan bir eğitim programıyla, bu öğrencilere okuma anlama da başarılı olabilmeleri için bilişsel öğrenme stratejileri kazandırmayı amaçlamaktadır.

Her okuma anlama dersinde Jones (1991) uyarlanan bir ders planı kullanılmıştır. Bu ders planınındaki sınıf içi çalışmaları, öğrencilerim geçmişte

edindikleri bilgileri okudukları parçalara taşımalarına yardımcı olacak şekilde düzenlenmiştir. Bu nedenle, öğrencilerin geçmişte edindikleri bilgileri uyarmak için, soru sorma, anlam haritası çıkarma, bilineni bilinmeyenle eşleştirme ve önemli kısmı seçme gibi değişik yöntemler kullanılmıştır. Soru sorma yüksek düzeyde düşünmeyi sağlayan bir yöntem olarak düşünülmüş ve bu nedenle soru sormada, Bloom Taxanomy (1956) deki soru sorma tekniklerinden yararlanılmıştır.

Araştırmanın sonuçları, bilişsel öğrenme stratejileri ile okuma anlama arasında yakın bir ilişki olduğunu ortaya çıkarmıştır. Çünkü, Deneysel Öbekteki öğrencilerin Kontrol Öbektekilere göre okuma anlama dersinde daha fazla strateji kullandıkları ve bu nedenle daha başarılı oldukları gözlenmiştir. Ayrıca, sonuçlar, okuma anlama dersinin bilişsel öğrenme stratejileri edinimi ile verilmesinin öğrencilerin ileri düzeyde düşünme ve edindikleri bilgileri kullanma yetilerini kazandıklarını ortaya koymuştur.

ANAHTAR KELIMELER

Bilişsel öğrenme

Bilgiyi kullanma yolları

Uzun dönem hafiza

Kısa dönem hafiza

Anlamlı öğrenme

Daha önce edinilen bilgiler

İleri düzeyde düşünme

Yeni ile eski bilgiyi iliskilendirmek

Kavram veya anlam haritası

Okuma anlama stratejileri

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CHAPTER 1

INTRODUCTION

Finding out the best method in language teaching has long been considered as one of the basic problems language teaching theoreticians have faced. Numerous approaches have been proposed and practised. From studies conducted on language learning and teaching, one could conclude that no method can be successful unless it helps learners develop appropriate strategies. That is, the method should provide ample opportunities for learners to enhance their thinking in handling problems they may encounter in the learning process. This could be achieved by enabling learners to gain appropriate strategies for meaningful learning. As it is stated by Ausubel (1963, p. 8), "learning takes place in the human organism through a meaningful process of relating new events or items to already existing cognitive concepts or propositions."

However, most of the traditional methods used have been based on having students learn by memorising some rules that could be helpful. This kind of learning emerged from behaviourism and is called rote learning. Before going into the cognitive theory of learning or stimulating concept learning as put forward by Ausubel, rote and meaningful learning should first be clarified. Ausubel (1963) describes rote learning as "the process of acquiring materials as discrete and relatively isolated entities that are relatable to cognitive structure only in an arbitrary and verbatim fashion, not permitting the establishment of (meaningful) relationship" (p. 108). That is, in rote learning, learners do not associate what they have learned with their existing knowledge. On the other hand, meaningful learning, as described by

Brown (1987, p. 66), is "a process of relating and anchoring new material to relevant established entities in cognitive structure."

Additionally, how people acquire and construct knowledge is a subject which has intrigued researchers. According to the behaviourist approach, this process results from relationship. However, throughout the years, it has been understood that this approach has been lacking regarding learning and storing knowledge because of ignoring what really happens in one's mind (Bartlett, 1932; Chomsky, 1957; Piaget, 1959; Ausubel, 1963; Köhler, 1969). Therefore, the cognitive learning theory has replaced the behaviourist approach because of its logical explanation of learning, storing and recalling knowledge. Throughout the twentieth century, cognition has been explored within the context of psychological inquiry, that is, the work of mind, which is triggered when individuals use language to facilitate comprehension and learning (Gagne, 1985).

In order to find out a decent explanation for how mind works with respect to comprehension, Fulghum (1989) suggests that people negotiate meaning in life by regarding to what they store in their memories: everything that they have sensed, experienced, and learned. From a cognitive perspective, cognitive psychologists have used constructs such as long-term memory, cognitive structure, and schema to characterise how people store and organise knowledge in memory. According to Smith (1988), the brain seeks, organises, stores, and when necessary, retrieves and utilises information about the world.

As for the relation between cognitive psychology and reading comprehension, researchers such as Goodman (1967, 1971), Rumelhart (1980, 1984) , Smith (1982) Irwin (1991), Jones (1991) claim that the knowledge that both L1 and L2 learners have stored before and brought to learning has important implications to content area

reading, in particular, because any comprehension depends on the knowledge we internalise. In reading, learners can achieve comprehension by relating what they read, or new information to what they already know. This knowledge of facts is not randomly collected; rather, it is a world view in our heads. It is called "cognitive structure" of the knowledge and stored in the long term-memory, and it obviously changes from reader to reader.

This stored knowledge (see Section 4.1), called schema, is organised in relation with concepts, and it is called schema. There is a close relationship between schema and what we learn. Therefore, cognitivist approach to reading comprehension is grounded on the schema theory in order to provide meaningful learning which fosters comprehension and facilitates learning. Meaningful learning helps readers to interact with the text in question. Vacca and Vacca (1993, p. 13) point out that in order to provide cognitivist approach to reading, readers should know "how to produce and interact with the text in order to discover, organise, retrieve, and elaborate upon content."

This approach also requires strategic reading comprehension. The main aim of strategic reading comprehension is to provide meaningful learning by actively involving learners in reading and enabling them to gain and use cognitive learning strategies. Therefore, it has been well embraced by researchers such as O'Malley and Chamot, (1990); Dole et al. (1991); (Kletzien, (1991); Shih, (1992); Tang and Moore, (1992) and Maker and Lanier, (1996).

1.1 Statement of the Problem

Although traditionally reading has been considered only a matter of knowing the vocabulary and structure, according to some researchers such as Goodman (1967, 1971) and Rumelhart (1980, 1984), there is far more to reading than that. We maintain that reading requires a process in which readers should be actively involved and use their mental power. That is, only a small part of the information necessary for reading comprehension comes from the printed page; the rest, however, depends on what readers bring into the texts they read. It is not sufficient to learn the meaning of words and grammar points and their function since reading involves more than just relying on one's linguistic knowledge. Reading also requires readers to bring their entire life experience and thinking power into what they read so that they can understand what the writer has encoded.

In reality, however, this is not the case. As far as reading comprehension is concerned, the strategy often used by L2 learners is translating each sentence into their native language, making use of vocabulary and structure they already know. Of course, that means a lot of time is spent on texts, and the result is, most of the time, incomplete comprehension. Consequently, their reading comprehension grades are lower when compared to those of other skills such as writing and listening. We assume that this problem derives from the fact that learners are not trained properly to utilise appropriate reading comprehension strategies. They are not aware of the strategies, which form the basis for a cognitive learning approach in reading comprehension in order to decode what the writer has encoded in the text.

Thus, when the teaching method is based on memorisation, and when teachers promote rote learning as a single strategy, learners are usually left alone tackling with

the difficulties in reading comprehension. However, if elaboration strategies (related to cognitive learning) such as making prior knowledge integration, prediction creating analogies, paraphrasing, summarising, and using higher order thinking skills and learning how to use this knowledge (metacogntive strategies) are all stressed in a training programme, learners could be more successful in reading comprehension.

1.2 Background of the Study

According to the reading as a psycholinguistic guessing game suggested by Goodman (1967, 1971), and schema theory, put forward by Rumelhart (1980, 1984), any text, either spoken or written, does not possess meanings in itself. It is not enough for the reader merely to decode words in order to determine their meaning. Rather, reading involves an interaction among the reader, the information suggested in the text and the characteristics of the text. From this point of view, the goal of reading is to construct meaning from the text.

In addition, Smith (1988) and Jones (1991) support Rumelhart by stating that reading, thinking, and comprehension are all interrelated. Therefore, characteristics of the reader, the text, and the context that affects comprehension, and the way students process text-based instruction should be taken into consideration in reading process. Of these, the first factor, reader's prior knowledge, is critical, and involves knowledge of content as well as learning strategies. It is obvious that the greater the reader's knowledge of content and repertoire of reading and learning strategies, the greater the comprehension will be.

The second factor, which contributes significantly to comprehension, is the reader's ability to control his or her own learning. According to Armbruster and Brown (1984), this ability is called metacognition and includes the ability to plan, monitor comprehension, and evaluate what is learned. Therefore, direct instruction in the use of cognitive strategies helps readers, to some extent, improve metacognitive strategies, enhance learners' thinking ability, and thus improve comprehension.

When the relation between reading and thinking as stated by Smith and Jones above is considered, it is obvious that learners can improve their cognitive learning strategies if they are trained properly by means of methods suitable to their level. Besides, if learners gain the cognitive learning strategies while learning English, they could probably apply these strategies in studying not only reading but also other subjects they take at school. Therefore, it is essential to conduct a study to see if there is a great difference between learners who have developed cognitive learning strategies and those who have not (Kletzien, 1991).

Additionally, Perkins and Angelis (1985) point at the relation between previous knowledge and reading comprehension. They suggest that more related research should be carried out in order to investigate the role of schemata considering other factors such as using schemata for elaboration, making analogies, and so on.

Furthermore, Kletzien (1991) and Tang and Moore, (1992) have carried out descriptive research related to the effect of cognitive and metacognitive pre-reading activities and strategies on reading comprehension. In addition, they point out how these activities affect reading comprehension. Kletzien also suggests that further research should be conducted in order to understand whether strategy use is the same for all learners at the same level, or it depends on the reading instruction they receive.

Therefore, taking into account the scarcity of research in this particular area, we try to fill this gap in the present study.

1.3 Scope of the Study

The purpose of this study is to (1) investigate the strategies L2 readers use in reading comprehension, and (2) enable these readers to gain cognitive learning strategies in order to facilitate comprehension. To achieve these aims: (a) the related literature was reviewed in order to clarify the notion of cognitive learning and its function in reading comprehension, (b) the basic reading comprehension process developed by Irwin (1991) and strategy used in reading comprehension studied by Kletzien were adapted so as to investigate the strategies and (c) a model of teaching reading comprehension process proposed by Jones (1991) was adapted and implemented. In order to train these readers so that they gain cognitive learning strategies, the basic reading comprehend process by Irwin was taken into consideration. This model consists of five main components:

1. Microprocesses
2. Integrative processes
3. Macroprocesses
4. Elaborative processes
5. Metacognitive processes

Among the above processes, the elaborative process based on schemata theory forms a base for this study; however, the metacognitive process is also taken into consideration. It was assumed that the first three strategies pointed out above are

dealt with in varying degrees by most reading comprehension teachers (Irwin, 1991). In addition, the course-books used in reading comprehension courses have some tasks related to microprocesses, integrative processes and macroprocesses activities (Goodman, 1971; Smith, 1988). However, what is lacking in activities carried out by teachers and in course books is what fosters the elaborative skills of students, that is the elaborative process in reading comprehension.

Elaboration is linked to prior knowledge use, and involves making prediction, prior knowledge integration, mental imagery, higher level order thinking (application, analysis, synthesis and evaluation) and affective responses (Irwin, 1991). Therefore, the scope of this study is grounded on the Schemata Theory which proposes that the reading comprehension process is an active process which can not be achieved without prior knowledge integration related to improving elaborative skills. The strategies mentioned above will be discussed in detail in Section 4.3, in the Components of Reading Comprehension.

1.4 Operational Definitions

For the purpose of this study, the following terms that appear in our research questions and hypotheses should be considered in their meanings below:

Using Cognitive Learning Strategies, Cognitive Learning Approach or Cognitive Strategy Training: Enabling readers to use their mental power in order to find the associations of unknown (from known to unknown) by means, in which readers use their existing schemata by making elaborations (predicting, inferring, applying, analysing, synthesising, evaluating).

Higher Level Thinking: Having the ability of judging, abstracting, reasoning, imagining, and problem solving. These skills can be provided if readers are in a state that provides field-independence rather than field-dependence.

Metacognitive Strategies: Not only having the knowledge but also readers' own awareness and understanding of the process involved and their ability to regulate and direct the process in whatever they are doing. For instance, while reading if readers know how to read, they operate on the cognitive level; if they know the processes involved in reading, and if they are able to regulate them, they operate on metacognitive level.

Reading Comprehension Skills: Skills which enable readers to skim, scan, relate what is in a passage to their own experiences, expand vocabulary, extract the main idea and differentiate between the main and the secondary idea, make an outline and summary of a text, analyse the passages in terms of organisation and to justify the answers to given questions, basing their judgements on various types of clues to be found in a particular text.

Changes: Having and/or improving skills which are needed.

1.5 Research Questions and Hypotheses

Research Questions

1. Does cognitive strategy training improve learners' reading comprehension skill
2. Does cognitive strategy training bring about any corresponding changes in metacognitive strategies?
3. Does cognitive strategy training improve higher-order level thinking?

Hypotheses

Hypothesis 1 (H 1)

There is a close relation between the cognitive learning strategies and students' success in reading comprehension.

Hypothesis 2 (H 2)

Cognitive learning training in reading comprehension can improve students' metacognitive strategies.

Hypothesis 3 (H 3)

Training students through cognitive learning strategies will improve their higher level thinking skills.

1.6 Assumptions and Limitations

To Stern (1991), in language learning, the cognitive skill the learners bring to the learning task is more important than personality factors such as being introvert or extrovert. Although we believe that the personality factors may play an important role in strategy training they are not within the scope of this study. Similarly, although Chastain (1988) points out that sex differences may play an unnoticed role in second language learning' however we have been able to include sex differences in this study since it does not constitute the main focus of this study.

Different school experiences of the subjects involved in this study were not considered because of the fact that the University Entrance examination they had taken required the students to be considerably proficient. It was assumed that their level of language was more or less the same.

An important limitation of this study is that the training materials used during the treatment period were based on the reading text books. These text books were used in both groups and no other reading materials were used in class. The students in the Experimental Group were encouraged to read externally in order to improve their background knowledge. They were expected to read books or and articles and report it by using the given model (see Appendix 7).

Using a cloze test for the assessment of higher order level thinking process was another important limitation of this study. The synthesis and evaluation questions in the taxonomy usually require open-ended questions (Orlich et al, 1985). The pre- and post-test served as a proficiency test to discriminate students who enrolled to the Faculty of Education, ELT Department whether they were eligible for the graduate study or needed one year of preparatory class. Therefore, considering the doubts

regarding the objectivity in the analysis of open-ended questions, we preferred to use a cloze test. This may be justified by the relationship between cloze tasks and higher order thinking skill suggested by Rankin and Thomas (1980), and Weir (1990).

Likewise, Kletzien (1991, pp. 72) points out that "a cloze task taps the reader's ability to make use of syntactic and semantic knowledge, an ability that is fundamental to comprehension and it requires readers to use the intellectual process such as imagining, reasoning, evaluating, judging, and problem solving" (p. 72).

CHAPTER 2

LEARNING AND LEARNING THEORIES

2.1 Definition of Learning

How human learning occurs has long been a consideration of psychologists and thereby educational psychologists. However, it has been pointed out that it is not so easy to define human learning as it is a complex and fascinating process and is related not only to psychology but also to the structure of the brain. Yet, Ormrod (1990) from a psychologist view points out two definitions of learning, the first one is related to behaviourist and the other to cognitivist view of learning. The first definition of learning by Ormrod is "learning is a relatively permanent change in behaviour due to experience" and the second definition is "learning is a relatively permanent change in mental associations due to experience" (p. 6).

There have been similar definitions of learning, one of which is proposed by Craig et al. (1975) as "learning is the process by which one's capability or disposition is changed as a result of experience" (p. 12). By this definition, the authors suggest that the learning process includes both what one is capable of and what one is predisposed to do.

When these definitions are analysed, it can be easily pointed out that the common point in both definitions is the key phrase "change as an outcome of experience." In other words, changing associated with learning even if not completely, is likely to last for some period of time. In addition, according to these

definitions, learning may occur as a result of what learners experience in their life. However, the former focuses on the behavioural experience whereas the latter, on a change in mental associations -- an internal change that can not be directly observed and theorised as "cognitive learning" (Ormrod, 1990). In addition, no matter how learning occurs there are some factors that affect learning.

2.2 Learning Components

For any learning process to take place, there must be a link between eyes, ears, and other sensory organs which help learners receives information (see Sections 3.5 and 3.6). During the process of learning, the brain handles such information; and if it goes through, the next stage is the encoding. After it is encoded and comprehended -- depending on its importance -- the information may be stored it in the long-term memory so as to use when need arises or totally ignore them (Craig et al. 1975).

There have been a lot of definitions of learning, yet all have the "three basic elements" (Gagne, 1970, pp. 4-7): the learner, the stimulus or sensory memory for initial information and the response. A stimulus is an object or event in the learners' environment that affects the sensory organs. The brain can recognise what our senses perceive and tries to find out how this perceived information can be used. In order to tackle with this process, the sensory organs of learners transmit nerve impulses to the central nervous system. The impulses are interpreted and translated into nervous or muscular responses. It is not possible to observe what is happening internally, but the way the learners react to the stimulus could be observed. According to what Solso observes (1988), when we turn off the music we have been listening to, we continue

to hear the melody for a while. The researcher points out that the sensory register has a limited capacity; thus, it can only handle a finite number of stimuli. Because of this limitation, the brain becomes unable in processing any more information at one time. However, this disability, in a way, is very advantageous for human beings because of the fact that it allows us to perceive everything coherently by choosing the essential components among all that is perceived.

The response includes mental or muscular activity of the learners that results from stimulation. This could be observed by referring to the performance of the learners. Learning is likely to be inferred from the observation of a performance following exposure to a stimulus situation. (see Section 2.3.1). Any example of learning has five phases: attention, perception, acquisition, retention, and transfer (Craig et al., 1975).

2.2.1 Attention

Attention is the first and the most important factor in a learning phase as it is the necessary preparatory set or a readiness process for some stimuli. No learning process can be achieved without having the learner attend to what is happening in the learning situation, since attention prepares students for the perceptual phase of learning (Bransford, 1979). In addition, the brain focuses on the most striking stimuli and maintains attention as long as it is meaningful. According to some research such as Goetz et al. (1992), even if there is a stimuli coming from another channel, the brain can also retain it by means of switching attention between channels. The most persistent stimuli are the ones which are the most attentive and most complex. The

simple ones are regarded insignificant whereas the too complex ones are considered puzzling and were not attended to.

2.2.2 Perception

In this phase, it is the right time for the learner to register the input to the senses and add some meaning. The result of what is perceived depends partly on existing knowledge and partly on what stimuli or parts of stimulus situations the learner attends to. We cannot view perception as a matter, which differentiates and registers the information in learners' environment; rather it helps learners make the association between the information in the environment and information retained from prior learning. Whatever knowledge individuals store in their mind is, therefore, important in forming a view of what is happening around them (Craig et al., 1977).

2.2.3 Acquisition

Craig et al. (1975, p. 121) explain acquisition as "the phase of learning in which one acquires a new capability or disposition." Without any hesitation, the learners can response to a stimulus. This can be observed in a situation such as when learning to drive. After being shown the steering tools and after practising for a while, the learner unconsciously uses the car.

2.2.4 Retention

According to psychologists and educators, whatever learned cannot be used unless it is retained for a short time. Travers (1970, pp. 144-163) suggests that there are two types of retention: short- term and long-term. Short-term retention can be observed in holding the information for immediate use. For example, we recall a telephone number or an address for just long enough to use it. Long-term retention is observed when the products of learning persist beyond an immediate occasion for their use, from a few minutes to a lifetime (see Sections 3.2.5 and 3.2.6).

2.2.5 Transfer

When learning new things, the acquired ones could be helpful for us. In other words, the acquired rule(s) could be transferred to the new ones in order to find a solution for the new situation. In fact, together with retention, transfer could be very effective in learning. Retention could be very helpful if the learning situation is exactly the same as the acquired ones whereas transfer is crucial if the situations are strange to learners. It is also very effective in different learning situations.

However, in most learning situations where retention is involved, transfer of involvement is inevitable. Gagne (1970) points out that there are two kinds of transfer: lateral and vertical. According to Gagne lateral transfer could be observed in the example of a learners' achieving the task of producing the "pre-" prefix after learning the function of it in for instance "pre-test." If such learner could produce the new word with "pre-" prefix such as pre-learning, pre-view and so on this is called

lateral transfer (see Sections 3.1.3.1 and 3.1.3.2, declarative and procedural knowledge).

On the other hand, vertical transfer occurs if a learner uses the previously acquired experiences in order to learn new but more complex ones. For example, if a learner, after learning simple future tense, tries to learn future continuous or future perfect, or related ones, this should be called vertical learning (see Section 2.3.2.4).

To sum up, any learning begins with the learner's attention, and without attention, no learning could occur. After attention, learners perceive the knowledge, acquire it, and finally retain and transfer it to the new situation. Learners having attentive learning strategies do not spend much time on attention, perception, and acquisition; instead, they focus on the retention and transfer phases.

2.3 Learning Theories

Educationists have been involved in the research of learning, learning theories and how learning occurs in humans. Behaviourists emphasise the roles of environmental conditions (stimuli) and suggest that it has a significant effect on behaviours (responses) in human learning whereas cognitive psychologists focus on how individuals process the stimuli they encounter. In other words, the cognitivist view of learning deals with how human beings perceive, interpret, and mentally store the information they receive from the environment. It is obvious that there are broad differences between behaviourism and cognitivism from the point of learning.

2.3.1 Behaviourist Theory of Learning

Behaviourism evolved on the idea of verbal learning (serial and paired associative learning) and became very popular between 1930 and 1960s. It attracted the public more than cognitivist studies, and cognitivist ideas were diminished. A great number of learning theorists focused on verbal learning. Some researchers such as Thorndike (1932b) and Skinner (1961) conducting research on animal learning, established a relationship between human learning and animal learning. Thus, this theory ignored the internal process involved in learning. According to Stern (1991, p: 305), behaviourism is "a study of learning phenomena which disregards the intentions, the thinking, the conscious planning, and the internal processes of the learner."

Studying on behavioural changes in accordance with stimuli-response and reinforcement, Skinner categorised the stimuli for verbal learning. "Mand" category, for instance, is the one which according to Skinner (1957, p. 5) derived from "command", "demand", "reprimand." These and similar ones are accepted as verbal stimuli in directing a person to action. For example; "Do you know the way to the train station?" (interrogative), "Don't park here!" (imperative). In addition to categorising the stimuli, Skinner points out that verbal behaviour is reinforced by visual expression of the stimuli. For example, when a child utters the word "cooky" and if it is reinforced by the visual expression of the cooky, the child can learn what the cooky is. In other words, response will be followed by reinforcement if the verbal stimuli occur in an appropriate situation.

Through the years, behaviourist learning theorists stood against the very learning situations they failed to account for with the help of S-R (Stimulus-Response) relations. For example, they could not explain why people tend to organise

and make sense of information they learn and why they try to make an alteration in the form of information they learn --handling the meaning rather than just only structure. They began to search for other variables, mainly mental functions (cognition) involved in learning.

In 1957, Chomsky made a turning point in learning and led to a discussion questioning the behaviourist approach. What Chomsky mainly opposed to was the contention that learning was totally associated with stimulus-response and reinforcing. He maintains that "I have been able to find no support whatsoever for the doctrine of Skinner and others' that slow and careful shaping of verbal behaviour through differential reinforcement is an absolute necessity" (cited in Stern 1991: 299).

Chomsky, by his linguistics research, finds out that behaviourism lacking in explaining many important characteristics of language learning. He believes that forming sentences requires semantic knowledge together with syntactic knowledge. This process involves linguistic unity. For an explicit explanation of this linguistic reality Chomsky proposes the following example so as to indicate that a sentence can be grammatically correct but it may not convey any meaning "Colourless green ideas sleep furiously."

This sentence is meaningless although it is grammatically correct. In view of this sentence and similar ones, Chomsky concludes that we can make up sentences having no meaning, and forming a sentence does not only depend upon our previous knowledge with the same sentence. He also maintains that language can not be explained simply in terms of change in behaviour, as it happens in animals; rather the working of human mind should be taken into account. He criticises behaviourism as follows:

> Language is not habit formation. Repetition of fixed phrases is a rarity. The notion that linguistic behaviour consists of "responses to stimuli" is as much myth as the idea that it is a matter of habit and generalisation. Ordinary linguistic behaviour characteristically involves innovative formation of new sentences and new patterns in accordance with rules of great abstractness and intricacy. There are no known principles of association or reinforcement, and no known sense of "generalisation" that can begin to account for this characteristic "creative" aspects of normal language use
> (cited in Stern 1991, p.300).

What Chomsky points out about language did not affect the other psycholinguists immediately, yet they gradually started to pursue the idea of cognition involved in learning. In the 1950s and 1960s many psychologists were against the idea on human learning that was pointed out by the early behaviourists. Along with Chomsky (1957) (on psycholinguistics), some others such as Bruner, Goodnow and Austin (1956) (on concept learning) published some valuable works in which they pointed out why they were against the ideas of early behaviourists. In addition, in the late 1960s, Ulrich Neisser published a book on "Cognitive Psychology" which occupied an important place in human learning in contrast to behaviourist learning theory.

In the light of new research in learning theories such as those by Bruner (1961a, 1961b, and 1966), Ausubel (1963) and Ausubel and Robinson (1969), cognitive learning, i.e. cognitivism, began to have its place in the literature of educational psychology. Some scholars such as Bransford and Franks (1971), and

Kendler (1985), while studying on human learning, pointed at what is involved in human information processes. Ormrod (1990, p.151) revised the assumptions of this theory as follows:

1. *Some learning processes may be unique to human beings.*

Unlike the S-R approach, this assumption maintains that human learning should be considered differently from the learning occurring in animals.

2. *Mental events are the focus of study.*

This is because of the fact that human beings have the capacity to think, judge, and evaluate and come to a conclusion. Therefore, different people in the same situations are likely to gain different insights.

3. *The study of human learning must be objective and scientific.*

Although behaviourist learning researchers carried out empirical studies to investigate how learning occurs, human information processing theory (HIP) states that mental events are ignored in these studies. Therefore, they suggest that there should be more empirical research, which may explain how mental events involve in learning.

4. *Individuals are actively involved in the learning process.*

Unlike behaviourism, which considers individuals as passive learners, HIP considers people as active participants involved in the learning process.

5. *Learning involves the formation of mental associations that are not necessarily reflected in overt behaviour changes.*

Behaviourists believe that there must be an observable change in the behaviour of individuals so that learning occurs. However, cognitivist approach suggests that learning occurs covertly with the help of mental associations. Therefore, learning can occur without being reflected in learners' overt performance.

6. *Knowledge is organised*

There is a close relationship between what is stored in any individuals' mind. In other words, information is not stored in a way each piece isolated from another; rather it is interconnected. Whatever comes into mind looks for related clusters to attach.

7. *Learning is a process of relating new information to previously learned information.*

Information processing theorists such as Ausubel (1968), and Gagne (1970) believe that any type of learning could occur by relating the new to the existing. In other words, learners add and integrate a new tie to what they have stored and anchor what they are currently learning.

Most of the above-mentioned assumptions are in the scope of this study since it aims to investigate the mental process of learners in reading comprehension. Therefore, we believe that the early cognitive theories of learning should be taken into consideration. These especially are "Perception and Problem Solving" by Gestalt Psychologist, "Remembering Theory" by Bartlett, "Purposive Behaviourism" by Tolman, and "The Active Learner and the Structure of Knowledge" by Piaget.

2.3.2 Cognitive Theory of Learning

From the 1930s to 1960s, research made in verbal learning and conducted by different educational psychologists is as important as cognitive movement in terms of what it provided for learning. Verbal learning theorists originally attempted to apply a S-R analysis to human language and verbal behaviour, but later they understood that

it is not always easy to explain the complexities of human language-based learning by only considering behaviourist theories. Verbal learning theorists began to cooperate with the mental process of human -- soon explained as cognitivism -- in order to provide explanation for their research results.

There are a lot of cognitive theories many of which date back to the early decades of the 20th century. The early cognitive learning theories appeared in the 1920s and 1930s. These especially are Perception and Problem Solving by Gestalt psychologists, Remembering Theory by Bartlett, Purposive Behaviourism by Tolman, and The Active Learner and the Structure of Knowledge by Jean Piaget.

2.3.2.1 *Gestalt Psychology*

Gestalt psychologists emphasise the importance of organisational process in perception, and problem solving, and believe that individuals tend to organise information in particular ways. According to this theory, the concept "insight" plays a great role in learning. Craig et al. (1975) maintain that *insight* enables learners to develop an idea about a particular point and grasp meaning. In addition, with the help of insight, learners know what leads to what and what they should do to attain their aims.

Gestalt psychologists also insist that there is a number of factors that affect the way individuals perceive a situation, which also affects whether or not individuals gain insight from the situation which they are in. Therefore, perception can go beyond its real meaning. In other words, perception could be different from what we really see around us because it involves figure and ground (Goetz et al, 1992). The same

researchers also point out that we perceive the object, which we focus on - the figure, and there is also the backdrop or context on which the form and shape of the figure is perceived – the ground. It is obvious that there is a shift between figure and ground or vice versa. According to Gestalt theorists, this relation reveals that there is an organisation in our sensory data, which enables us to perceive.

In addition to difference between perception and reality, one of the Gestalt psychologists, Köhler (1969) states that parts do not exactly express the whole because of the fact that different aspects of experience studied separately from each other, can not define who experienced it. This is, because of the fact that the parts of elements may show a pattern not evident in any of the elements.

On the other hand, Gestalt psychologists express one of the most fundamental features of cognitive learning, problem solving as restructuring and insight. They point out that one thing is the key factor in problem solving that one could understand the structure of it. In other words, cognitivism provides learners to stimulate their mental processes therefore, in problem solving, learners could mentally "combine and recombine the various elements of a problem till a structure that solves the problem is achieved" (Ormrod 1990, p. 130).

Additionally, Wertheimers (1959) explains that problem solving can be observed in the situations where students know how to calculate the area of square or rectangle but not find the area of parallelogram because its corners are straight. Wertheimers also states that students can combine and recombine the elements of problems and realise that a parallelogram can be reconfigured to form a rectangle. What is required in problem solving, according to Gestalt psychologists, is that learners should restructure the problem so that they can solve it by developing their

own strategy to organise the problem in a certain manner which might be from known to unknown.

It is clear that this is somewhat different from trial and error learning pointed out by behaviourist learning. According to Gestalt psychologists, arranging the problem elements in various ways enables learners to have a sudden insight in order to solve the problem they cope with.

2.3.2.2 *Bartlett's Remembering Theory*

Bartlett (1932) was studying on the mystery of remembering process while Gestalt psychologists were conducting research on the process of perception and problem solving. Bartlett believes that retrieval was not the only way of remembering. On the other hand, retrieval supporters assume that whatever we record while experiencing is stored randomly in memory to be retrieved later. Bartlett, however, states that the role of the individuals who try to remember something is a great contribution to this process. He also points out that the role of individuals involved in remembering process shows a great resemblance to that of a palaeontologist. In other words, a palaeontologist can reconstruct an entire body of an animal by collecting the bits of bones while a rememberer can recollect the bits of information to reconstruct the whole.

When Bartlett pointed out the role of previous experiences on remembering, it was not appreciated because it lacked the proper scientific explanation. However, he tried to testify his ideas by giving his subjects some stories and encouraging them to tell what they recalled. He found out that when readers encountered unusual stories

inconsistent with their schemata, what they recalled was very different from what they really read. Because of this, he insisted on the fact that there were no examples of any event in that we remember something differently from what actually happened.

He also supports his cognitive functioning theory on remembering with the retellings that he obtained from his subjects, and pointed out that whatever we experience is stored in what is called schema. Every schema has its own unique place in the memory, and while remembering something we use these schemata in order to find the whole. Therefore, through the year his ideas have taken into consideration as educational psychologists have developed new techniques to find out how people comprehend and remember what they read.

2.3.2.3 *Tolman's Purposive Behaviourism*

During the years when behaviourism was very popular in learning, Edward Tolman conducted various studies so as to find out the role of mental processes in learning. In view of these studies, Tolman (1959) points at some ideas which are related to learning such that "behaviourism should be studied at a *molar* level; learning can occur without a change in performance; intervening variables must be considered: behaviour is purposive; expectations affect behaviour; learning results in an organised body of information" (cited in Ormrod 1990, pp. 135-136). In other words, what Tolman studied was to find out the relationship between cognitive and behaviourist approach towards learning.

In his theory, Tolman points out that every behaviour is the outcome of the search for goals, which makes that behaviour meaningful. He believes that there is a

close relationship between events, and certain events leading to those other events. In addition, he suggests that without a certain goal, behaviour could not occur. This idea is associated with the former one that is behaviour is purposive. With this idea, Tolman insists that particular behaviour produces particular results and these results lead to other expectations. Rather than reinforcement, affecting the response it follows; the organised expectations of reinforcement affect the response it precedes.

In addition, Tolman states that behaviour should be studied at a level in which S-R relations are examined by isolating them from its totality since it is most likely that the meaning and purpose of that behaviour are lost. Moreover, learning does not require reinforcement, that is learning can occur without reinforcement. Tolman believes that reinforcement is not the most important factor in learning. There are other factors, such as mental processes, which are superior to reinforcement in learning.

Tolman also points out that learning can occur without a change in performance. By analysing the behaviourists ideas, it may be concluded that there is a close relation between learning and behaviour changes. However, Tolman's theory suggests that "learning can occur without being evidenced in a change in performance, using the term latent learning for such unobservable learning" (cited in Ormrod 1990, p. 134).

To sum up, Tolman believes that learning occurs if there is any change in learners' cognitive structure as a result of new insights. Knowing how things are organised in space enables an organism to get from one place to another often by the shortest route. This is the outcome of learners' developing cognitive maps of their environment; they learn the relation between the parts and where they are placed. Considering the cognitive map of learning, Tolman states that learning is organised

and each bit of learned information is stored in the mind regarding the previous acquired ones.

2.3.2.4 *Piaget's The Active Learner and The Structure of Knowledge Theory*

Piaget, who is the pioneering researcher of this theory, mainly focuses on mental events such as logical measuring process and structure of knowledge. Ormrod (1990, p. 136), revises Piaget theory on the relationship between human learning and cognition and suggests that the followings are the key ideas in Piaget's theory:
(1) people are active processors of information; (2) knowledge can be described in terms of structures that change with development; (3) cognitive development result from the interactions of individuals with their psychical and social environment; the ways in which people interact with the environment remain constant; (4) cognitive development occurs in distinct stages with the thought processes at each stage being qualitatively different from those at other stages; (5) the rate of cognitive development is controlled to some extent by maturation.

In fact, what Piaget suggests, in terms of the structures, that change with development is somewhat similar to those suggested by Gestalt and Tolman. This is because of the fact that Piaget, like Gestalt and Tolman, focuses on the relation between mental process and learning. Therefore, he points at the previous knowledge stored in the learners' mind. In other words, he firmly believes that learners could acquire new things by finding the related ones already existing in their mind.

In addition, Piaget states that cognitive development results from the interaction of individuals with their physical and social environments. Interaction with

environment is essential in order to develop one's schemata. Physical interaction enables the learner to be aware of some objects and use this awareness in interactions with others in order to make it easy to recognise the new one better. It also provides learners to learn how to share ideas or whatever it is in the interaction. With the help of social interaction learners begin to realise that they have a position in the place they are living and this place belongs to them not to the others.

Piaget (1970) also believes that the ways people interact with the environment remains constant. People could interact with their environment through "assimilation and accommodation" in order to reconcile new information with existing schemata, which are stable and do not change. According to Piaget, in the assimilation process, when learners interact with an object or event that associate a schema already existing in memory, they can assimilate the information. Thus, assimilation is the process of adding or incorporating the new information into existing schemata.

In assimilation, learners may vary in interpreting the information presented since interpreting depends on the knowledge they have acquired. In other words, when a new experience or event does not associate the existing schemata, the process of assimilation becomes almost impossible. For example, if a learner who has a bird schema, in which birds are thought of as creatures which have feathers and can fly, s/he could easily say that a stalk is a bird.

In the accommodation process, learners refer to existing schema or schemata through which they could account for anything they have just met. Goetz et al. (1992) explains that learners modifies the existing knowledge structures (schemata) in order to associate them with the information which does not match the existed schemata. In other words, when new experiences and information do not match with the existing schemata, we must alter schemata to provide the opportunity for matching.

By using the above example for bird schema, it could be stated that in accommodation, a learner who puts a stalk into the bird category after seeing hens which have feathers but cannot fly might infer that not all creatures which have feathers are birds. S/he will also believe that there must be another category these kinds of creatures should belong to. Therefore, this learner needs to make an alteration in the bird category in order to find a decent place for the stalk (see Section 3.2). Thus, it is obvious that assimilation and accommodation go together. According to Piaget, in the former, learners try to put new events into the context they previously have acquired, whereas in the latter, they use the existing knowledge in order to find a new context for the new one they are currently experiencing.

To sum up, cognitive psychologists mentioned above suggest that no real learning occurs if learners are not mentally involved in learning process. In addition, unlike the supporters of behaviourist idea of learning, the supporters of cognitivist idea of learning claim that whatever we have acquired before affects what we try to learn. They also maintain that learners should activate their previously acquired knowledge for both learning and remembering. Therefore, this relation between cognitive psychology and its effects on learning will be dealt with in detail in the next chapter.

CHAPTER 3

COGNITIVE LEARNING THEORY AND ITS IMPLICATIONS

3.1 Cognitive Learning

It has long been agreed by the experts that the way teaching materials are presented and explained are of vital importance in both teaching and learning processes, since the most widely held objectives for education are those associated with the acquisition and retention of information. Accordingly, curriculum guides, text books, tests routinely used by teachers are organised and the needs which might arise in a class are taken into consideration. (Kendler, 1985; Jones et al. 1987, and Arends, 1989). However, O'Malley and Chamot (1990, p.188) revise what have been suggested on cognitive learning as follows.

1. *Learning is goal oriented.*

Expert learners have two major goals during the learning process: (a) to understand the meaning of the task and (b) to regulate their own learning. In other words, learners have both declarative knowledge, and content goals, and procedural knowledge, or strategic goals for a learning task.

2. *In learning, new information is linked to prior knowledge.*

Prior knowledge is stored in memory in the form of knowledge framework or schemata, and new information is understood and stored by calling up the appropriate schema and integrating the new information with it. Knowing how and when to

access prior knowledge is a characteristic of effective learners.

3. *Learning requires knowledge organisation.*

Knowledge is organised in recognisable frameworks such as story grammars, problem/solution structures, comparison/contrast patterns, and description sequences among others. Skilled learners recognise these organisational structures and use them to assist learning and recall.

4. *Learning is strategic.*

Good learners are aware of the learning process and of themselves as learners, and seek to control of their own learning through the use of appropriate learning strategies. Strategies can be taught, but many do not transfer to new tasks. Although each content area may require a particular set of strategies and skills, a number of core skills underlie all subject areas. Examples of these core skills are using prior knowledge, making a representation of the information, self monitoring and summarising.

5. *Learning occurs in recursive phases.*

All types of learning are initiated with a planning phase, followed by on-line processing and ending with consolidation and extension of the new information. In the planning phase, the problem is identified, goals are set, and prior knowledge is activated. During on line processing, new information is integrated, assimilated and used to clarify or modify the existing ideas.

During consolidation and extension, the learner summarises and organises the new information, assesses achievement of the goal established in the first phase, and extends learning by applying it to new situations. During each phase, the learner may return to previous phase to rework one or more of its aspects.

6. *Learning is influenced by development.*

Differences between older and younger students and between more and less proficient learners are due in large part to differences in prior knowledge and learning strategy use. These differences may be present when children begin school or may develop over time, but in either case, they tend to persist unless intervention is undertaken.

Although these assumptions about learning are suggested for a first language learning context (Jones et al.1987), they are also valid for a second language learning. They guide every aspect of planning and implementing instruction in any learning and teaching situation. Moreover, a great number of researchers (Clarke, 1980; Royer and Carlos, 1991) have demonstrated that second language learners are able to transfer strategies they have gained in first language learning to second language learning if they have attained a proficiency level in their first language.

In the light of the above-mentioned assumptions for teaching/learning process, three ideas, related to cognitive psychology and learning and teaching process, should be considered altogether. According to Arends (1989) these are (1) structure of knowledge, (2) meaningful verbal learning, and 3) cognitive psychology and acquisition of knowledge. These issues are significant factors in setting cognitive learning model of presentation, including the related rationale and the pedagogy.

3.1.1 Structure and Organisation of Knowledge

Knowledge of the world has been organised around various subject areas called disciplines. "History is an example of a discipline that organises knowledge using temporal concepts; biology organises information and ideas about living things" (Arends 1989, p. 260). The disciplines constitute the resources on which most teachers and curriculum developers draw in making decisions about what knowledge should be taught to students.

In teaching any subject related to any discipline, a teacher is one of the essential components of the curriculum. In presenting any information, s/he should use her/his abilities to activate what is going on. Ford and Pugno (1964), observing the relationship between a teacher and existing curriculum, state that

> from the standpoint of the curriculum, the discipline should be viewed primarily as a resource that can be drawn upon for the education of students. Hence, we want to understand these resources at their best. And we, I think properly are often fearful that some of the second-hand treatment that we get of these subjects really prostitutes them -- does not represent them at their best. Certainly these disciplines at their best are not simply an encyclopaedic collection of facts to be memorised but rather they are active efforts to make sense out of some portion of world or of life (p. 4).

During the 1950s, some scholars and curriculum developers were deeply interested in studying how disciplines were organised and what that organisation

meant to instruction. Related to these studies, Bruner (1960) collected his research in a book called "The Process of Education." In his book, Bruner produces the idea that each discipline has a structure consisting of key concepts that define the discipline. Bruner (1962, p. 77) also argues that knowing about a house "is not a matter of knowing about collection of nails, shingles, wallboards, and windows." Rather, knowing about the total concept of house is significant.

In addition, Jones et al (1987) maintain the role of better-organised knowledge. The researchers point out that various organisation systems of knowledge help learners store knowledge and access it more efficiently. By organising knowledge, readers access the related ones as compared to the unrelated pieces. What is important is not what is being illustrated but what is emphasised Therefore, the reader has to develop an awareness that the existing structures are a means of organising information about topics, dividing information into various categories, and showing relationship among various categories of information (see Section 3.2).

According to Arends (1989, p. 262), "the teaching implications of this structuring of knowledge are clear -- the key ideas supporting each structure should be taught to students instead of list of desperate facts or bits of information." That is, the highlighted concepts and the related ideas should be organised well to be able to present them. Learners need to acquire strategies that help them build up relations among the related subjects rather than being exposed to bulks of knowledge that is in most cases useless.

3.1.2 Meaningful Verbal Learning

The hierarchical organisation of knowledge and how human mind organises ideas have appealed to the researchers for many years (see Section 3.2). David Ausubel, an educational psychologist, carried out some interesting research on this subject. He explains that at any point in time, a learner has an existing "organisation stability, and clarity of knowledge in a particular subject-matter field" (Ausubel 1963, p. 26). He calls this organisation a cognitive structure and believes that this structure determines the learner's ability to deal with new ideas and relationships. New things can be emerged from new materials only if they are linked to existing cognitive structures of prior knowledge.

In addition, Ausubel believes that when information is learned meaningfully it is stored in permanent memory attached with similar pieces of information. Learning meaningfully is likely to facilitate both storage and retrieval of information. In other words, storing information by forming a relation with the existing ones is done quickly and obviously it can be remembered more easily (see Sections 3.3 and 3.4). It appears that meaningful learning is grounded on the relations of concepts in the long-term memory. In relation with the organisation of information, meaningful learning can be characterised as a process of storing new concepts or meaningful parts by finding their relations in the existing network.

However, there are some factors involved in the occurrence of meaningful learning. First, according to Ausubel (1963), the learner must have a meaningful learning set. In other words, learners should try to learn the new information meaningfully rather than through memorisation. This can be provided by having

students focus on the meaning and explain the learning task in their own words. Another way of providing a meaningful learning set is to avoid using text book definitions and having students be sure that new learning tasks can be understood.

The second component of meaningful learning is that learners must have previous knowledge that could enable them to make relations with the new information (Ellis and Hunt, 1983). That is, the larger the previous knowledge learners have, the easier they can relate it to their new experiences, as a result of which, meaningful learning can occur more easily. Ormrod (1990) suggests that those who have more experiences, learn more things more easily than those who do not. This can be observed in the process of learning in adult and young learners. The reason is likely to lie on the function of previous knowledge.

The third factor that affects meaningful learning, according to Ausubel and Robinson (1969), is that learners must know that whatever new things they are experiencing, are related to something already existing in the long-term memory. For this process, learners must recall their existing knowledge and must take the relevant one(s) into short-term memory (working memory) in order to enable the integration with the new information (Gagne, and Driscol 1988). Additionally, Ausubel (1963) maintains that the primary function of formal education is to organise information for students to represent ideas in clear and precise ways. He adds that the principle function of pedagogy is "the art and science of presenting ideas and information meaningfully and effectively -- so that clear, stable and unambiguous meanings emerge and .... are retained over a long period of time as an organised body of knowledge" (p. 81).

In this way of learning as proposed by Ausubel, it is obvious that learners can establish a relationship between what is newly learnt and prior knowledge in order to anchor the concept. In doing so, according to Ausubel (1963, p. 27), the teacher has the primary role in creating the following conditions:

1. Present learning materials in their potentially meaningful form, with major and unifying ideas and principles, consistent with contemporary scholarship, highlighted rather than merely listed facts.
2. Find ways to anchor the new learning materials to learners' prior knowledge and cognitive structures and ready the students' minds so that they can receive new information.

In order to organise the ways and ideas to stimulate the students' prior knowledge, Ausubel suggests that the students should be enabled to develop the ability of higher level thinking. The researcher proposes a major pedagogical strategy, that is, the use of advance organisers. By studying the significant role of advance organisation in pedagogy, Ausubel (1963) states that "it is the job of advance organisers to present clearly, precisely, and explicitly the principle similarities and differences between the ideas in a new learning passage, on the one hand, and existing related concepts in cognitive structure on the other" (p. 83).

3.1.3 Cognitive Psychology and Acquisition of Knowledge

Cognitive psychology has been on the agenda of philosophical speculations for centuries. In the 19th century, it became popular and started becoming a scientific subject. Even early psychologists (dating back to 1870s) tried to study the relation between thinking and experience but they gave up this studying since the observable behaviour was much easier to investigate. However, in the 1950s a great number of scientists such as Chomsky (1957), and Piaget (1959) point out that cognition must be taken into account in order to make a logic explanation of human behaviour. Wondering what is involved in the thinking process has been the concern of many researchers, like Treisman (1964) who encouraged carrying out experimental research to assess people's experiences. By doing so, they were able to infer the thinking process from what they observed.

In view of various research related to cognition, cognitive psychology is described as a branch of psychology which focuses on what happens in the human mind during the knowledge processing, that is, how knowledge is acquired, modified, manipulated, stored and used (Abadzi, 1990). In other words, cognitive psychology provides ways of thinking about how knowledge can be presented and, how ideas organised for an effective presentation. It also emphasises that one of the important goals of teaching is to facilitate active thinking and mental processing. Gagne (1985) organises the ideas and researches in the field of cognitive psychology that apply directly to teaching. After studying with different subjects, the researcher believes that there are three concepts related to cognitive psychology of learning; knowledge types, knowledge representation, and information processing (Gagne 1985, p. 35).

The process of learning and the knowledge storing have long been an interesting subject for many scholars. Curriculum developers and text-book designers have also been interested in the idea of providing better ways for learners to learn well and store the acquired knowledge as long as possible. This idea has made Gagne (1985) study the types of knowledge. Having conducted significant studies, Gagne pointed out that there are two types of knowledge: "declarative knowledge and procedural knowledge" (Gagne 1985, p. 37).

In addition, Anderson (1985), studying on both second language acquisition and learning strategies in relations with cognitive theory, proposes a theory which is called Cognitive Academic Language Learning Approach (CALLA). In this theory, Anderson, agreeing with Gagne, suggests that information is stored in memory in two forms: ***declarative knowledge*** and ***procedural knowledge***.

3.1.3.1 *Declarative Knowledge*

According to Gagne (1985), declarative knowledge is the type of knowledge about something, which is stative or/and, do not change. It provides the learner only with the name of the topic such as word definitions, facts, rules and sequences of events. Anderson (1985) states that, this kind of knowledge is stored in the long-term memory with the help of meaning-based concepts rather than imitating the events of a language. For example, having the knowledge of "The University of Çukurova consists of seven faculties" could be declarative whereas how good it is and how to be a student at that university could be procedural knowledge.

In addition, it is crucial to know how declarative knowledge is structured since the structure of knowledge can not only explains what individuals have learned but also they enable individuals to perceive and acquire new information. Goetz et al. (1992) point out that schema theory and knowledge organisation in the mind account for the function of declarative knowledge (see Sections 3.2 and 4.1).

3.1.3.2 *Procedural knowledge*

Procedural knowledge is the type of knowledge of how to do something. It is originated with Newel and Simon (1972) and has become popular through the years. Gagne (1985) points out that procedural knowledge can be acquired in three stages: (1) we should have the related knowledge (cognitive stage or declarative knowledge), (2) we should know how to handle this knowledge (associative or procedural knowledge), (3) we should gain the authomaticity which enables us to spend little attention on what we do.

Anderson (1985) points out that procedural knowledge is related to one's ability to understand and generate language. Moreover, the researcher states that the representation of knowledge is a complex system, which requires procedural knowledge. This is related to production systems, which are based on a system of cognitive approach -- if- then. In other words, if certain conditions are met then action will be taken.

It is obvious that there are two components of production system: (1) condition, (2) actions (Goetz et al., 1992, p. 403). In conditioning process, learners

become ready to apply a given production. In action process, they apply the production. For example:

If you do not know how to drive
Stage 1
Then go to a driving school.

If you learn how to drive
Stage 2
Then buy a car.

If you have a car
Stage 3
Then drive to work.

If you drive to work
Stage 4
Then you save time.

This relation is initially similar to declarative knowledge but it later becomes procedural knowledge during the repetition process. This production system can be observed in the event which requires comprehension and production, such as reading comprehension, problem solving, and chess.

In addition, Anderson states that language skills can not be acquired quickly, rather in order to acquire them one should go through an extensive practice process. This process is related to procedural knowledge. However, declarative knowledge related to the information, which is always true, is likely to be acquired in a short time. By making the relation with knowledge types and language learning, Anderson indicates that in order to come to an autonomous stage, one should go through an extensive process as language is a complex cognitive process which requires both explicit and implicit knowledge about the system of the language which is being learned.

In CALLA, the relations between cognitive skills and the interplay between declarative and procedural knowledge are focused on. Anderson, studying on how new information is processed in the working memory and how it is transferred into the permanent memory, came to the conclusion that the process should be gradual. Related to language learning, he proposes three stages:

a. *Cognitive stage:* At this stage, learning occurs unintentionally and learners tend to make mistakes.

b. *Associative stage:* Learners, at this stage, begin to move from dependent independent learning since they tend to make relations between concepts and make fewer mistakes.

c. *An Autonomous stage*. It is the stage for learners to gain their confidence and they do not refer to rule-governing process any longer. Thus, gradually they gain their own rule governing by practising the same process.

Comparing the knowledge types described previously by Gagne (1985) and Anderson (1985) with the definition of meaningful learning by Brown (1987, p. 66), as "a process of relating and anchoring new material to relevant one(s) established in cognitive structure", it can be observed that there are sharp similarities. In addition, the researchers focus on using the existing knowledge for the new ones, which is vital in learning. According to Gagne, these knowledge types are deeply embedded and they are the significant parts of the cognitive psychology of learning related to meaningful learning. That is, the more learners acquire new information about the same topic, the more they can process this acquired language by making relations between new and related areas.

It is obvious that using the existing knowledge is the key factor in meaningful

learning evoking from cognitive learning (mentioned above). Moreover, as it is stated above, knowledge is stored and organised in harmony in the mind so that learners can make use of it in order to make associations in a short time. In other words, knowledge organisation and its utilisation are key elements in cognitive learning and are within the scope of this study since it is grounded on the schema theory . Therefore, knowledge organisation and its utilisation should be taken into consideration, regarding the ways in which learning becomes easier.

3. 2 Cognitive Psychology and Organisation of Knowledge in Mind

Knowledge organisation on the mind has been one of the mysteries on which cognitive psychologists have intensively studied. According to cognitive psychology, humans process knowledge in terms of basic units, which are called proposition or ideas. Gagne (1985) is interested in the knowledge formation and the relationship between the presentation of existing knowledge and cognitive psychology. She reports her observations as follows:

> One of the most important characteristics of any given unit of information is its relationship to other units. Our knowledge of such relationships underlies our ability to make analogies and to see other types of connections. Such abilities are important in novel problem-solving situations. Because the relationships among sets of information are a crucial aspect of intelligence, it is important to have a way of representing them. One way is the form of propositional networks, which are sets of interrelated propositions (p. 40).

There have been four models proposed for knowledge organisation; *Hierarchical Network Models*; *Semantic Feature Model*; *Spreading Activation Model* and *Propositional Network.* There are no sharp differences between these models; rather, the new ones complete the failures of the old ones. All models show the structure of knowledge concept and the concepts of meaningful learning. When these models were analysed, it is understood that the better scholars organise academic discipline according to a specific structure, the better the learners organise knowledge into propositions and networks.

According to Arends (1989), psychologists do not agree with the idea that these networks occur at any point. Despite their disagreement, Arends states that "the important point for teacher is that information is stored in some type of propositional network and, ... these networks actively filter new information and thereby determine how well new information presented by teacher will be integrated and retained by learners" (p. 264).

3.2.1 Hierarchical Network Model

This model presented by Collins and Quillian (1969) suggests that the acquired information is stored in the mind in a category related to subordination and superordination relations. In other words, information is stored in hierarchical arrangement. At the top of the hierarchy is the general superordinate, and the specific subordinate information is below it. According to these researchers, the human brain

is too limited to store all related concepts. Therefore, any information that could be stored more than once would be stored only at the highest point. The same category or features is not given for each time, instead they are represented at the top and are made available to other concepts through the network of relations.

In addition, this network model suggests that, while storing knowledge, any individual uses a system of categories and category characteristics. These are arranged in a rank from the most important to the least. This model indicates that if individuals came across the sentence "A bird is an animal", in order to verify this statement, they would activate both the bird concept and animal concept. By using the relations between these concepts they would justify if the sentence were true or false. However, if the concepts were far away from each other, it would take a long time for verification. Therefore, concepts, which are closer to each other, are verified faster than those, which are farther.

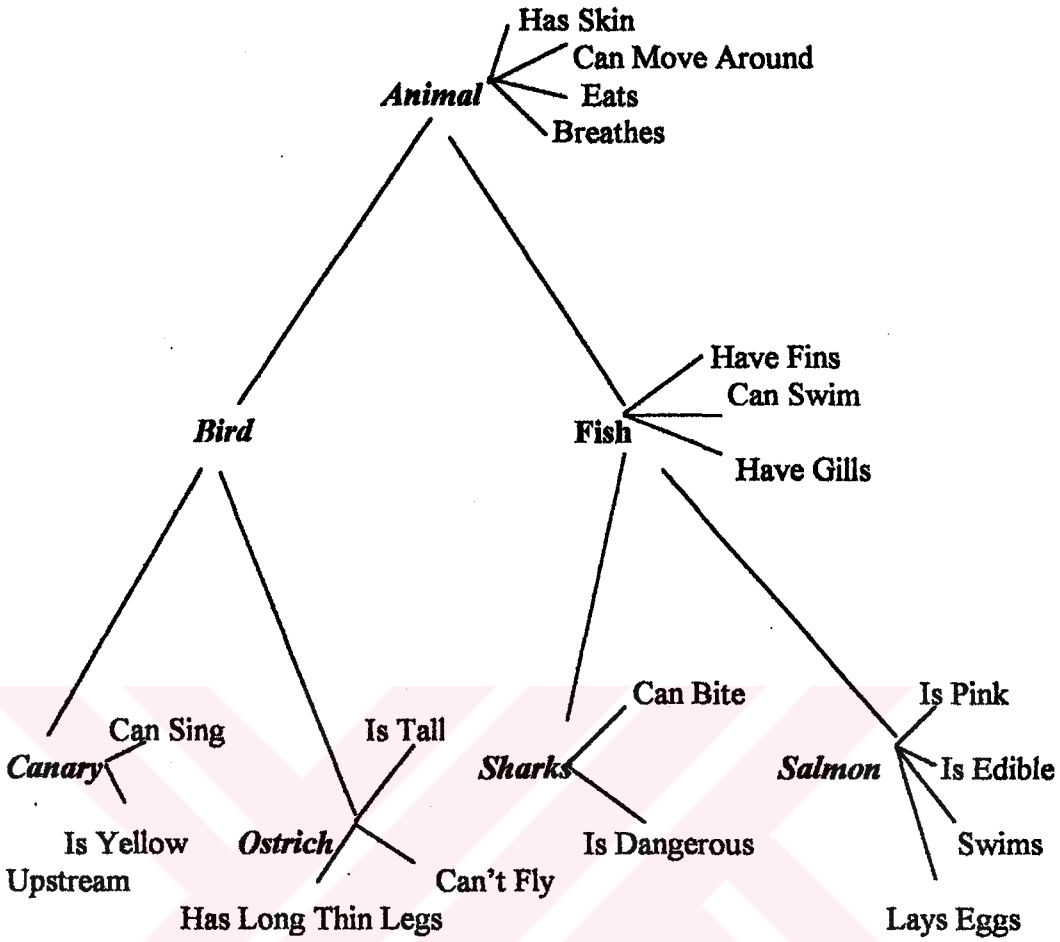

Figure 3-1 A hierarchical network model, which represents the semantic information, related to animals (Collins and Quillian, 1969).

Conrad (1972) studying how memory stores and retrieves information states that there are some failures related to how frequently some concepts are used in Hierarchical Network Model. Some concepts are used more frequently than others; therefore, they would be verified faster than those, which are used less frequently. For example, "Fish can swim" is a more common combination than "Fish can move around." Therefore, the ranking of the concept in this case, may be too complicated to form the hierarchy. In addition, Collins and Quillian suggest in their model (shown in Figure 3-1) that all items on the represented hierarchy are equal.

In the figure, a canary and an ostrich are represented as the subordinates of *bird*. In that case, they should be verified in an equal time and this causes a reduction in verification time. Thus, this kind of organisation distracts learners from true statements and leads to false statement. Learners do no spend enough time on each subordinate item. According to this model, these items are in the same category and whatever features this superordinate has, the subordinate items should also have them.

3.2.2 Semantic Feature Model

In view of these failures in hierarchical network model, Smiths, Shoben and Ribs (1974) suggest that in the semantic network, all items should be explained with respect to their defining features and characteristic features. In other words, the concepts are to be framed according to their characteristic features that are peculiar to them. For example, defining features of whales could be "They are fish and mammals" whereas, the characteristic feature could be "They live in deep oceans." Consequently, they, suggest a new model in order to show the activation of the knowledge. According to this model, shown in Figure 3-2, the information stored in the mind is activated in a two stage- process.

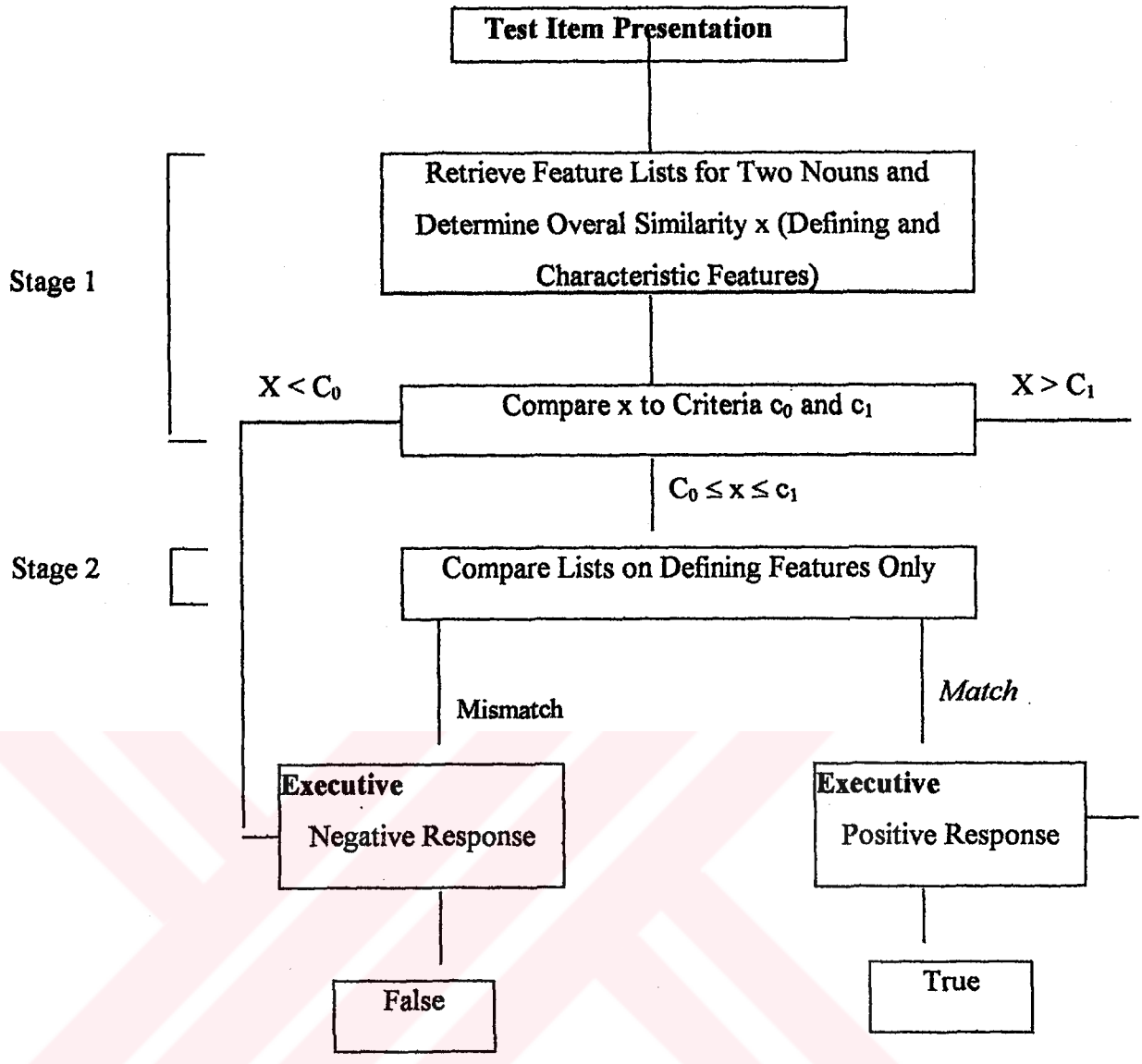

***Figure 3-2** A semantic feature model of semantic verification performance* (Smith, Shoben and Rips, 1974).

Stage 1 in the figure above is organised in a way that helps individuals consider all the features of a subject and compare it to stored information. If they match each other, it is accepted as a true response. The second stage is used if they are different from each other. This stage gives the defining features of the subject. Because it is grounded only on defining and showing the characteristic features of

subjects, this model does not appeal to some psycholinguists. McCloskey (1980) suggests that there is no certain defining feature for most of the concepts. Therefore, it would not be possible to find specific features for different objects. The same researcher, examining the characteristic features of the objects, also suggests that the similarities between the characteristic features of objects may cause a false interpretation.

In addition, because of the problems in framing the defining and characteristic features of objects, it is vague whether semantic feature models can be used in sentences or discourse. Thus, we need to know what the function of word meaning in language processing is. However, semantic feature models in the process of knowledge storage in long-term memory do not clearly mention the way as to how the words come together to form meaningful sentences or paragraphs. As a result, another model, the Spreading Activation Model, was presented by Collins and Loftus.

3.2.3 Spreading Activation Model

As mentioned earlier both models related to knowledge storage in the mind lacked in presenting a comprehensible explanation. Therefore, an alternative approach was developed and presented by Collins and Loftus in 1975. This model opposes to hierarchical models in that there is not a strict hierarchy between concepts. In addition, it is a revision of semantic feature model in relation with the definition and characteristic feature of the concepts. As a result, the spreading activation model has come out as a model, which incorporates some aspects of previously presented models.

The spreading activation model, shown in Figure 3-3, suggests that we do not come to a decision by considering the strong or weak relations between concepts whenever we make relations between the new and given concepts, we decide to store it. Furthermore, Collins and Loftus state that we do not search for a relation through a network; rather this relation occurs by a process of spreading activation. Carroll (1986) claims that when this activation is triggered at a concept it will spread in the similar concepts throughout the network.

However, it is obvious that the closer the concepts are, the more they are activated, or vice versa. Wessells (1982) suggests that the activation process in this model is similar to the process of a rock dropped on the surface of still water in a container. The disturbance occurring on the surface of water gradually decreases, while going towards the side of the container. Therefore, the researcher states that the relation between concepts starts from the initiated point and spreads in different directions.

Yet, it is very difficult to make an account of how we come to a decision while making this relation. According to Collins and Loftus, in order to come to decision, we go through a process which functions as a doorway from one concept to another. While going through this process, the given concept is activated by an accumulated influence beyond this doorway.

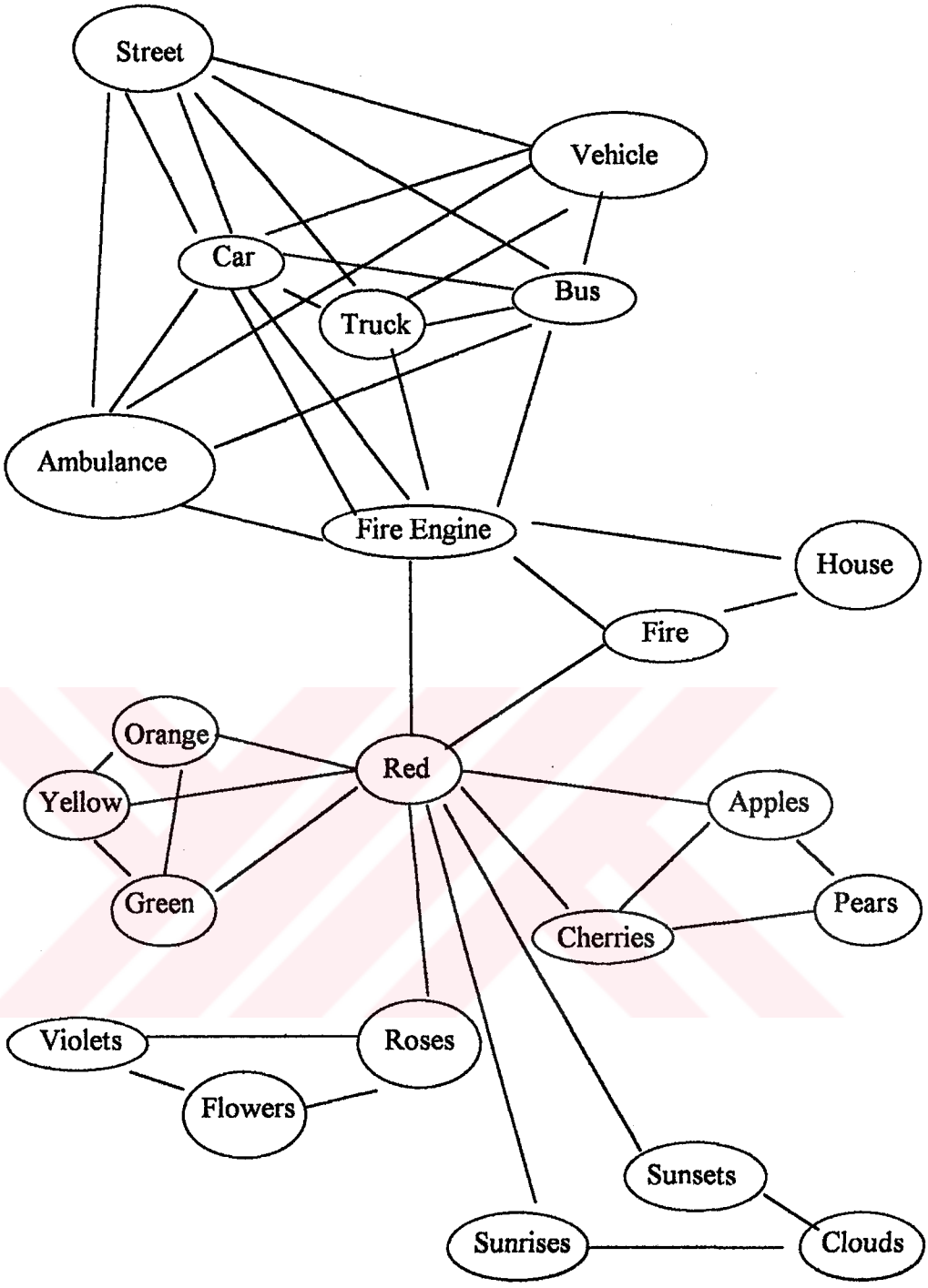

Figure 3-3. *A spreading activation model of semantic knowledge* (Collins and Loftus, 1975).

As a result of this activation, we become aware of the relations between concepts and come to a decision. This is explained on the hierarchical model by

pointing at the reason of the order designed according to the importance of concepts. The spreading activation model, on the other hand, proposes that together with word knowledge, world knowledge is involved in relations between concepts and this should be taken into account so as to come to a decision. For example, in judging the statement of "An Ostrich is a bird", we search for the closeness of the concept *bird* and *ostrich* in the network. As they share similar characteristics, these concepts are close to each other. However, when they are judged from a point of categorical information, it is understood that one of them is in the category of birds which classifies whether they can fly or not.

Consequently, it is obvious that world knowledge is required to come to a conclusion of finding the place of a concept in the network. This model provides a more comprehensive view of concept mapping as opposed to other approaches. However, another model which is in relation to the spreading activation model model, the propositional model has taken place in terms of studies related to information organisation in the long term memory.

3.2.4 Propositional Network Model

The information organisation in the memory has been appealing to many psycholinguists. Therefore, different research has been carried out and different models have been proposed. Propositional network model is the latest one, and it is proposed and supported by different researchers such as Norman and Rumelhart (1975), Gagne (1985), and Anderson (1985).

In fact, this model is very close to spreading activation model. Yet, the terms used in this model seem to be more logical from the point of a concrete explanation. According to this model, information is stored in a system in which propositions are interrelated. The following sentence is likely to illustrate what this model states:

My father, who works at a university, complains about lazy students.

This sentence contains four propositions within it:

a. I have a father.

b. My father works at a university.

c. He complains about the students.

d. The students are lazy.

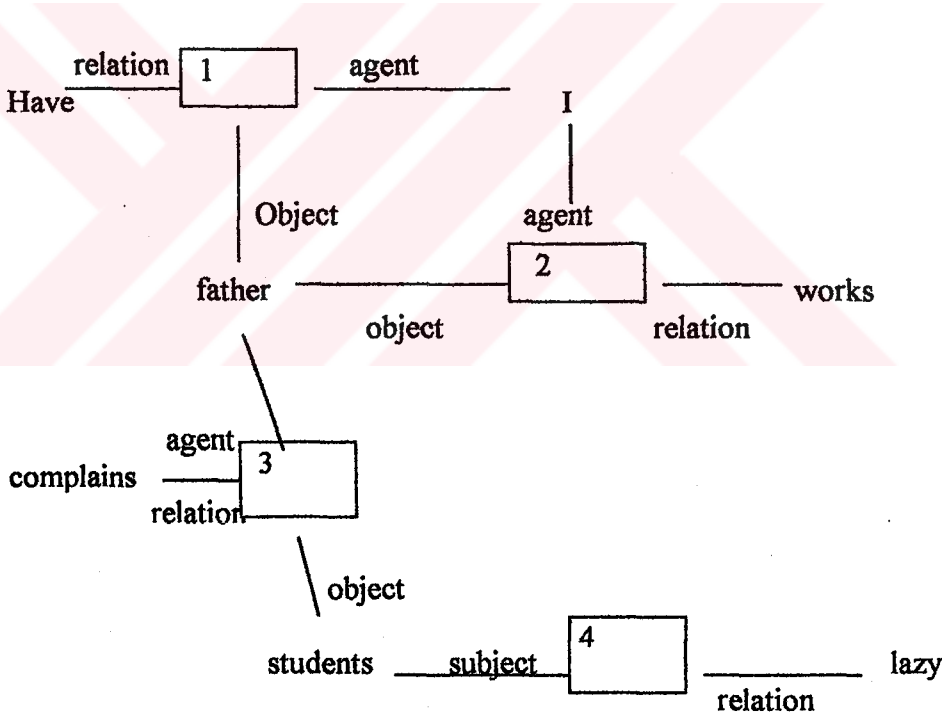

Figure 3-4 Propositional Network Model. Adapted from Omrod (1990, p. 241).

Anderson (1985) symbolises this relation between propositions. In Figure 4 shown above, there are four diagrams, and these share a few objects or arguments.

For example, *father, students, and I* can be seen in more than one proposition because they share the same characteristics. The common characteristics can lead to a close relation between propositions in the network. As opposed to the hierarchical network model, which is built upon the superordinate and subordinate relations, this model suggests that there are more relations between concepts such as *possession*, *location*, *opposition* and so on.

Gagne (1985) maintains that the propositional network model includes both propositions which are meaningful parts of sentences and the other memory codes, such as imagery and productions. For example, in the sentence above, one might have an image of a university lecturer and his relations with students. In addition, one might puts himself/herself into the place of the students if s/he is a student and judges if s/he is a good or bad student himself/herself.

All models proposed by different researchers account for how knowledge is organised in the mind and how it is used. However, in this study, spreading activation and propositional models were considered in the construction of semantic mapping students studied during the treatment. The former points at the relation between concepts and world knowledge, and the latter gives more logical explanation of the relation between propositions.

It is obvious that learning cognitively is related to how we store knowledge and how we can use this stored knowledge. The above-mentioned models have accounted for how humans store information in the long-term memory. We should also consider what happens in the storage and recall of information in learning. Therefore, memory working, long-term in particular, will be considered study in the following sections.

3.2.3 Cognitive Psychology and Memory Working

In the very last part of the nineteenth century, James (1890) suggested that there were three components of human memory. These were the sensory image, primary memory and secondary memory. However, as it was the heyday of behaviourism at that time, what James said about human brain did not receive much attention. Many decades later the 1960s was the time for cognitive approach towards learning to become popular. Therefore, James' theory on memory was renewed and reproposed by Atkinson and Shiffren (1977).

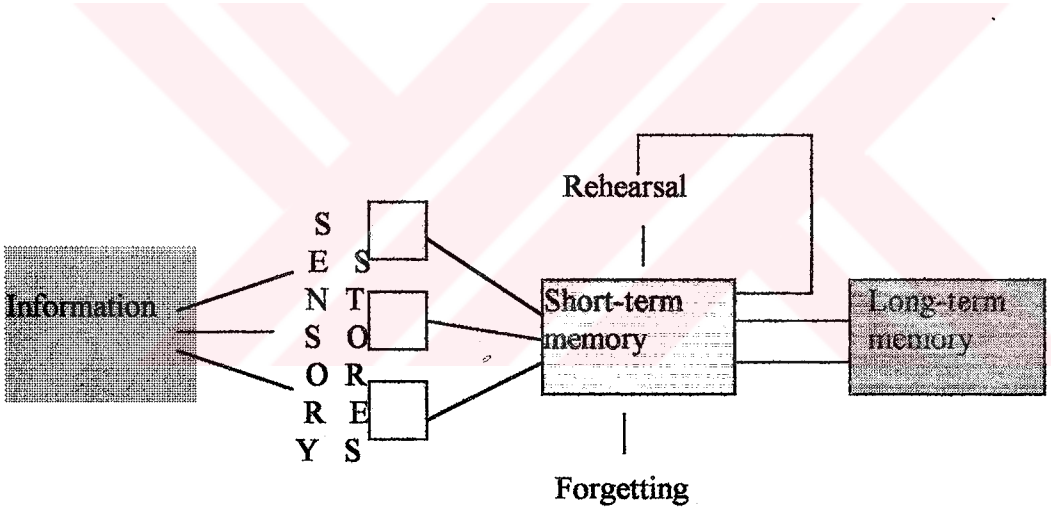

Figure 3-5 *Short-term and Long-Term Memory.* (Benyard and Hayes 1994, p. 304)

This model of memory consists of three parts; sensory register (SR), short-term memory (STM), and long term memory (LTM). According to this model, whatever we are capable of sensing is likely to stay in our sensory register for a short while before it goes through a cognitive process. After sensing the information we make a selection of that information according to the importance or relatedness and

make a selection of that information according to the importance or relatedness and send it to other stages of memory. As the information does not go through a process at this stage, whatever we sense is stored in the same form; a visual input is stored in a visual form, and so on. Sensory register has an unlimited capacity, perhaps because the sensed information can only stay there for a short while.

Human beings use their senses to acquire new ideas, and information. These recognised senses are handled first by the learner's "working memory." According to Gagne (1985), working memory is the "place where conscious mental work is done. For example, if you are solving the problem 26 x 32 mentally, you would hold the intermediate products 52 and 78 in working memory and add them together there" (p. 10).

However, Cermak and Craik (1979), renamed short term memory "as level of processing"; and Daneman and Carpenter (1980) as "working memory." In addition, some other psychologists such as Anderson (1984) used the term "memory activation." These processes emphasise that the input information would go through an active process; that is cognitive process.

According to the level of processing theory, the input information is processed at any one of different levels of complexity. This processing has a limited capacity. Therefore, it can hold the information that we are familiar with at any given time. If the information goes through all the levels including interpretation, comprehension and making relation with the existing knowledge, it is remembered for any length of time. Otherwise, it may not be remembered only if recalled to some extent.

Working memory model proposed by Daneman and Carpenter (1980) is very similar to the short-term memory model. Short-term memory emphasises the storage

of information but working memory focuses on the processing together with storage. For example, holding the numbers 356892 in the working memory could be possible; however, holding and processing these numbers with others could be impossible. Therefore, working memory firmly suggests that the function should be taken into consideration along with storage of information.

Anderson (1984) proposes the memory activation model which claims that short and long-term memories should not be considered individually. According to how they store and process information, they reflect different activation. Short-term memory deals with the information that is currently active. This active information includes both the new and existing one. This activation depends on the attention of the individuals. In other words, when they shift their attention, the activated one becomes passive and the new one is activated.

In addition, the acquired information in working memory may soon be forgotten unless it is deeply transferred into long-term memory. Long-term memory works just like a computer. Information is coded before it can be stored. The stored information can not be retrieved -- even if it can be stored for a lifetime -- unless the appropriate code is given. Besides, information or ideas stored in long-term memory must also be retrieved to working memory before it can be used. That is, long-term memory stores the information which is related to many thing and we are not aware of the information stored in the long-term memory until it is activated and used. This activation in the long-term memory should be dealt in detail since it is in close relation with schema theory in reading comprehension, and the training programme of this study is based on this activation.

3.2.4 Cognitive Learning and Long-term Memory

Cognitive learning can occur if individuals are involved in a learning activity in which they use all their mental functions. In other words, it depends on using the information previously acquired and stored in the long-term memory. Jones (1986) states that "learning cognitively enables students to process whatever they are learning meaningfully and to become independent learners rather than dependent ones" (p. 7). By learning cognitively, students can become active processors in learning, which helps them construct meaning from whatever they are reading, and solve problems they may encounter. In order to gain this learning strategy, students mainly need to make associations between the new and the previous information stored in the long-term memory.

According to Gagne and White (1978), long-term memory stores four types of information: "verbal knowledge, intellectual skills, images and episodes." Verbal knowledge is the declarative and propositional knowledge (as they are defined above; declarative is the knowledge about something that is in existence; propositional knowledge establishes the relationship among sets of information). Intellectual skill is the procedural knowledge for performing intellectual tasks such as the skill to write a sentence. Images and episodes are the ones which the learner can actively participate in. These are the display of certain information and memories of certain events.

From the point of cognitive psychology, the function of long term-memory is important because of three points: The first one is that it is necessary to know that knowledge is organised and structured around basic propositions and unifying ideas.

(This organisation can be seen in Figures 3-1, 3-2, 3-3, and 3-4). Second, students' abilities to learn new ideas depend on their prior knowledge and existing cognitive structures.

The last one, according to Arends (1989), is related also to teachers. They should help students acquire the knowledge such as thoughtful and skilful organisation of learning materials. This could be achieved by providing students with "advance organisers that will help anchor and integrate new learning, and present them cues for drawing information from their long-term memory to their working memories" (p. 266).

In this chapter, we clarified the notion and components of cognitivist approach to learning. In particular, we emphasised the reasons why cognitive learning replaced behaviourist learning, the role of knowledge structure, the models of how we store the knowledge and the role of the long-term memory and short-term memory in the storage and retrieval of information. How can readers implement cognitive learning in what they are reading? The key idea lies in how they bring their background knowledge and texts together within the context of meaningful learning, in other words, cognitive learning. In the next chapter, you will explore the effects of background knowledge in reading comprehension and the reading comprehension process. The chapter also focuses on cognitive learning strategies and an instructional framework in order to promote cognitive learning in reading comprehension.

CHAPTER 4

COGNITIVE THEORY OF LEARNING

AND READING COMPREHENSION

4. 1 Schemata Theory

The term schema, from the point of its role in knowledge storage and retrieval of the acquired knowledge, has been viewed as vital in cognitive learning and comprehension. Bartlett (1932), one of the earliest cognitive psychologists who studied the term schema, points out that schema is related to how people adjust information so as to recall it later according to their own ideas and assumptions. How we go about using information stored in order to comprehend what we read has long been the consideration of many cognitive psychologists. The first users of the term schema to explain the role of it in comprehension are Kant, (1787), Wulf, (1922), Bartlett (1932), and Piaget (1926).

Through the years a great deal of research has been carried out so as to find out the knowledge structure in mind. They have led the scientists to propose the theory called schema (plural schemata) theory (Minsky, 1975; Anderson, 1977; Bower, Black, and Turner, 1979 and Rumelhart, 1980). The schema theory is based on the idea that the acquired knowledge is stored in a system, and it is recalled by making associations of the new and the stored one. Rumelhart (1980) defines schema as:

> A schema, then, is data structure for representing the generic concepts stored in memory. There are schemata representing our knowledge about all concepts: those underlying objects, situations, events, sequences of events, actions and sequences of actions. A schema contains, as parts of its specification, the network of interrelations that is believed to hold among the constituents of concepts in question. A schema theory embodies a prototype theory of meaning. That is, in as much as a schema underlying a concept stored in memory corresponds to the meaning of that concept, meanings are encoded in terms of the typical or normal situations or events that instantiated that concept (p. 34).

Goetz et al. (1992, p. 394) suggest that "a schema is a knowledge structure that represents our understanding of an object or event as a set of relationships among concepts." According to the same researchers, these concepts may show the characteristics of an object or event or the parts of the object or event. "Roses are flowers" or "driving fast is risky" show the characteristics of an object and event. Additionally, the example of bread has flour, salt, yeast, and so on or a wedding ceremony involves a bride, groom, guests, and so on may show the parts of an object or an event.

In addition, more detailed information has been obtained about the concept and it has been defined as "one's own world knowledge." The term schemata has been considered as the concepts which are framed and which help learner use the previous knowledge in order to modify the new information so that it could find a place to be stored (Phye and Andre, 1986). Moreover, Benyard and Hayes (1994), revised Rumelhart' s ideas on the term schema. They suggest that there are four ways that should be regarded in studying the term schema.

a. schemas can be seen as plays, containing information about characters, setting, and scripts for appropriate sequences of action;

b. schemas can be seen as theories, which allow us to produce a meaningful explanation for what is happening around us;

c. schemas can be seen as computer systems, allowing us to process information that we are receiving from the world;

d. schemas can be seen as decoders, breaking down and analysing the components of everyday living in the same way as a grammatical parser will break down a sentence into its grammatical parts and its meanings (p. 189).

It is obvious that people are likely to have their own schemata. According to Markus (1977) organisations of experiences might differentiate from one person to another but once it is certain that this organisation, formed in terms of self-schemata, helps individuals to think over their behaviour. In addition, Benyard and Hayes (1994, p. 189) state that "a schema is a cognitive structure that represents factual information, organises how we deal with it and directs courses of action with respect to it." Therefore, personal schemata are related to what we theorise and expect about what other people are like and how they behave in society in which they live. For example; different people might have different schema of the concept *teacher*. According to this schema they hypothesise certain expectations about what a teacher looks like and how s/he behaves. This instance is one of the facts about what happens in individual's existing schemata.

When individuals receive new information, they often refer to their existing knowledge (schema) and try to find out what they already know. By doing so, they can understand the new information and learn it. As it has been stated previously, this kind of learning is stored permanently, and therefore it is called meaningful learning. By making the link between new

and existing knowledge, individuals tend to make elaborations. That is, they use the given and new information in order to make a value judgement on what they are studying.

4.2 Schemata Theory and Reading Comprehension

Goodman (1967, 1971) defines reading as a receptive skill which requires psycholinguistic process and adds that comprehension is a fascinating process which requires some other factors along with linguistic knowledge. In psycholinguistic approach to reading comprehension, there is a close relation between writers and their readers in a way that writers encode their ideas as language and readers decode that language to thought which requires previous knowledge as well as language knowledge.

Like Goodman, some other researchers have been involved with the role of previous knowledge (schema) in reading comprehension. One of the pioneering researchers, Rumelhart (1980), studying the role of schema in comprehension points out that:

> The fundamental processes of comprehension are taken to be analogous to hypothesis testing, evaluation of goodness to fit, and parameter estimation. Thus, a reader of a text is presumably constantly evaluating hypothesis about the most plausible interpretation of the text. Readers are said to have understood the text when they are able to find a configuration of hypotheses (schemata) that offers a coherent account of the various aspects of the text. To the degree to which a particular reader fails to find such a configuration, the text will appear disjointed and incomprehensible (p. 38).

Smith (1982) maintains that comprehension of any kind (listening, reading or likewise) is related to what we know about the subject. The researcher adds that "reading or any kind of comprehension means relating to what we know or not know, or relating the new information to what we already know which is called cognitive structure" (p. 84). With the cognitive structure, Smith refers to the organised body of knowledge which is related to world view of every individual (personal schema).

In addition, Irwin (1991, p. 7) defines comprehension as "an active process to which readers bring their own attitudes, interests, expectations, skills and prior knowledge." In other words, the message in the text is encoded and is not explicit. It is the duty of the reader to decode and comprehend it by actively getting involved and interpreting the ideas on the text. In order to do so, readers must bring their entire life experience to what they read.

On the other hand, text characteristics can influence what readers try to comprehend. Johnston (1981) points out the importance of word familiarity, sentence length, additionally the passage coherence, and the organisation in comprehension. In other words, Johnston emphasises that both text structure and readers' background knowledge are involved in comprehension of a text; and readers take active role in making inferences about what they read. Thus, Johnston suggests that "reading comprehension is viewed as the process of using one's own prior knowledge and the writer's cues to infer the author's intended meaning" (p. 16).

The reading process, according to Richaudeau (1985) involves eleven steps in which previous knowledge plays a vital role. The following diagram shows that there are different factors affecting what we read. However, the previously acquired knowledge is one of the key factors that plays a great role in comprehension. The diagram summarises the steps and components of a reading process and indicates that each individual must involve his/her previous knowledge for a full comprehension.

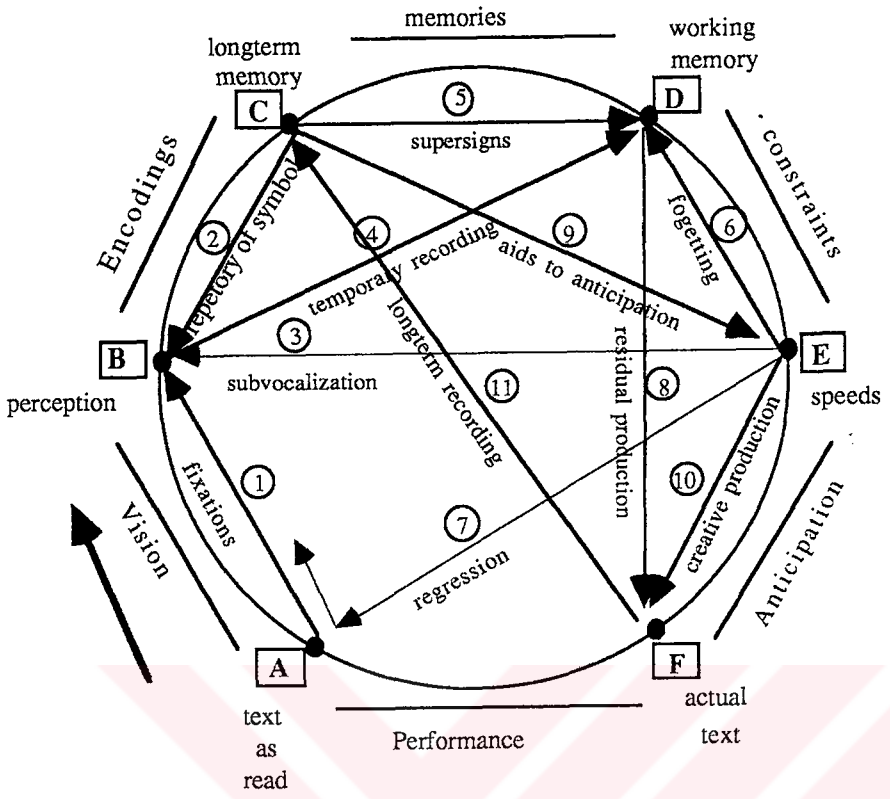

Diagram 4-1 The reading comprehension process. Richaudeau (1985, p. 510)

The diagram shows that there are six components of reading in general: memories, constraints, anticipation, performance, vision, and encoding. The components linked to each other according to the different factors that are involved in reading. However, it is obvious that there is a close relation between the knowledge stored in long-term memory and reading comprehension.

Comprehension can differ from one person to another. Two different people can comprehend similarly only if they read the same text with very similar interests and background. Otherwise, they may comprehend the same text quite differently. An ELT graduate student reading an article in a newspaper is likely to be different from that of a man on a business trip. Additionally Mosenthal (1984) suggests that there is a close relationship

7) states that "what is comprehended is influenced by the individual reader's characteristics, the text's characteristics, and the situation-related factors: the situation organiser, the task, and the total setting". Irwin also points out that, in teaching/learning situations (usually classroom setting), teachers act as situation organisers. They also use the tasks related to instructions, questions, activities and so on.

While reading, readers use their schemata in order to construct meaning. Without bringing their previous experiences, conceptual understandings, attitudes, values, skills and strategies readers could fail in comprehending what they are reading (Adams and Collins 1985 and Vacca and Vacca, 1993). The following text could show and summarise the relationship between schemata and reading comprehension:

> In the mornings, Obasan always took my brother and me for walks, but in the evenings she liked to go for drives. I always went with her, because my mother made me, "Just in case something happens," she said. My brothers were too young to go and my mother and father were always too tired. When I wanted to go somewhere at night, my parents asked my grandmother to accompany me - just in case. So my life intertwined with my grandmother's (Mayfield, 1994, pp. 149-150).

Different readers are likely to have different interpretations of this text. The reason why readers would have difficulty making sense of the text or different readers would interpret it differently, lie on the schemata activation. By activating their schemata, readers bring their previous knowledge to build up the meaning in the text. Therefore, schema plays a role in comprehending a text. First, having relevant schema enables readers to construct their learning in a framework by searching and selecting information which is in accordance with their purpose (Carrell, 1987). In this process, they are "more likely to make inferences about the

text" (Vacca and Vacca 1993, p. 33). Inferences could occur when they predict the setting of the text and events in the text. The second role of schema, according to Vacca and Vacca (1993), is that it provides opportunity for the readers to organise what information they get.

The integration of old and new information forms meaningful learning, and this facilitates retention and recalling of the text. The third influence of schema on reading comprehension is the elaboration process. In reading, when readers elaborate on what read, they get involved in the cognitive process which requires higher order thinking skills (application, analysis, synthesis, and evaluation).

Additionally, it is obvious that reading comprehension can change according to the background knowledge readers have. If two similar readers read the same text, they will not comprehend the text exactly alike. This is because of the fact that individual readers build up their own unique meaning that has uses for them. This process is called the "transactional model of comprehension" in that readers transact the text and context (Irwin 1991, p. 8). By doing so, they create a new text in their mind by themselves. That is, according to transactional comprehension, reading should help readers create a message that they could use for comprehension. Regarding transactional comprehension, Irwin maintains that readers use their prior experience and the writer's cues in the text in order to construct meaningful chunks that will enable them to comprehend what they are reading.

Using prior knowledge and clues in the text in order to comprehend what is being read is a common feature in the previous definitions of comprehension. However, how to use such knowledge in creating meanings requires appropriate reading strategies. Hence, according to Irwin, using strategies should be included in definition of comprehension which she defines as

comprehension can be seen as the process of using ones own prior experiences and the writer's cues to construct a set of meanings that are useful to the individual reader reading in a specific context. This process can involve understanding and selectively recalling ideas in individual sentences (microproceses), inferring relationship between clauses and sentences (integrative processes), organising ideas around summarising ideas macroprocesses, and making inferences not necessarily intended by author (elaborative processes). These processes work together (interactive hypothesis) and can be controlled and adjusted by the reader as required by the reader's goals (metacognitive processes) and the total situation in which comprehension is occurring (situational context). When the reader consciously selects a process for a specific purpose, that process can be called a reading strategy (p. 9).

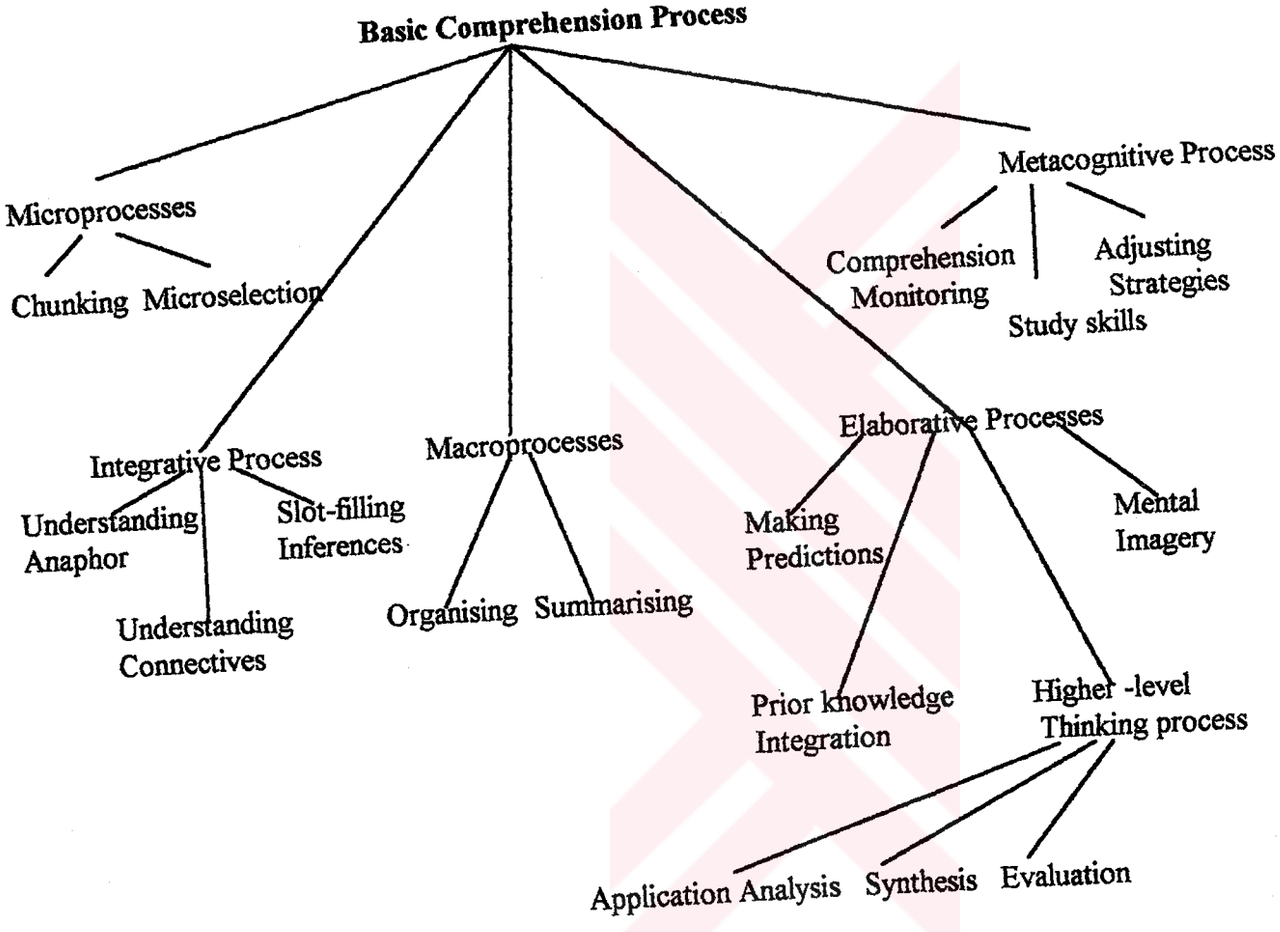

Figure 4-1. *The basic comprehension process.* (Irwin, 1991, p. 6).

4.3 Components of Reading Comprehension Process

Traditionally reading comprehension has been taught in a way where students are given a text and asked questions about it. These questions have usually been in a form that requires the learner to make comparisons, find main ideas, and factual information in the text, and so on. In this approach, reading comprehension is considered a passive process which requires readers to find the right answer. In addition, these kinds of approaches ignore the fact that different people approach situations differently, and therefore reading strategies should be based on purposes and situations.

Considering the failure of traditional approaches towards comprehension, many reading educators and cognitive psychologists have tried to explain how comprehension occurs. They have come to an agreement that instead of isolated sub-skills presented in traditional approaches, there are at least five types of processes which are linked to each other and occur simultaneously during comprehension (Rumelhart, 1976 and, Just and Carpenter, 1980). These are microprocesses, integrative processes, macroprocesses, elaborative processes and metacognitive processes (Irwin, 1991, pp. 2-3). Each process will be dealt with below.

4.3.1 Microprocesses

The term microprocesses refers to, analysing the meaningful units of the smallest parts of a sentence. Readers must be able to put the words together into meaningful syntactic units in order to comprehend what they are reading. In other

words, even if they can understand the vocabulary items individually, they need to go through two sub-processes in order to understand whole sentences and the vocabulary used. In the first sub-process, readers use their syntactic knowledge and previous experience in order to put individual vocabulary items into meaningful phrases or sentences. This is called "chunking" (Irwin (1991, p. 3).

In the second subprocess, which is likely, to differ from one person to another is that individuals can select some parts in sentences, which help them remember the whole part. Baumann (1984) suggests that this process resembles finding the main idea in the traditional process. In both processes, learners focus on the most important ideas.

For example:

"The demonstrator marched furiously through the streets."

Some readers might choose the *demonstrator* while others might focus on *marched furiously* to remember.

A great deal of research, such as Meyer's (1977), Just and Carpenter's (1980), and Irwin's (1991), have revealed that readers are likely to focus on important ideas ignoring the unimportant ones. In order to do this, they usually use their ability to summarise and find out the author's organisation, that is the using microprocessing strategies.

4.3.2 Integrative Processes

Inferencing plays a great role in constructing meaning in a sentence or in a paragraph. Readers need the skill to inference in order to construct comprehension of a text. In addition, they need to understand the relation between sentences; how they fit together, what discourse markers are used etc. This understanding and inferring process between clause and sentences is an integrative process.

According to Irwin (1991, p. 39) "understanding anaphora, understanding linking words and making slot-filling inferences are involved in the integrative process."

4.3.2.1 Anaphora

There are anaphoric markers in most of the clauses or sentences, and these are the words or phrases used to replace the previously used one(s).

1. Eren went to school early today.

2. He did not want to miss the ceremony held in the mornings.

The word Eren in sentence 1 is replaced by its pronoun "he", in sentence 2. Accordingly, in another sentence, a substitution word can be used:

3. Eren went to the class. He met his friends (pronoun).

4. He studied mathematics. The counting process did not appeal to him. (substitution)

Anaphoric relations can be observed in all types of words. Substitution words or pronouns can be used to replace nouns, verbs and clauses. Anaphoric relations are usually easy to understand if the related clauses or sentences are close to each other.

However, Barnitz (1986) states that there are some factors that make anaphoric relation difficult to understand. These are related to the conceptual difficulty of material, ambiguity in context, the background knowledge of learners and the like. The following sentence is an example of these difficulties since antecedent and replacement (These things) are in sentences that are separated by other clauses.

There are many different cultures in the world, and in each of them the children must learn a great many things that are expected of everyone who participates effectively in that culture. These things are taken for granted by everyone who shares the culture.

4.3.2.2 Discourse Markers (Linking words)

These are the words or phrases that connect clauses and sentences together. With the help of these words, readers could easily understand the relation between sentences: cause-effect, opposition, concession, condition and so on.

1. We went out although it was raining heavily.

2. I took an aspirin. I had a terrible headache.

It is obvious that the first sentence gives the message clearly whereas the sentence 2 does not. It is because of the fact that in sentence 1 there is an explicit connective, however, in 2, there is an implicit one. Irwin and Pulver (1984) point out that implicitly stated connectives are much more difficult to understand than explicitly stated ones.

4.3.2.3 Slot-Filling Inferences

According to Trabasso (1981), with the help of that processing, learners can fill in what is missing perhaps an important part in a given situation. Accordingly, Kintsch (1974) maintains that by finding logical answers to the following questions, readers can fill in the missing parts of a given text:

Agent: Who did it?

Object: To whom or what was it done?

Instrument: What was used to do?

Experiencer: Who experienced the feeling or thought?

Source: Where did it (or they) come from?

Goal: What was the result or goal?

(Irwin 1991, p. 48).

As in all inferencing processes, this kind of process is related to the learners' previous knowledge. The more information they store in their long-term memory in an organised body, the more inference they are likely to make.

Mary heard the ice cream truck coming down the street. She remembered her birthday money and rushed into the house. (Rumelhart 1984, p. 1).

In order to infer the meaning of this sentence, readers need to have previous knowledge related to "ice-cream truck" and "birthday money", and the relation between children and ice cream. Obviously, most readers could infer that Mary is a little girl who hears the ice cream vendor coming and runs home to get the money she has received. However, some readers are likely to have different schemata, according

to their schemata, they could infer that the ice cream man is a bad man frightening most children. Therefore, Mary runs to her home as soon as she has heard his coming.

4.3.3 Macroprocesses

As is stated previously, in the storage and retrieval of information, organisation is vital. The informations, which are activated more, are the ones remembered much more easily; however, some others remain passive. After reading a text, readers cannot remember every single idea in that text. This may be due to the fact that the working memory or short-term memory has a limited capacity. Therefore, in cognitive learning strategies related to reading, readers refer to macroprocessing. This term is defined by Irwin (1991, p. 55) "as the ongoing process of creating or selecting an organised set of summary ideas, presumably for the purpose of organising recall and reducing the number of ideas to be remembered." That is, this process helps readers find the related general ideas stored previously, and link the details with them in order to facilitate recalling thereby comprehension. Through macroprocessing, therefore, readers can organise and summarise their ideas more accurately.

4.3.3.1 Organisations in Stories

This is one of the ways that help readers become familiar with the structure of most of the stories. Although there is a disagreement among researchers about the

story structure, most of them agree that every story has a similar structure. This structure, according to Irwin (1991) consists six steps: "setting, initiating events, internal response, attempt, consequence and reaction" (p. 57).

4.3.3.2 Organisation in Expository Texts

There are a few categorisation systems related to classification of organisational patterns used in expository texts (Armbruster and Anderson, 1981; Calfee and Curly, 1984). However, none of these systems can give a complete explanation for the process. Yet, they are useful in that they make readers aware of typical patterns.

Armbrustor and Anderson (1981) propose a classification system of content area texts. According to this model, content area texts are grounded on one of the following organisational patterns: description, temporal sequence (process description), explanation (cause effect), comparison-contrast, definition-examples (classification), and problem solving.

Apart from the classification system, the main idea could be used to characterise the organisation of expository texts. Fishman (1978) points out that main ideas are likely to facilitate recollection of the information. In addition, the organisation of ideas in accordance with the main idea will help learners retrieve the information much more easier than those who do not accomplish this kind of organisation.

4.3.4 Elaboration

Individuals use their existing knowledge in order to obtain meaningful learning. In other words, whatever they receive, they try to relate it to what they have stored before. However, there are some cases where the information is not complete and depends on the receiver to understand it. Therefore, learners should go beyond the information given by linking it to the existing information. While establishing this link, individuals definitely need to use their schemata in order to make interpretations, inferences, and assumptions for the new information. Sometimes this leads individuals to learn more things along with the required ones. This process is the outcome of making elaborations.

Ormrod (1990, p. 254) defines elaboration as "a process of learning more than the information actually presented." In other words, elaboration is to add the new information to the existing one in order to make the material more personally meaningful. In addition, Reder (1982), and Reder and Ross (1983) have carried out studies on the process in the long-term memory and have come to similar conclusions for elaboration. According to these researchers, while elaborating on the new information, individuals tend to go beyond it, therefore, sometimes have difficulty in distinguishing what the actual information is itself. This lies on the fact that different people have different schemata (see Section 4.1). For that reason, Weinstein et al. (1988/1989, pp. 17-18) point out that "elaboration involves using what we already know and helps us make sense of what we are trying to learn. What we already know includes our previous knowledge, our experiences, our attitudes, our beliefs, and our values."

According to Irwin (1991), there is not a single reason why readers elaborate; rather, there are numerous reasons. However, one certain thing is that while elaborating, readers are more likely to enjoy what they are doing. In the elaboration process, making predictions and using the schemata are two important factors. Using predictions by relating the information to the previous knowledge would enable readers to form mental images and respond actively and with higher order level of thinking.

In storage and retrieval of information, elaboration plays a great role in long-term memory, and there are few factors involved in the elaboration process. First, individuals must have a great many schemata so as to make elaborations. In other words, the more information one has, the more alternatives one might have to construct meaningful interpretation of the new information. As it is defined by Anderson (1985), one's schema is in relation with the information on a certain topic, and is stored in a system (see Sections 3.2 and 4.1).

According to Bower et al. (1979), people build up schemata not only related to objects but also related to events. A lecture at a university could be an example of event schema:

1. Students wait for the lecturer
2. The lecturer steps into the class
3. Students stop talking
4. The lecturer greets the class
5. He starts his lecture
6. Students take notes
7. They ask questions for clarifying

8. The lecturer finishes his lecture

9. He asks if there are any more questions

10. He answers the questions and leaves the class.

The organised information helps individuals focus on the most important and ignore the less important. It is likely that human memory can cope with more information at one time. However, this is not always possible for human memory to handle such bulk of information. In such a case, the organisation of information (schema) enables individuals to understand what is more important and what is less important.

The second important factor related to schema and elaboration is that elaboration is likely to change from one person to another due to their schemata. Accordingly, making different elaborations can mean learning the same thing differently. Anderson et al. (1977), by giving the same text to different students, state that individuals' interpretation depends on their background knowledge. Those who share similar backgrounds knowledge with what they experience are likely to elaborate better than those who are not familiar with the situation (see Section 4.1).

It is a fact that elaboration can sometimes cause misconception. However, Anderson (1985) has maintained that most elaboration is carried with the help of correct assumption and interpretation of an event or concept. In addition, elaborated information is learned and stored more easily than non-elaborated information.

On the other hand, elaboration helps the storage and retrieval of information in the long-term memory. As it is mentioned above, elaborated information is handled in accordance with the existing knowledge. Therefore, it is understood and stored easily in the long-term memory. In addition, elaboration can provide more information than

the one what necessary at a particular moment. The information, which may seem useless at the moment in question, can be useful later in another. By using this information, individuals can have the opportunity to make assumptions about what the new information is likely to be about.

4.3.5 Metacognitive Strategies

Individuals may tend to find out different ways of learning while accomplishing a task. By doing so, they may modify their approach to the learning tasks they set before. Therefore, they pay more attention to the point they are learning. In addition, they may also be focusing on understanding, organising, and elaborating the learning materials they are using.

Baker and Brown (1980) consider readers' approach to reading comprehension and divide metacognitive processes into two parts: "reading for meaning and reading for remembering" (p. 5). Most readers use reading for meaning by monitoring their own comprehension so as to succeed in whatever they are reading. Baker and Brown (1980) also claim that those who have obtained good strategies are likely to realise the reasons for their failure in understanding, and decide what to do for understanding. They usually evaluate their ongoing comprehension process while reading, and if there is any failure in the process, they take some remedial action to remove it.

On the other hand, reading for remembering is related to selecting, evaluating, and adjusting certain strategies to remember the text, in use. Elaboration and

macroprocesses are vital in recalling. By mapping the ideas, the readers could broaden their horizons in remembering the texts they have just read. In addition, by using the previous knowledge and imagining and visualising the situations again, the readers would be more likely to recall the ideas.

Brown (1982) states that metacognition is the ability related to learners' awareness of their cognitive resources and by which they manage to use particular cognitive strategies. Many researchers have pointed out the relation between metacognitive awareness and reading comprehension. For instance, Brown and Palincsar (1982) state that metacognitive awareness has a vital role in using the cognitive strategy in reading comprehension. The researchers suggest that there is a close relationship between metacognitive awareness and reading comprehension.

In addition, Duel (1986) points out that metacognition is related to what learners do in approaching learning tasks. In other words, learners are supposed to be using metacognitive processes if they are aware of what they should learn and what cognitive processes they need to use for learning new information, and if they try to use this knowledge in order to broaden what they have acquired before.

According to Ormrod (1990, p. 292), the following skills are involved in metacognition:

1. Being aware of one's own learning and memory capability and of what learning tasks can realistically be accomplished.
2. Knowing which learning strategies are effective and which are not,
3. Planning an approach to a learning task that is likely to be successful,
4. Using effective learning strategies,

5. Monitoring one's present knowledge state; knowing when information has been successfully learned and when it has not,

6. Knowing effective strategies for retrieval of previously stored information.

Gilroy and Moore (1988) state that if learners are trained systematically to gain the metacognitive skills, they are likely to improve their reading comprehension. However, if learners are trained with cognitive skills they may develop the metacognitive skills they need in reading comprehension. O'Malley and Chamot, (1990) and Irwin (1991) suggest that metacognitive strategies are vital in reading comprehension and define, metacognitive process as "selecting, evaluating, and regulating the strategies" in order to get a full comprehension (p.110).

4.4 Strategies Used for Elaboration

The role of elaboration in reading comprehension is vital for using previous knowledge. Therefore, it should be fostered for any reading courses in order to provide a full comprehension. There are some activities that help students elaborate on what they are reading. These are constructing semantic or concept maps, linking the known to unknown, selecting the most important information and arranging questions. These are usually implemented in reading comprehension classes in order to enable students to elaborate on the text they are reading. In this study, these kinds of activities were mainly used in order to activate students' background knowledge.

4.4.1 Concept mapping

In order to have students elaborate, concept mapping can be used so as to show the relation between concepts, which enables students to think. By doing so, students can have the chance to visualise organisational ideas. In addition, they are able to trigger their previous knowledge stored according to their relation.

The concept mapping could be defined as a "spatial display that includes the important people, places, or events that are central to a particular topic or/and field of study and indicates the relationship among those people, places, or events" (Goetz et al. 1992, p. 356). With the help of concept mapping students can be shown where they focus their knowledge. Piaget (1970) and Ausubel (1977) point out that learning is more meaningful if it is well organised and progress logically from simple to more complex concepts or from super-ordinate to sub-ordinate ideas.

In addition, creating a concept map is likely to assist the teachers in organising and framing the content of the course they are teaching. Concept maps are also very helpful in visualising the ideas that fit together for the students. This term is sometimes called differently, such as graphic organiser, semantic mapping, cognitive mapping, semantic organiser and network. Sinetra, Stahl-Gemaka, and Morgan (1986, pp. 4-5) suggest that this mapping:

> is a graphic arrangement showing how the major ideas are related in written work. The map consist of nodes which can be drawn as circles, rectangles, or squares containing key words or phrases, and connecting links in the form of

lines or arrows grown between the nodes. ... A major classroom value of such maps lies in the way that they holistically conceptualise a content.

Anderson and Armbrustor (1984b), Heimlich and Pittelman (1986), Johnson (1989), Clarke (1991), and some others point out the role of mapping in relationship with text structures and suggest some ways, which can help students, understand text structure during or after reading. They also show how to train students to form maps to represent the information organisation. Johnson (1989) identifies five types of visual displaying:

1. Stars (to list facts about a concept -- facts are written on lines radiating out from the central concept).
2. Charts (to list or compare attributes to concepts -- in tabular form).
3. Chains (to show a sequence of steps or events -- connected with arrows).
4. Trees (to exhibit hierarchies of concepts -- e.g., a classification in the form of a branching tree).
5. Sketches (pictures, to visualise a concept).

(cited in Shih 1992, p: 308)

According to Hayes and Peters (1989), by keeping in mind the main idea of the text under study, students are likely to guide themselves to create the related ideas. This sorting procedure consists of problem solving and compare and contrast or causal (if-then) organisations. The next phase in organising the concept mapping is the evaluation of the interrelatedness of the sets of concepts that are developed

previously. As Lapp and Flood (1989) point it out, organisation of the ideas graphically is a visualisation of the related ideas and graphic visualisation is more important than just having these ideas. Therefore, the organised concepts are drawn on the board in order to have the students see the relationship of the concepts. Doing so would help them enhance their higher order thinking just before what they were going to read. By studying on creating concept maps, the learner could gain ways of tackling problems they are likely to encounter in reading comprehension and in other subjects as well.

Mapping the information before reading with the help of key words or titles and subtitles can activate students prior knowledge, focus their attention on relevant schemata and thereby motivate them to read the text (Heimlich and Pittelman, 1986). It has been proved that mapping the ideas facilitate the learning of some types of information (McWorther, 1988). In addition, Carrell, Pharish, and Liberto (1989) state that students who studied how to organise ideas with the help of semantic mapping in pre-reading and post-reading showed greater success in open-ended short answer comprehension questions than those who had not been trained with semantic mapping usage.

4.4.2 Linking the Known to Unknown

As pointed out by Ausubel (1977), activating knowledge that learners have is essential in their learning of new ones. In other words, students are likely to store new ideas only if they match the ones with the framework in their mind. If learners' cognitive frameworks are inadequate or inaccessible, the new information will not be

meaningful (meaningful learning as it is named by Ausubel 1977), and therefore, it may not be understood or recalled.

In reading comprehension, the most essential factor is according to Ausubel (1977) and other experts such as Anders, Bos and Fhilip (1984), what the readers already know. In other words, the more information they have the more they could understand. Therefore, forming new schemata is much more difficult than adding or relating to the existing schemata. The stored information schema on a particular subject is the skeleton of the knowledge in the brain. As the new information is learned about that subject, the skeleton is activated by new information and the skeleton grows.

In reading a new text on a new subject, the relevant previous knowledge should be activated in order to provide good comprehension. In fact, in pre-viewing of the text, a few schemata are activated so as to stimulate interest and get the learner to interact with the text. Then, in reading, learners are likely to expand their knowledge and integrate the new information to the related concepts and store them in their brain.

4.4.3 Selecting the Most Important Information

It is very common among students that they are not able to effectively distinguish the clues as what is important or what is interesting. Therefore, they spend too much time on what they are tackling with. On the other hand, as stated by Garner and Alexander (1989); and Hidi and Baird (1989), it is possible to save time and also tackle the problem just by using some clues in the texts. Doing so requires the

learners to put aside their personal interests and use their cognitive skills to identify and learn what is important.

Van Dijk (1979) points out that most texts include some textual clues such as graphic, syntactic, lexical, semantic, and schematic, and these could help readers, especially good readers, understand what they are reading. In the text, there were so many indicators such as the words or phrases, and even the sentences are italicised or boldfaced. Studying on these indicators could increase the amount of time and attention students give them as they make certain segments of text stand out from the rest. In addition, some other topographical and textual features that signal the importance of information are introduced so as to focus them on what is important.

In other words, italicised or bold-faced parts, word order in sentences and in paragraphs, or the usage of words e.g. *the most important*, and so on, the final statement of the ideas; *to sum up, lastly*, and the structure or organisation of the text; *cause- effect, descriptive, informative* and so on are the textual factors that would help readers comprehend the text. Englert and Mariage (1991) suggest that by using the above-mentioned clues, learners background knowledge be activated. These clues are also helpful in brainstorming so as to find the relevant information based upon what they know about the topic of the text they are reading.

Beside the physical features of the text, there are also linguistic indicators of importance in the texts named signalling by Meyer (1975). Words such as *critical, principal*, and *major* show the relative importance of content whereas phrases such as *two factors* or *three reasons* tell how many salient pieces of information follow. In addition, ordinals such as first, second, next, finally, and so on give the sequence of information. Considering these clues which are helpful in comprehending the text

they read, the students' attention could be drawn to these physical and linguistic clues by using and emphasising them.

4.4.4 Arranging Questions

Anderson (1980) that there is no other instructional tool more basic in teaching and learning than questioning states it. Questioning is likely to be the most beneficial and reliable aid to learners' comprehension whatever aim it is used for whether with the purpose of stimulating or evaluating learning (Craig et al. 1975). Therefore, in elaboration, questioning is essential; (a) in relation with linking the unknown to known called pre-questioning in the syllabus, (b) understanding learners' comprehension, and (c) improving learners' processing of asking questions.

Before going through how the questions were organised in the current study, the types of questions that could be used in the teaching/learning process, and thereby in reading comprehension will be discussed. According to the general purpose of the person who asks the question, there are two categories: rhetorical and direct questions.

4.4.4.1 *Rhetorical questions*

These questions are often asked for the purpose of literary or stylistic reasons. In Bloom's Taxonomy, these questions are similar to knowledge questions. In these questions, learners focus on a particular point in order to answer the question even if there is no expectation of getting a response.

4.4.4.2 *Direct questions*

These are different from the rhetorical questions in that learners are expected to formulate their answers. When compared to Bloom's Taxonomy, these questions could be in the higher order thinking level. According to Raphael and Pearson, (1985) in getting the answer to the questions, the information needed could be examined in three categories: text explicit, text implicit, and script implicit.

1. Text-explicit questions are those which could be answered easily by finding the related sentence in the text.
2. Text-implicit questions are far more difficult to answer because of the fact that they require information that must be integrated across sentences, paragraphs, or pages.
3. Script-implicit questions are based on information that the readers acquired before. These kinds of questions require learners to find the answers without referring to the information provided in the text.

4.4.5 Questioning Levels in Bloom's Taxonomy

Bloom's taxonomy has an outstanding place in teaching and learning. It is hierarchically organised in which learners must attain prerequisite knowledge at higher levels, and skills at lower levels. Sadker and Sadker (1977, p. 159) suggest that "Bloom's Taxonomy is probably the best known system for classifying educational

objectives as well as classroom questions." Additionally, Paul (1985, p. 1) states that Blooms' Taxonomy could be helpful in that "the categories of the taxonomy can be used as a framework for viewing the educational process and for analysing its working and even for analysing teachers' success in classroom teaching."

Level	What students are involved in
Knowledge	Remembering, memorising, recognising, recalling
Comprehension	Interpreting, translating from one medium to another, describing in one's own words
Application	Problem-solving; applying information to produce some result
Analysis	Subdividing something to show how it is put together; finding the underlying structure of communication; identifying motives
Synthesis	Creating unique and original product that may be in a verbal form or may be a physical object
Evaluation	Making value decisions about issues; resolving controversies or differences of opinion

Figure 4-1 The Levels of Bloom's Taxanomy. (Orlich et al. 1985, p. 85)

In view of the categories of the Taxonomy, it is clearly identified by most educators, such as Thorndike (1973), Adams (1980), and Rumelhart (1980), that higher order skills of analysis, synthesis, and evaluation which take place in that taxonomy are essential in education at all levels. These higher order skills and critical thinking can not be separated because they are embedded with each other. To learn how to ask questions of analysis, synthesis and evaluation, one must learn how to think critically.

This taxonomy consists of six levels and for each level, the learners are required to use different kinds of thought processes. According to these levels different questions could be formulated in order to have the learner involved in a variety of cognitive processes.

4.4.5.1 Knowledge Questions

These questions are generally used to elicit the information individuals memorise. At this level, learners are not asked to manipulate information, rather they are asked to answer the question, based on the information that has been acquired before. In other words, knowledge questions are grounded on the storage and retrieval of the information in the text. In addition, students are not expected to manipulate or transform the knowledge, but to remember the information as is presented. Knowledge questions are the springboard for other categories in the taxonomy. Rosenshine (1983) points out studying knowledge questions and answers might be very beneficial for students in familiarising them with higher order thinking skills. Knowledge questions are usually wh-questions. In this study, they were used as follows:

Who is the writer of that book?

Where has it taken place?

Who is involved in the story?

What is the meaning of "assimilate"?

4.4.5.2 Comprehension Questions

Comprehension questions are those which require the learners to demonstrate that they sufficiently understand in the content. In other words, they help the students be aware of what the text is about rather than memorising the given information. This

level of questioning requires learners to go beyond recall of information by actively participating in responding. They could interpret what they have learned and must demonstrate what they have understood by rephrasing the text using their own words. As a result, instead of simply recalling the facts in the text, they manipulate the response.

There are many types of comprehension questions. According to Orlich et al. (1985), some examples for these types of comprehension questions may include interpretation, translation, example and definition questions and in the present study they were used in the following ways:

Interpretation Questions

What makes you think that it is not possible to stop the pollution?

How do you explain the effect of cars on pollution?

Translation Questions

Describe, in your own words, the higher education in Asia?

Example Questions

Give examples of each institution related to higher education in your country.

Definition

Define, in your own words, the universities in Asia.

Explain, in your own words, the term "Global Warming."

4.4.5.3 Application Questions

In the application process, learners are to apply appropriately the information available in a new situation while coming to a solution. By doing so, learners are likely to comprehend the text they are reading and feel more independent. Therefore, application questions are "more cognitively demanding questions since they require the transfer of implementation of what has been learned" (Goetz et al. 1992, p. 371). In other words, these kinds of questions require learners to apply a rule or a process to a problem and find answers to the questions with the help of the acquired rule. Application questions may include the items such as *apply, use, choose, write an example, solve, how many?, what is?,* and so forth. Using one of these words, we made up an application question in the present study as the one below:

According to the information about pollution given in the text, which country is considered the most polluted in the world?

If one hundred people are moving to Istanbul a day, how many people will be living there in 2002? (Twelve million people are living in Istanbul now).

4.4.5.4 Analysis Questions

This is the second important level in higher level thinking because in this process readers who have this skill go into the parts of a whole. Irwin (1991) states that analysis is "the process of breaking the information into its component parts and assessing one's own thought processes in relation to those parts" (p. 101). While

analysing what they are reading, readers go through a few processes:

1. They try to understand the source of the text and whether or not it is authentic.

2. They find out the facts and supporting ideas.

3. They go into details of overgeneralizations, unimportant and similar ideas and analyse them to come to a conclusion.

4. They detect and find out the illogical parts of the reasoning.

Analysis questions, according to Sadker and Sadker (1977, p. 166), are "higher order of questions that require students to think critically and in depth." In making up these kinds of questions, the main purpose of the generator is to engage the learners in identifying the motives, reasons for a specific event, in analysing the available information in order to come to a point, and finally, in analysing a conclusion, inferring, or generalising to find evidence to support or reject the evidence.

At the level of analysis questions, the learners are expected to find the best answer among possible alternatives. There could be several answers for the given question, however, by careful analysis, spending time with some thought, the best answer could be generated. Therefore, analysis questions are higher order ones and they are very important for the aim of this present study since they trigger critical thinking in learners. Items used in such type of questions are usually *identify motives or causes, draw conclusions, determine evidence, support, analyse, why*? and so on, and these items are helpful in generating an analysis question. These questions were used in different ways in this study as:

Identification of main and subordinate ideas

After reading the passage, distinguish the attitudes of students in their own country and those in an overseas country?

What is the author's attitude about the urban development?

Implication

What would be the future of the world if global warming continued at this rate?

Reasoning

Why do many students from developing countries go overseas for higher education?

Why do you think the hole in the ozone layer affects the global warming?

How does global warming affect the living things around us?

4.4.5.5 Synthesis questions

After analysing the information, it is time for readers to form their own knowledge. In order for this process to occur, readers use all separate pieces of information, this is called synthesis. According to Irwin (1991), with the help of the synthesis process, readers are able to think about different points of the matter they are studying. Additionally, Orlich et al. (1985) suggest that in the synthesis process, readers should combine the parts in order to find the whole. In other words, in order to reach the whole one must recombine the small parts of it, therefore, synthesis requires unique creativity.

Synthesis questions are asked to generalise or be divergent in thinking. These are also higher-order questions that require learners to perform original and creative thinking. It is so common to see such vocabulary in the terms occurring synthesis

questions; *predict, produce, write, design, construct, how can we improve?, what would happen if? how can we solve?* and so on. According to Sadker and Sadker (1977, p. 170), these kinds of questions "require learners to produce original communications, to make predictions and or to solve problems." For the purpose of the present study, the synthesis questions were formulated as follows:

To produce original communications

Considering the text you have just read, formulate your own criteria for choosing the students for that university.

Design your own plans to prevent the global warming.

To make predictions

What would the world be like if the population goes on at this rate?

What problems would you have if you studied abroad?

To solve problems;

How can we improve students' attendance in schools?

How can we stop moving from villages to large cities?

4.4.5.6 Evaluation Questions

The final step in the higher order level thinking facilitate elaboration is evaluation questions. It is here where we observe the criteria for evaluating and decide whether or not ideas are appropriate, right, fair and so on. According to Orlich et al. (1985, p. 100), in order to give an evaluative response, students should

"establish criteria on which to base judgement to use the prescribed criteria, they should make their judgement accordingly."

Evaluation questions are, therefore, the highest level questions in Bloom's taxonomy. They require learners, similar to synthesis and analysis questions, to use their mental processes so as to respond to posed questions. The learners are expected to judge the main idea in a topic, to find a solution to a problem, or to create an aesthetic work. The learners are also supposed to comment on any related subject. For these kinds of questions, not only one but different responses are expected from learners. There are some certain words that are commonly used in making up these questions such as *judge, argue, assess, give your opinion, do you agree?, would it be better?* and so on.

Following are some examples for evaluation questions proposed by Sadker, and Sadker (1977, p. 172), and they were reformulated to use in this study

Do you think love is the most important factor in marriage?

Which is better for higher education, going abroad or staying in motherland, explain?

Give your opinion in controlling population growth.

Should Turkey send students abroad for higher education?

In answering any kind of evaluation questions, as it is stated by Bloom (1956), learners must use either objective standards or a personal set of values. In other words, they must use their own criteria. For example, an answer to the last question, individuals first use personal sets of values and methods which they believe are effective in controlling population growth. On the other hand, they may also use objective criteria. These criteria might include the rate of the population growth each

year, and reasons, whether people are aware of the techniques in controlling birth, in which countries does it increase most and so on. Considering the mentioned evaluations of population growth, a judgement can be made in relation to the most effective method in controlling population growth.

As is stated above, this type of questioning related to Bloom's Taxonomy, is vital in improving higher order thinking of learners. This is especially very applicable in reading comprehension courses for cognitive learning. The parts including application, analysis, synthesis, and evaluation in Bloom's taxonomy are especially related to cognitive learning.

All these steps in learning are not only essential in fostering learners' previous knowledge for elaboration, but also in the formation of responses to questions. However, learners need to improve their knowledge of what strategies they could use whenever need arises. Therefore, metacognitive strategies which direct learners into the knowledge they acquired should be considered along with cognitive strategies.

4. 5 Reading Comprehension and Strategy Usage

According to the cognitivist approach, while having students learn they are to be forced to go beyond the memory level of learning objectives that will enable them to use their knowledge to understand new situation in order to solve problems. In other words, students should be directed to find out the relationship between what they previously acquired and what they are newly learning. How students acquire the

ways that help them think and find the solutions have been in the agenda of educational psychologists.

Readers who have acquired good strategies in reading can comprehend what they have read by constructing meaning and integrating information from the text with their background knowledge (Rumelhart 1980). By doing so, they use different kinds of strategies related to schemata; in order to make out the content they use conceptual knowledge - content schemata, to understand the text-structure - formal schemata and knowledge associated with text processes. Accordingly, Garner (1987) suggests that native language readers who have been skilled about conceptual knowledge on a text are likely to understand and recall information better than those who have not.

Students are likely to develop strategies in order to facilitate learning in reading. It is obvious that these strategies can vary from reader to reader, however, they can be modified for specific reading tasks. What makes the difference between good and poor readers is the knowledge of strategies. Good readers know how to approach a text and make a plan of reading in the light of strategy knowledge. In addition, they know how and when to use the strategies in order to get out of the problems by locating and summarising key points.

On the other hand, readers who lack the knowledge of strategies or the usage of them are more likely to be floundered when they encounter a text they are to read for comprehension. Therefore, it is imperative that readers be taught how to use strategies, which help them monitor their comprehension. Paris, Libson and Wixon (1983, p. 259) suggest that "thinking about one's thinking is at the core of strategic behaviour." Teaching reading comprehension, therefore, requires teaching readers good strategies and how to apply them in any reading area.

With the CALLA theory, Chamot and O'Malley (1987) state that the use of learning strategy instruction in second language includes the following propositions all of which are grounded on cognitive learning:

> 1. Mentally active learners are better learners. Students who organise new information and consciously relate it to existing knowledge have more cognitive linkages to assist comprehension and recall than do students who approach each new task as something to be memorised by rote learning.
> 2. Strategies can be thought. Students who are thought to use strategies and are provided with sufficient practice in using them will learn more effectively than students who have had no experience with learning strategies.
> 3. Learning strategies transfer the new tasks. Once students have become accustomed to using learning strategies, they will use them on new tasks that are similar to the learning activities in which they were initially trained.
> 4. Academic language learning is more effective with learning strategies. Academic language learning among students of English as a second language is governed by some of the same principles that govern reading and problem solving among native English speakers (p. 240).

The above-mentioned researchers and some others such as Chamot and Küpper (1989), and O' Malley et al. (1989) point out that learning strategies are likely to be essential for students who are learning both language and content. They add that by teaching these strategies we could enable our students not only become effective in second language but also in other related areas. Accordingly, Antony and Raphael

(1989, p. 254) claim that "the most effective way to bring about student control of a strategy is through an instructional sequence in which independent use is preceded by direct explanation and guiding practice."

In addition to CALLA suggested by Chamot and O'Malley (1987), Shih (1992), and Maker and Lenier (1996) have suggested similar ideas in order to improve the critical reading skills of students based on cognitivist approach to reading comprehension. What have been suggested by different researchers in order to promote critical reading, share similar characteristics and consists of a five-stage-reading comprehension model for reading, thinking, studying and comprehending:

Step 1 is the pre-reading. It is important to overview all the major ideas in the reading text and activate background for the first step before beginning to read. Shih (1992, p.301) suggests that "when the goal of reading is in-depth comprehension and good recall of information from expository text, previewing (surveying, over-viewing) facilitates the process because it familiarises a reader with the basic content and organisation of the text and helps to activate relevant prior knowledge."

By previewing, readers will become familiar with the parts of the text, source of the text, title, subtitle, graphs, charts and so on. This activates them to judge what they know and do not know about the idea in the text they are going to read, and thereby they will be integrated into their schemata. Jacabowitz, (1988, p. 128) suggests that "the survey step is an excellent way for students to derive independently the macrostructure of the text as well as to build their background knowledge of the text prior to reading it in its entirety."

Step 2 is related to while reading. In this step, readers are actively involved in reading, interacting with what they are reading. By interacting with the text, they will

be able to understand the textual keys. Shih (1992, p. 302) points out that "knowledge of the organisation of a particular text and of common textual signals can help a reader identify important information as well as between ideas in the text."

While reading, students ignore some of the unfamiliar words and interpret some others through the usage of contextual clues in the text they are studying. Some of the words can not be interpreted based on the context, and in that case, these words are looked up in a dictionary. However, for the accurate meaning, students are not only dependent on the context but also on reliable dictionaries. Students identify key words such as words in the title, in the section headings, in the topic sentences, and the words that are used more often. The identified words are studied in the semantic network to connect the new words or concepts with the words and concepts in their schemata.

Step 3 is the analysis of the ideas in the text. This step is one of the components of the higher order thinking process mentioned previously. According to Maker and Lenier (1996), analysis is the key factor in critical reading. With analysis, the authors mean recognising the author's point of view, arguments, and supporting details. By analysis, readers can make their own judgement for what they have read, and they also decide what to study in relation with predicting test questions and creating a study guide.

This step also enables students to understand what is important for them to respond to the questions related to the text. Students underline and annotate the important parts of the paragraphs. McAndrew, (1983, p. 104) points out that "the amount and depth of processing required to mark higher level sentences increase students' recall." Students go through the text, first reading, then rereading and

underlining. However, in order to acquire the right strategy of underlining, McWorther (1988, p. 206) maintains that "students need to develop a habit of first analysing the task requirements and using this to help them to determine how much and what type of material to underline." According to Blanchard (1985, p. 201), this would be provided by "demonstrating the difference that might be useful to underline for multiple-choice test as opposed to an essay test."

Annotations, another useful way in recalling the important ideas would be used in the comprehension and/or essay questions. Annotations, especially good ones, can make underlining unnecessary. Simpson and Nist (1990) point out that annotation can be in various types such as summary words and phrases, definitions, examples, names, dates, events, lists, causes/effects, similarities/differences, conditionals and so on. The authors have also suggested that students should be provided with the useful lists of abbreviations and symbols.

According to Shih (1992), in order to annotate, students should first skim the text then reread by annotating one paragraph at a time. By doing so, students can paraphrase and state the information using their own sentences. This would provide them with higher order thinking (see Chapter III), and thereby they process text at a deeper level of understanding.

Step 4 is the remembering what's important and what is interesting. In this step, readers become aware of what is important to remember and what technique they should use to help their memory recall the information stored. Shih (1992) states that "students can make use of a variety of strategies to organise, reduce, and rehearse important information from their reading to facilitate recall on a test and to stimulate thinking so as to tackle other assignments such as papers" (p. 306).

Note taking is one way, perhaps the most effective way of organising and condensing the information that would still be vaguely remembered. Anderson and Armbrustor (1984b, p. 666) marks the note-taking as "a great potential, a study aid, for it allows the students to record a reworked (perhaps more deeply processed) version of the text in a form appropriate for criterion task." Taking notes in the format of paraphrasing and showing relationship between ideas and connecting them to schemata by outlining is likely to enable students to recall and use the information whenever need arises.

Step 5 is the production step in that readers attempt to use what they read. They can either answer the comprehension questions or write short paragraphs or summarise the texts or else. Niest and Diehl (1990a, p. 154) suggest that "writing summaries, that is, succinct statements of the main idea(s) and key supporting points of a text or text segments, is an especially good strategy to prepare for a test that will include essay questions, since such questions typically require students to take great deal of information and organise it concisely in new ways."

In summarising, annotated notes and underlining of main ideas and the other supporting ideas are the basis for making up ideas in order to take selective and careful notes. In addition, conceptual mapping provided before reading can be very promoting for "comprehension, retention and retrieval of ideas" (Shih 1992, p. 307).

In this step, readers can also evaluate themselves by applying analysing, and synthesising the feedback they received in the process of production. The feedback can be in different forms such as grading a test, commenting on paper, responding an oral representation, and so on.

Cognitive processes involved in reading comprehension are the means by which readers acquire appropriate strategies. These strategies should enable readers to interact each other and to engage in reading comprehension process. This chapter emphasised the role of schema theory that provides cognitive learning in reading comprehension since it enables readers to "(1) seek and select, (2) organise information, and (3) elaborate information encountered in texts" (Vacca and Vacca, 1993, p. 62).

All the above-mentioned studies dealt with the relation between cognitivist approach and reading comprehension. However, there are only a few studies focusing on strategy training, which provide cognitive learning approach to reading comprehension. Therefore, in the next chapter, in order to fill this gap we will implement an instructional framework (based on schema theory) which enables readers to gain and use appropriate (cognitive) strategies in reading comprehension.

CHAPTER 5

METHODOLOGY

5.1 Introduction

This study aims to (1) find out the strategies which the students of English Language Department at Çukurova University use in reading comprehension course and (2) implement a training programme in order to help these readers to gain cognitive learning strategies which they can beneficially use in reading comprehension courses.

It is assumed that reading comprehension is the best skill which helps readers develop their thinking skills (Jones, 1991). Therefore, after investigating the strategies used in reading comprehension courses, we mainly dealt with the effects of the training related to improving students' mental power and lead them to become problem- solvers rather than reproducers of what they have already learnt.

This study mainly focuses on improving students' cognitive learning strategies by enabling them to use their mental power. Thus, the notion of cognitive learning and its effect in reading comprehension was clarified through the related literature. Two different research designs were used: (1) descriptive design and (2) experimental design. First, students were interviewed by means of a questionnaire, which was designed and administered by the researcher in Turkish (see Appendix 1). The researcher aimed to investigate and describe the strategies the students use. Then, a

model of teaching reading comprehension was applied on the Experimental Group while the traditional approach was applied in the Control Group. The model used is an interactive teaching approach in which the teacher and students work together, and helps students activate their background knowledge through various methods. In addition, at the beginning of the training, a pre-test and at the end of the training a post-test were administered to both groups. The obtained data were analysed by utilising the SPSS (Statistical Package for Social Sciences) to investigate whether a significant difference between the Experimental and Control Groups existed. Before going into the research, a pilot study was carried out in order to investigate possible outcome and the problems, which may arise during the training programme.

5.2 Pilot Study

A pilot study was conducted with a group of six adults, studying for KPDS (Kamu Personeli Dil Sınavı: Language Proficiency Test for Civil Servants), a proficiency test consisting of 100 questions. The test is grouped under nine sections: Structure, Vocabulary, Translation from English to Turkish, Translation from Turkish to English, Sentence Completion, Paragraph Completion, Responding to Given situations, Transformation of Sentences, and Reading Comprehension.

The first aim of the pilot study was to find out the applicability of the training designed to enable students to gain appropriate strategies in reading comprehension. The second aim was to see if there was any change in the strategy usage of the students after the training. Finally, it was aimed to identify any problem that occurred

during the treatment.

Before starting the treatment, the students were interviewed so as to find out which part(s) of that examination they usually found difficult to answer. All students claimed that though they spent most of their time on reading comprehension, they did not obtain high scores in this section. They all pointed out that in order to understand the texts they try to find out the meaning of each word using their grammar and vocabulary knowledge to get the meanings in the text. The average test score of these people was 50 points (out of 100, and one point for each question).

The treatment started one and a half months before the examination. After pointing out the aim of reading, the study began with short but unsimplified texts. Just before starting to read the text, they were told to forget all the strategies they had been using before in reading comprehension and try to experiment the one they were going to be instructed. In addition, they were told that a reading strategy is an action or series that is employed in order to get the meaning in the text.

The study involved pre-reading, while reading and post-reading phases, two days a week, each of which lasted two hours. For the purpose of the study, the pre-reading section was the most significant part due to the fact that in that part, the students could be motivated, and their schemata could be stimulated to bring their previous experiences and expectations to the texts to make elaboration.

In pre-reading, the related questions (not yes/no questions) were used to get their interest and to trigger their schemata. The questioning was based on Bloom's Taxonomy (see Section 4.4.5). In the second phase of the pre-reading, semantic mapping method was used. One of the key words, phrases, or title was written on the board, and the students were asked to point out the related concepts. Thus, they

were to use their mental power to bring their previous experiences related to the text they were going to read. In the final step of the pre-reading part, they were asked to hypothesise what the text could be about.

Through reading, they were asked to read with a critical view to find out if the text matched what they had previously hypothesised. In addition, they were directed to try to predict the words they did not know rather than asking the teacher or looking up a dictionary.

Post-reading steps started by talking on the semantic mapping constructed in pre-reading section. The students were asked if they could add some more words to the map. As they tried, the map was enlarged and more concepts were included. When they were asked if the text was about what they had previously expected there were different responses such as "I thought it was about how people use their brain, because I know the meaning of brain", or "I did not hypothesise anything because there were too many words I did not know." However, they all agreed that the vocabulary items in the text were too difficult to understand. It seemed that they all focused on the vocabulary. As Paris and Myers (1981) report "Poor readers were less aware than were good readers of harmful strategies that would interfere with reading." In that case, the readers still continued to use their own fossilised strategies. Studies on adult learners conducted by Garner and Kraous (1982) show a significant correlation between strategy knowledge and reading comprehension ability. Therefore, strategy teaching was insisted on by using different texts.

After a month, the students were still complaining about the difficulties of the text that they were assigned to study. In addition, they tended to find out the dictionary meaning of each word in the text and translate them into their own

language. However, it was observed that they spent less time on the comprehension questions than they did before. Anderson (1980), after studying teaching reading strategies to adult learners, claims that readers may use the learned strategies but they are not aware of why they are doing so for a while. Thus, it was assumed that the subjects involved in the pilot study were also unaware of what they were doing in reading texts.

At the end of the first training session, which lasted about one and a half months, the students took the KPDS test given in November. It was assumed that the questions asked in this test were similar to the ones they had previously taken. KPDS tests are not published after the examination, therefore, we were not certain about the questions. However, one thing we were certain about was that there were no change in the style of the questions and the sections in which the questions are grouped.

There was a slight increase in the grades they achieved; the average point this time was 55. All of the students pointed out that they felt more self-confident, and more aware of the test during the examination. However, they also pointed out that they could not finish answering all questions, partly because they spent more time than allotted to reading comprehension texts.

After a-month-break, the training started with upper intermediate and advance level texts. This time, the students were more willing to read the texts, and it was observed that they were not looking up every word in dictionaries or asking the meaning of every word. By using the same strategies used in the first training session (based on stimulating their schemata), the second training lasted three months, for two hours a week.

After three and a half months of implementation, the students took the KPDS

again. Just after the examination, they were interviewed about the examination itself, and how they felt about it. Four students stated that they thought the questions were not very difficult, and they did not have any timing problem while answering the questions. Two students still complained about the time allotted for the questions, and they added that they spent most of their time on reading comprehension passages. Examination results showed that those who said they had felt ease during the examination had no timing problems because they used the right strategies in reading comprehension and did well and passed the exam. The average score was around 70.

The results of this pilot study were not analysed or included in the analysis part. Additionally, no pre- and post- tests were used. The test they took was accepted as the base in order to observe their improvement. However, to get an insight about the training, the grades they achieved before and the training were compared. The comparison showed that there were striking changes in the grades they achieved before and after training. In other words, the grades they achieved after the training were higher than those they achieved before the training.

These findings could be explained by the idea that if the students are trained with the strategies, which enable them to use their mental power in order to make elaboration about what they are going to read, they are likely to be more successful. In addition, although this pilot study was conducted in limited time and with limited number of subjects, the sharp increase in the test scores of the students could be considered as an outcome of the training. The researcher assumed that this increase resulted from the training, since all the participants who had participated in the training claimed that they did not have as much difficulty in reading comprehension texts as they previously had.

Therefore, the pilot study was considered one of the significant steps for conducting a more sophisticated research. It was also very beneficial, particularly, in terms of familiarising the researcher with the training procedures, and checking the feasibility of such a treatment. In addition, it was very helpful for the researcher in identifying the potential problems that may affect the treatment and find possible solutions. Motivation was not considered as a problem since all the participants needed to achieve a high mark from this general test (they had instrumental motivation). However, considering the difference in the Experimental Group, it was predicted that there would be motivation problem for the students who would participate in the future study. Therefore, it was decided that in pre- reading sessions of the training, sufficient time should be spent on motivation.

In the beginning of the training session, the students were resistant to constructing semantic maps and not using a dictionary for vocabulary. Similarly, they did not want to spend time on pre-reading; instead they wanted to read the text immediately. However, for each lesson, the aim and the role of the activities used in training were pointed out. While studying on semantic mapping, they were experienced individual difficulties in finding the related concepts. Therefore, they were paired, and it was thought that in the training, semantic mapping would be more beneficial if it were used in group work which is expected to foster more interaction and thereby more productivity.

5.3 Subjects

Subjects of this study were preparatory class students attending the English Language Department, Faculty of Education, Çukurova University. A questionnaire was utilised to find out strategy usage to determine that there were not any differences among students, such as parents involved in language learning and teaching process, and foreign country interference. There were school differences but all of the students were prepared for ELT Department in preparatory classes in their high schools.

Before they are eligible to take undergraduate courses at the Faculty, these students are required to get an intensive preparatory education in four basic skills in English. These skills are listening, speaking, reading and writing. The size of the preparatory classes depends on the number of the students who are able to pass the placement test administered at the beginning of the first semester. In the year the study was carried out, the majority of the students were able to succeed in the placement test. Forty-four students failed, and they were divided into two groups randomly. The selection was according to the systematic random selection method. That is, the students with odd school numbers were placed to one group and the ones with even numbers to the other group. Both groups were trained by the same teacher in order to prevent the different teacher effect on the performance of the students.

5.4 Data Collection

The data collection started at the beginning of 1995-1996 academic year. Before the training started, the students were given a questionnaire, which included open-ended questions. The aim of this instrument was to find out why students have difficulty in reading comprehension and what strategies they use in reading comprehension processes. The questions in the questionnaire were adapted from the studies carried out by Kletzien (1991) and Jones (1991). These studies are mainly related to strategic teaching of reading comprehension in order to develop the thinking power of readers.

After the commencement of the training, and after each achievement test each month, the students were interviewed to identify what difficulties they had in supplying possible answers to the questions in the examinations. In addition, they were asked if they could focus on what happened in class and what points in the training they found difficult to get adapt to. Based on these student-reflections, the researcher determined what strategies they currently had difficulty in using. The researcher also considered the time allotted for the activities which helped students to gain the strategies they had difficulty in applying. Thus, the activities in the model of teaching reading comprehension were determined in the light of students' reflections obtained through interviews.

During the training, subjects were given a test each month, including reading comprehension questions, guessing vocabulary from the context and cloze questions. These mid-term examinations were a part of their fixed program and *both* the students in the Experimental Group and also the students in the Control Group were obliged to

take these tests. Therefore, the results obtained from these tests enlightened the researcher in terms of the training the training provided. The grades of the students who took these examinations were observed in order to find out if there was any improvement. The main aim of the mid-term examinations was to serve as instruments for the researcher to gain insight for the purpose of the study. The results were statistically analysed to find out if there was any significant difference between the two groups.

5.5 Instrumentation

In this study, two types of instruments were used in order to collect data:

1. The questionnaire. It was designed by the researcher, and administered before and after the treatment to both groups. It was written in Turkish so that students could understand the items and respond to them easily (see Appendix 1).

2. Pre-and Post Tests. It was administered before and after treatment to both groups. The questions were arranged considering Bloom's Taxonomy. In other words, the tests were designed in view of knowledge, comprehension, application, analysis, synthesis, and evaluation levels in the questioning of Bloom's Taxonomy (see Appendix 6).

5.5.1 The Questionnaire

It was designed by the researcher by considering and adapting the strategies used in reading comprehension categorised by Kletzien (1991) and Jones (1991). It was aimed to determine if students were currently using any strategy in reading comprehension, and what these particular strategies were. The questionnaire included open-ended questions concerning their views on reading comprehension. Bereither and Bird (1985) suggest that *think aloud* while reading is one of the processes that could be used in determining the strategies students use. However, sometimes students are reluctant to think aloud. For these students, interview is a more suitable approach in finding out what strategies they know and use in reading comprehension. Therefore, the questionnaire was administered together with the interview. The subjects responded to open-ended questions while they were being interviewed. The strategies they use in reading comprehension were determined through their responses (see Appendix 2).

5.5.2 The Pre- and Post-test

These tests were administered to find out if there was any significant difference between the two groups. Pre-and post-tests were the same test and consisted of multiple choice questions most of, which were adapted from a TOEFL preparation textbook. It is believed that the reliability and validity of the questions in these kinds of books is certain hence they are justified by a group of experts.

Additionally, Bloom's taxonomy was taken into account while reorganising the questions in the pre-and post-tests (see Appendix 6). Considering this taxonomy the questions were classified. Thus, knowledge, comprehension, and analysis questions were included in the test separately whereas a cloze test was used for the application, synthesis and evaluation questions. This was due to the fact that these kinds of questions, especially synthesis and evaluation, should be constructed in open-ended form rather than multiple choice form. In addition, the test assigned served as part of the proficiency test applied in the beginning of the year and at the end of the year. Therefore, the synthesis and evaluation questions were not assigned in an essay form; instead, they were assigned in cloze test because of the fact that multiple choice tests are far more objective and easier to evaluate than others.

The test consists of three parts; the questions related to reading text (knowledge and comprehension questions), the analysis questions (reading and deciding), and cloze test questions (see Appendix 3). In fact, for cognitive strategy training, a cloze text could be the best task. Rankin and Thomas (1980) and many others have found out the relation between cloze tasks and reading comprehension. Additionally, Kletzien (1991, pp. 71-72) points out that "a cloze task taps the reader's ability to make use of syntactic and semantic knowledge, an ability that is fundamental to comprehension." Furthermore, the same researcher states that a cloze task requires readers to use the intellectual process such as "imagining, reasoning, evaluating, judging, and problem solving" (p. 72). These requirements are in close relation with the usage of cognitive strategies, and therefore, are essential in reading comprehension.

5.6 Procedure

During the fist and second semesters of 1995 - 1996 academic year, students in the both groups had to take HIN-104 and HIN-106 Reading Comprehension, a preparatory class course in the curriculum of the English Language Teaching programme. It was a six-hour course per week for a duration of 14 weeks for each semester. The objectives of this course are:

(1) reading authentic and semi-authentic passages written on various theoretical modes (descriptive, narrative, classification, explanation and analysis)

(2) reading for skimming and scanning

(3) expanding vocabulary

(4) improving reading comprehension skills

(5) extracting the main idea and making differentiation between the main and the secondary idea

(6) making an outline and summary of a text

(7) relating what is in a passage to their own experience

(8) analysing the passages in terms of organisation

(9) justifying the answers to given questions, basing their judgements on various types of clues to be found in a particular text.

The students in both groups were trained in accordance with objectives mentioned above. The researcher was the instructor of both groups. In the Experimental Group, a reading comprehension lesson plan was prepared in view of cognitive teaching and learning approach. For this purpose, each unit in the students' book, a model instruction based on cognitive teaching and learning adapted from

Jones (1991) was applied (see Appendix 6). This model is also grounded on interactive teaching related to the theory of the importance of prior knowledge for text comprehension. On the other hand, in the Control Group, a traditional approach based on structure and vocabulary knowledge was used. The model used in the Experimental Group, consisted of pre-reading, while reading, and post-reading activities.

5.6.1 Pre-reading Activities

In the pre-reading section, to stimulate the students' interests in the text they were reading, first we pointed out the aim of reading in human life in general and also reading in the English Language Teaching programme. The aim of this activity was to take their interest into what they were going to read, since interest takes a great role in learning, and thereby in reading comprehension (see Section 2.2.1).

The second step in pre-reading phase was using the questions to stimulate students background knowledge and have them bring whatever they had in their mind about the text they were going to read. Questions were organised considering the levels in the Bloom's Taxonomy. Higher order level questions were often used in order to enable students to enrich their thinking in order to be able to respond to questions. In addition, higher order questions were mostly used for the purpose of enabling students to think deeply about what they already have in their long-term memory. Therefore, the students were allotted for two or three minutes so as to respond to the questions. In this way, they were forced to recall their previous knowledge related to the topic they were currently reading. Questions such as

"How have new developments in technology and communication affected your life? Why do countries invest so much money on technology?" were asked (see Section 4.4.4 Bloom's Taxonomy).

In pre-reading activities, semantic mapping was often used again as a key element (see Section 4.5, Step1). The main aim of mapping the ideas is to activate the information stored before. As it was discussed in the knowledge storage and long- term memory works, the information acquired is stored according to the relations between concepts. In addition, it was discussed that in meaningful learning new knowledge could only be acquired only if it matched the related ones stored before.

Therefore, in relations with the structure of information storage and meaningful learning, in the current study, the schemata of the students were activated by mapping the ideas. Jones (1991, p.153) suggests that "the reader's prior knowledge is critical and includes knowledge of content as well as learning strategies." In other words, it is obvious that the more information readers have about the content of the text, the better they can comprehend what they are reading.

In order to map the ideas, the titles or key concepts selected in the texts were used as the central idea for mapping, to activate the students' schemata. In this study, the students were asked to contribute information from their backgrounds. The ideas put forward by the students were used as the nodes on the semantic mapping. For example, the title of the text "Urban Development" was used as the key concept. The students added and integrated related concepts such as growth of cities, examples of large cities and the reasons of moving to large cities. They added as many concepts related to urban development as much as they could generate (see Appendix 5).

All these pre-reading activities in the present study were conducted with the help of an instructional procedure known as POSSE. The first two steps of the POSSE, predict and organise phases were used in pre-reading activities to help readers stimulate their previous knowledge. In addition, KWL (what I know, what I want to learn and what I learned) was implemented. While working in groups, students wrote down what they knew about the text they were studying. They mainly pointed out what they knew on the maps they formed (see Appendix 4).

5.6.2 While Reading Activities

The model used was an interactive model of teaching reading comprehension. It was arranged in a way that readers must actively participate in reading in order to be effective in reading comprehension. In other words, reading was regarded as an active process, and students were forced to be involved in the activities. If readers themselves are not involved in the reading process, they are likely to be unwilling to participate in the active process which is expected to enrich comprehension.

While reading act is the step, which has the students both interact with each other and actively interact with the text. Papilia (1987, p.77) suggests that "to provide greater interaction with the text among students, teachers should stimulate work in groups, where students have the opportunity to work together and learn from each other." Thus, in the current study, to provide the interaction students were grouped into threes. While forming the groups, features such as introvert/extrovert and good/bad students were taken into account in order to facilitate interactions.

In order to provide the interaction, the reading process, in this study usually started with reading the text. While the texts (usually) were being read by the researcher, the students generally followed it silently. While reading, some questions were generated to keep the students awake, which helped them recall their previous knowledge. Moreover, the teacher's reading was interrupted as students were asked to elaborate on the text and write what might happen in the next paragraph. As they were working in groups, each student could see other students' predictions and finally exchange their predictions. This kind of study helped them gather more information to make close predictions to what they read later. In the second step of this phase, students were allowed to read silently. They were directed to ignore some of the unfamiliar words and interpret some others by using the contextual clues in the text (see Section 4.4, and Section 4.5, Step 2).

Additionally, searching and summarising parts of POSSE were implemented due to their being significant in the while reading process. After studying the title, subtitles or other textual key elements and making up semantic mapping, students were expected to form their own elaboration about the text they were going to read. By searching and summarising, they were able to decide what was important and what was interesting. In addition, searching and summarising helped them check their hypothesis and reform or testify what they were reading. Thus, while reading students underlined or took notes of the important parts that they thought they would use in responding to the comprehension questions.

For searching and summarising activities, students were asked to read the paragraphs one by one and find out if they matched their prediction. In addition, they were asked to list the relationship between evidence and statement. In this process,

they also become aware of the text structure and the author's style. Later, they focused on noting what was important and unimportant and what was clear and unclear.

In the summarising process they discussed the main idea as they worked in groups. While discussing, they searched for the information in the text to support the idea. When they came to an agreement on the main idea, they added it to the semantic map they had made in the pre-reading process. They also evaluated the word meanings and made sure they could predict them through the context (see Section 4.5, Steps 2, 3).

5.6.3 Post-reading Activities

Post-reading activities were grounded on the process, which would enable students to go into details of the text, respond to comprehension questions and produce short paragraphs. Therefore, two different activities were carried out in order to achieve these aims: (1) in depth processing, and (2) response processing.

5.6.3.1 *In depth processing*

This process provided an opportunity for the students to construct the detailed meaning of the words. In order to increase their knowledge of concepts, the students used three reading strategies: (1) comparing, (2) clarifying and (3) predicting.

During the comparison step in this study, the semantic maps, which were

studied during pre-reading process, were compared. While making comparisons students were asked to add more information to what they had learnt while reading. By doing so, they would extend their knowledge and with the help of new information they had learned they confirmed or disconfirmed the previous information they had pointed out during semantic mapping in pre-reading process (see Section 4.5, Step 4).

In the clarification step, the students discussed the unfamiliar vocabulary and the parts, which were unclear in the texts. They also generated questions which they could not find answer to in the texts. In groups, they discussed the possible answers to clarify the ambiguities in the text. At this point, students realised that they could not find answers to many of their own questions.

In the prediction step, students were asked to predict what the next section of the text would be. By using the information in the text they had read or using the semantic mapping they had constructed and enlarged, the students could predict the following ideas related to what they had just read. Thus, they were likely to become ready for the production of what they had acquired.

5.6.3.2 *Response Processing*

This is the step, which requires students to produce what information they have acquired. Jones (1991, p. 154) suggests that "it is important to be product oriented when writing to learn if the students are expected to complete essay questions containing specific information and text structures in literature and other contents courses."

In relation to what Jones suggests, the students in this study were directed to summarise the passage and answer questions. They achieved this task by using the semantic mapping they had constructed in pre-reading and had enriched it after reading. They also used the notes they had taken and the important parts they had underlined while reading. They also responded the statements related to what they had read. While answering, students first made their responses individually and later they discussed their individual answers in their small groups. Finally, the groups explained their final responses, which resulted from their discussions. Melendez and Pritchard (1985, p. 402) point out that "the process of thinking their answers and then defending them with other students helps students synthesise the information (discussed in higher order thinking and Bloom's Taxonomy), and thereby create or expand schemata which can be used in the future."

Finally, the structure of the texts (compare/contrast, informative, cause/effect and so on) was discussed. By doing so, the metacognitive skills that help cognitive skills become meaningful were reinforced. The students were guided to organise their notes to write short paragraphs, writing summaries or retelling enable students to enhance comprehension of what they read. While doing so, an overall comprehension was looked for in the writings (see Section 4.5, Step 5). Errors in structure, spelling, and punctuation were not taken into consideration.

CHAPTER 6

ANALYSIS AND DISCUSSION

6. 1 Introduction

The obtained data were analysed through a statistical programme, SPSS (a Statistical Package for Social Sciences) for Windows 6.0. From this programme, Mc Nemar, Mann- Whitney, U – Wilcoxon Rank Sum and Wilcoxon Matched Pairs Signed Rank Test have been used for the data analysis (Frankel, and Wallen, 1990). In Section 6.2, the analyses of the questionnaire and the interviews have been presented. Section 6.3 introduces the results of five achievement tests which the students took during two semesters. In Section 6.4, the analysis of the pre- and post-test data have been presented, and Section 6.5 covers the item analysis of the pre- and post-tests given to the students before and after training.

6. 2 The Questionnaire and Students' Reflections

Through the questionnaires and interviews, the usage of twelve strategies before and after training were determined. In order to investigate whether the readers increased the frequency of strategies, and to correlate the pre- and post-interviews strategy usage, Mc Nemar statistics analysis programme was used because of the fact that the data obtained needed an analysis which require related samples analysis. That is, the different data obtained from the same group was to be analyzed and this was only possible by means of Mc Nemar test. The results are presented in Table 6-1 and Table 6-2. In these tables, the frequency of the each strategy usage and the "p" values are included. The correlation of the strategy usage before and after interviews is shown with the "p", significance value. In order to show the statistical changes the significance value of each strategy use was taken into consideration. If the statistical value is $\leq .0500$ probability level, they are accepted statistically significant.

Table 6-1 Pre- and Post- interviews of the Experimental Group

STRATEGIES	PRE-INTERVIEW YES		PRE-INTERVIEW NO		POST-INTERVIEW YES		POST-INTERVIEW NO		P Value
	Frq.	%	Frq.	%	Frq.	%	Frq.	%	
1. Recognising and using the structure of the sentences.	22	100	0	0,00	22	100	0	0,00	1.0000
2. Trying to find out the meanings of vocabularies in a dictionary and translate the text into native language.	22	100	0	0,00	17	77,3	5	22,7	0.0625
3. Comparing sentence and paragraph meanings while reading.	0	0	22	100	22	100	0	0,00	0.0000 (S)
4. Finding main idea(s).	18	81,8	4	18,2	20	90,9	2	9,1	0.6250
5. Re-reading previous or subsequent sentences and paragraphs.	19	86,4	3	13,6	16	72,7	6	27,3	0.2500
6. Recognising the function of vocabulary and chunking them to make meaningful phrases or sentences.	13	59,1	9	40,9	18	81,8	4	18,2	0.0625
7. Understanding the relations between sentences and paragraphs by recognising the function of linking words, transitions and anaphors.	10	45,5	12	54,5	15	68,2	7	31,8	0,1250
8. Paraphrasing sentences and paragraphs. Making a summary of what has already been read by ignoring unimportant information. Finding the general or main ideas; understanding the authors general organisational patterns.	0	0,00	22	100	12	54,5	10	45,5	0.0005 (S)
9. Selecting key vocabulary or phrases using the context, which would help recall the whole.	0	0,00	22	100	8	36,4	14	63,6	0.0078 (S)
10. Making elaboration: Making predictions by pre-reading; skimming title, subtitles, graphics and questions; making analogies by using the previous acquired knowledge; visualising the events; using higher level thinking (application, analysing, synthesising and evaluation process).	0	0,00	22	100	14	63,6	8	36,4	0.0001 (S)
11. Feeling himself/herself actively involved in the reading text and making logical responses.	0	0,00	22	100	13	63,6	9	36,4	0,0002 (S)
12. Using a specific process in a specific way because of specific context. Evaluating the comprehension process while reading: If there is any lack finding a new way to overcome it. Remembering certain parts of the text by selecting, evaluating and adjusting strategies.	0	0,00	22	100	13	59,1	9	40,9	0.0002 (S)

p= .0500 **S= Significant**

Strategy 1. This is related to knowledge questions, and it was the most commonly used strategy among the students. Results showed that all of the students in the Experimental Group have used this strategy in reading comprehension. Totally, 22 (100%) students stated that they used this strategy in reading comprehension. As it is seen in Table 6-1, there is no change between pre- and post-interviews. Similarly, the students in the Control Group used the same strategy. In other words, as seen in the Table 6-2, all of the 22 (100%) students used the way of recognising the grammar points in the sentence. In fact, during the interview, they all pointed out that without finding out the meaning of individual sentences, they could not go through the whole text. Almost all the students stated "I am grammar oriented and I like learning the meaning of the sentences through understanding the structure of the sentences in the text." Therefore, at the beginning and end of the semester, they were all in favour of using this strategy.

As stated in the Statement of the Problem Section in the Chapter I, students merely focus on vocabulary and the structure of the texts, and this results in an incomplete comprehension. This was the strategy they had gained throughout their previous education, and it was observed that it became a habitual approach towards reading comprehension. This habitual approach observed in both groups can be easily noticed with the frequency and the percentage of this strategy in Tables 6-1 and 6-2.

Strategy 2. Vocabulary focus is another widely used strategy among the students who joined in the training group. In other words, there is a close relationship between Strategy 1 and this strategy because those who used this strategy most, believed that vocabulary, together with structure, was vital for them to get the meaning.

However, after training, some of the students in the Experimental Group started to avoid this strategy. The results showed that before training all of the

students (total 22, 100%) whereas after training only 17 (77.3) students used this strategy. The observed decrease, however, is not statistically significant. When compared with those in the Control Group (see Table 6-2), all of the students in both pre 22 (100%) and post 22 (100%) focused on vocabulary in sentences. In the interviews, (both pre and post) the students commented "I do not understand the sentences and thereby the paragraphs, finally the text, without finding the meanings of the words, and I do not feel confident if there is any word or phrase I do not understand." As it is stated above, habit formation usually takes a long time and it is not so easily changed.

Strategy 3. Comparing sentence and sentence structure is helpful in reading comprehension from the point of recognising what would happen next. This strategy is related to sentence recognition and the relation between sentences, and is used in relation with Strategies 1 and 2. In order to get the meaning; students should compare sentence structures thereby paragraphs. All the students were unaware of this strategy at the beginning, however, at the end of the treatment with the help of the activities, most of the students in the Experimental Group seemed to be aware of sentence structure. In addition, all of the students in the Experimental Group 22 (100%), in the pre interview pointed out that they did not use these kinds of methods while reading. They figured out that they did not take the interrelationships between sentences into account ("I do not care what the relations between the sentences"). During the training, it was observed that students were unaware of what they were doing.

In addition, this was observed in the post-interview with the results shown in Table 6-1 that all of the students, after being aware of the strategies, mentioned that they used this strategy. Additionally, the P value of .0000 shows that there is a

statistically significant change between the pre- and post-interviews. Although it was not the same, the students in the Control Group could also show a statistically significant increase (P= .0034) in the usage of this strategy. This may be due to the activities in the text book which were related to this strategy (see Table 6-2).

Strategy 4. As stated above that finding the main idea is one of the activities included in reading comprehension text books, and it is commonly used in the classroom activities by most teachers. Although it includes most of the reading comprehension activities, some of the teachers do not care about the importance of the main idea and ask their students to respond to the questions below the text after reading it. Some of the students, therefore, have not been able to gain the strategy of finding the main idea. This could be observed in the result that before training 4 (18.2%), after training 2 (9.1%) students did not consider using this strategy. Furthermore, there was not any statistically significant change.

The students in the Control Group, on the other hand, did show a good improvement in using this strategy. Although it is related to inference, most of the students pointed out that they tried to pick up the main idea in the text in order to get the meanings in the sentences. They asked "Does every text has a main idea, or are there more than one main idea in a text?" They also stated that they mostly failed to find the right main idea. However with the help of the activities in the textbook the students in this group gained the implication of how to approach main idea finding. The results in Table 6-2 clearly shows that although there were 3 (13.6 %) students who did not use this strategy at the pre-interview stage there were no students who used this strategy in the post-interview.

Strategy 5. In order to understand the meaning of the sentence or paragraphs, readers often go backward and forward in reading. This strategy is in close relation with the

Strategy 1 (recognising the sentence structure of finding out the meaning of words). Because, almost all of the students pointed out that if they could not understand the meaning of the sentence, they preferred to go to the preceding sentence or to the coming sentence. Before the treatment this strategy was used by 19 (86.4%) students only 3 of them (13.6%) indicated that they did not use this strategy. After treatment, we observe a decrease in the number of this strategy user. When looked at Table 6-2, it is seen that the students in the Control Group showed the same usage in the pre-interview 19 (86.4%), however they preferred using this strategy more in the post interview than those in the Experimental Group. This strategy usage is in the knowledge and comprehension level. This change can be attributed to the fact that students in both groups often go backward and forward in order to get the meaning while recognising the vocabulary and sentence structure.

Strategy 6. Some of the readers use the way of word recognition and the function of the words in the sentences. They also chunk them to make up meaningful sentences to understand the whole paragraphs and then texts. The results related to this strategy indicate that there are slightly significant change between pre- and after training. The number of those in the Experimental Group, who used this strategy raised from 13 (59.1%) to 18 (81.8%) whereas those who did not use it decreased from 9 (40.9%) to 4. (18.2%).

On the other hand, the results of the students in the Control Group showed that most of the students - 15 (68.2%) in the beginning did not use or did not know what the function of this strategy was, because they stated in the pre- interview that "I do not know how to chunk the vocabulary." Thus, although they mainly focused on the vocabulary and structure they were unaware of the relation between words and sentences. As it also one of the strategies related to structure and vocabulary usage in

finding the meaning of the sentences the students, during the year, while improving the level of language they were likely to improve the usage of this strategy. It seemed that they did not know whether a word was a noun, a verb, an adjective or an adverb. However, at the end of the year, the number of those who used this strategy reached from 7 (31.8) to 19 (86.4). This increase is statistically significant.

Strategy 7. Knowing the role of linking words, transitions and anaphors are also related to sentence recognition, which means to use the structure of the sentence. In addition, recognition the function of linking words, transitions, anaphors could be helpful for sentence and paragraph comprehension and these kinds of the activities are usually included in reading comprehension text books. These kinds of words would help readers find out the relation between sentences, thereby understand the sentences. Since it is related to sentence and paragraph recognition, nearly half of the students in the Experimental Group (10, 45.5 %) before training, and almost two third of them (15, 68.2%) after training used this strategy. This is not a significant increase between pre- and after training. Relatedly, the results of the Control Group obtained in the beginning showed that half of the 22 students were familiar with this strategy 11 (50%). This number increased to 16 (72.7%) because there were some related activities in the text book used; yet there is not a statistically significant improvement.

Strategy 8. While reading, paraphrasing and making a summary of the preceding paragraphs, finding the general or main ideas, or author's general organisational patterns require students to find what is interesting and what is important. It is, in a way, related to higher order level thinking in that readers should comprehend, analyse, and apply appropriate ways to achieve these kinds of activities. According to some research, good readers may use the author's organisational patterns to help them

organise their own ideas on what they are reading, and this helps them remember more than those who do not (Meyer, Brandth, & Bluth, 1980; Taylor, 1980).

However, in the pre-interview all students in both groups came to an agreement that "paraphrasing sentences or making summary of what has already been read is time consuming and it should be done in writing courses not in reading comprehension course." Results indicated that no students in the Experimental Group used these strategies before training; however, after training the number raised significantly (from 0 to 12 with a 54.5% percentage). Additionally there was statistically significance change between the pre- and post-interviews at a level of .0005. According to a research carried out by Winograd (1984) the students who do not use the appropriate strategies and are called poor readers. They are likely to use summarisation techniques efficiently than those who are good readers. However, good readers who are appropriate strategy users, see the relation between the parts of a whole. Thus, while studying in the training with the semantic mapping for related ideas, those in the Experimental Group were likely to gain some insight of using this strategy.

The results of this strategy obtained from those in the Control Group indicated that before and after the training most of the students did not use this strategy. In the interviews, the students emphasised that paraphrasing was time consuming and they wanted to read the whole text and understand it with the help of vocabulary and structure. In addition, almost all of them stated that they had never studied reading comprehension in this way. Thus, there is no shift between the responses obtained in the pre- and post-interviews.

Strategy 9. Most of the readers involved in the training, believed, before training, that without knowing most of the sentence structures and the vocabulary they could not comprehend the text. They were not aware of the function of key vocabulary items and additionally, they did not believe that the more one word is used the more likely it would be one of the key vocabularies. Almost all of the students commented that "I think there are some significant vocabulary in each text, but I do not know how to use them to predict the meaning in the whole text. It seems impossible." Therefore, all of those in the Experimental Group did not use this strategy, but after the training 8 (36.4%) of them started using this strategy. This increase shown in Table 6-1 (with value of .0078) indicates that there is a significant increase between pre- and post-usage of that strategy.

When we look at Table 6-2, we notice that in both pre- and post-training, there is no change in the results of the students in the Control Group. Using some words to predict the whole requires top-down process in reading, and for top-down processing, key words are vital for comprehension of the text. Using key words would help readers try to predict the whole by involving their world knowledge or schemata. However, the interviews showed that the students in the Control Group insisted on using the bottom-up process, which led them to use the small parts in order to reach the whole.

Strategy 10. This strategy forms the basis of the study. The training was grounded on this strategy, and it was in relation with schemata theory in reading comprehension. By means of using this strategy, students were expected to improve their prediction skills by using the top-down process, forming mental images, and responding effectively to any problem by using higher level thinking process. Therefore, the

improvement of this strategy was provided with having students elaborate, which is the base of the skills mentioned previously.

The results showed that the training had a significant impact on the improvement of this strategy. None of the students at the beginning used it; however, at the end of the training 14 (63.6) of 22 stated that they used it. In addition, the results shown in Table 6-1 figure out that there is statistically significant increase in the use of this strategy (.0001).

On the other hand, the students in the Control Group indicated that pre-reading was time consuming and it was useless for the comprehension of the texts. Additionally, they pointed out that they did not care about textual clues such as titles, subtitles, graphs and so on. This strategy was the base of the training in the Experimental Group and the Control Group did not get any special training. Furthermore, there were not any activities related to this strategy in the text book used. Thus, there is no change between the pre- and post-strategy interviews in the Control Group shown in Table 6-2 (1.000).

Strategy 11. Most of the Turkish students tend to approach reading comprehension without having any aim. Therefore, they usually do not feel themselves involved in reading; rather they feel they are obliged to read and do the tasks. This strategy is related to motivation and motivation, which is, considered one of the metacognitive skills. Metacognitive strategies are called "cognition of cognition" by Carrell, et al. (1989), and they state that there is a close relation "among awareness of, or perception about strategies, strategy use, and reading comprehension" (p. 648).

The results of training based on cognitive learning strategies and using them were likely to improve the level of using this strategy. This could be proved with the results the Table 6-1. Although before the training all of the students indicated that

they did not constantly focus on the reading and were unaware of strategies needed, after training 13 (63.6%) out of 22 students indicated that they felt actively involved in reading. Thus, the results prove that there is statistically significant improvement.

As it happened in the Experimental Group, the students in the Control Group were in the feeling of achieving the tasks related to reading text. They were not motivated for what they were expected to do in the beginning. However, after they were told the aim of reading and what they were to achieve related to the activities in the texts some of them became more eager for reading. As a result, 12 (54.5%) out of 22 started approaching reading in this way and this resulted in statistically significant change with a value of 0,0020 probability level.

Strategy 12. This is also related to metacognitive skills. Readers are expected to acquire the skills which enable them to get both the knowledge and how to use this knowledge. Furthermore, metacognitive skills enable readers to use the right strategy in the right place. Thus, this strategy usage is included in the pre- and post-interviews. The results showed that together with cognitive strategies metacognitive strategies improved. Although all of the students were unaware of this strategy, before training, 13 (59.1%) of them became familiar with it after training. Additionally, this was proved to be a statistically significant increase at 0.0002 level.

In the Control Group, on the other hand, as seen in Table 6-2 in accordance with strategy 11, there was a slight shift from "no" to "yes" in the usage of this strategy. The results showed that although in the beginning none of the students did use this strategy, in the end 7 (31.6%) started using it but the improvement was not statistically significant (.0703). It was assumed that this increase might have resulted due to the improvement in their level of language. The students in this group still

Table 6-2 Pre- and Post-interviews of the Control Group

STRATEGIES	PRE-INTERVIEW YES		PRE-INTERVIEW NO		POST-INTERVIEW YES		POST-INTERVIEW NO		P value
	Frq.	%	Frq.	%	Frq.	%	Frq.	%	
1. Recognising and using the structure of the sentences.	22	100	0	0,00	22	100	0	0,00	1.0000
2. Trying to find out the meanings of vocabularies in a dictionary and translate the text into native language.	22	100	0	0,00	22	100	0	0,00	1.0000
3. Comparing sentences and paragraphs meanings while reading.	2	9,1	20	90,9	13	59,1	9	40,9	0.0034 (S)
4. Finding main idea(s).	19	86,4	3	13,6	22	100	0	0,00	0.2500
5. Re-reading previous or subsequent sentences and paragraphs.	19	86,4	3	13,6	21	95,5	1	4,5	0.5000
6. Recognising the function of vocabulary and chunking them to make meaningful phrases or sentences.	7	31,8	15	68,2	19	86,4	3	13,6	0.0005 (S)
7. Understanding the relations between sentences and paragraphs by recognising the function of linking words, transitions and anaphors.	11	50,0	11	50,0	16	72,7	6	27,3	0.0625
8. Paraphrasing sentences and paragraphs. Making a summary of what has already been read by ignoring unimportant information. Finding the general or main ideas; understanding the authors general organisational patterns.	0	0,00	22	100	1	4,5	21	95,5	1.0000
9. Selecting key vocabulary or phrases using the context, which would help recall the whole.	0	0,00	22	100	0	0,00	22	100	1.0000
10. Making elaboration: Making predictions by pre-reading; skimming title, subtitles, graphics and questions; making analogies by using the previous acquired knowledge; visualising the events; using higher level thinking (application, analysing, synthesising and evaluation process).	0	0,00	22	100	0	0,00	22	100	1.0000
11. Feeling himself/herself actively involved in the reading text and making logical responses.	0	0,00	22	100	10	45,5	12	54,5	0.0020 (S)
12. Using a specific process in a specific way because of specific context. Evaluating the comprehension process while reading. If there is any lack finding a new way to overcome it. Remembering certain parts of the text by selecting, evaluating and adjusting strategies.	1	4,5	21	95,5	7	31,6	15	68,2	0.0703

p = .0500 S= Significant

insisted on using the sentence structure and vocabulary in order to understand the text. In addition, they mostly stated "if there is any part I do not understand while reading I lose my interest in the test and do not want to go on reading."

The results shown in Table 6-1 and Table 6-2 show the significant differences between the Experimental and the Control Group. The tables also show that although there is a significant change in the strategy usage of the students in the Experimental Group, the same changes are not observed in the students of the Control Group. The students in the Experimental Group did increase their strategy usage especially in the 3^{rd}, 8^{th}, 9^{th}, 10^{th}, 11^{th}, and 12^{th}. These strategies are in the scope of the study and the significance values show that there is a significant change in the usage of these strategies. When the strategy 10, for instance, is considered in Table 6-1, it is observed that even though total 22 students in pre- interview asserted that they did not use this strategy, in the post-interview 14 (63.6%) of them started using this strategy. In addition, this strategy is related to the usage of the background knowledge in order to elaborate on the text, and it is obvious that the students in the Experimental Group have shown a great deal of improvement in the usage of this strategy. In the Table 6-2 which shows the results obtained from the students in the Control Group, although the pre-interview results show similarity to those of in the Table 6-1, the post-interview results show reasonable differences. The effects of this improvement in the usage of the strategies will be shown, in partly, in the discussion of the achievement tests in section 6.3 and mainly in the pre- and post-test results in section 6.4.

6. 3 Achievement Tests

During the two semesters the students in preparatory classes have to take six achievement tests for each skill. In other words, they are required to take one achievement test of the four skill courses (grammar, reading, writing and listening/speaking) for nearly each month. For the reading comprehension course, total five achievement tests were given during the two semesters to both groups in the similar situation and under the same condition. They were analysed through one of the non-parametric statistical programme, Mann-Whitney U - Wilcoxon Rank Sum W. This statistical programme is used for the data obtained from independent samples. Thus, the data obtained from the Experimental and the Control groups were analysed through this programme. It measured the mean of each test and correlated the results of the Control and the Experimental group students. The probability level = .0500 means the 95% accuracy in the analysis of the results. In correlation of the two groups, if the statistical value is = .0500 or below, the result was accepted statistically significant. In addition, the results of these tests taken each month provided a good opportunity for the researcher to observe the effects of the training.

Table 6-3 The Results of the Achievement Tests

ACHIEVEMENT TESTS	**MEANS**		**P Value**
	CONTROL GROUP	***EXPERIMENTAL GROUP***	
ACHIEVEMENT 1	55,9	58,1	0,4805
ACHIEVEMENT 2	58,6	65,1	0,0397 (S)
ACHIEVEMENT 3	61,5	59,8	0,4881
ACHIEVEMENT 4	55,9	63,0	0,0376 (S)
ACHIEVEMENT 5	62,5	70,3	0,0059 (S)

p = .0500 **S:** Significant

Achievement 1. The first achievement test was given in the sixth week of the first academic semester. The test consisted of knowledge, comprehension and cloze questions. The analysis questions were not included because it was the beginning of the training, and it was assumed that students would show any change in answering these questions. However, it was considered that cloze questions would serve as analysis question, in addition to application, synthesis, and evaluation. The results showed that there was not statistically significant difference between the two groups (.4805 > .0500). It may be due to fact that it takes time for any learner to adapt a new learning strategy (O'Malley and Chamot 1990).

Achievement 2. One month after the first test, the students took the second achievement test. It involved the same type of questions as the achievement 1; i.e. knowledge, comprehension and cloze questions. The results showed a significant difference between the Experimental and the Control groups. It was assumed that there was a tendency in the Experimental Group to gain the strategies needed in order to overcome difficulties in the comprehension of whatever they read. In addition, the text included in the exam was about sharks and cloze test passage was about acid rain. Since the training were based on the involvement of the background knowledge by elaborating, the students in the Experimental Group may have used their background knowledge and did better than those in the Control Group who were not accustomed to using background knowledge.

Achievement 3. This was the last test of the first semester. It was administered at the end of the semester, and again there were knowledge, comprehension and cloze questions. The text and cloze test passage were very different from those in the second one in that the reading comprehension text was titled "Shadow Factories" and

the cloze test passage had no title and needed vocabulary knowledge rather than context usage. The results showed that the students in the Control Group did better than those in the Experimental Group. It was assumed that unlike the second achievement test the students in the Experimental Group did not have the chance of using their background knowledge to go beyond the text. It was likely that they did not have any or much information about shadow factories located in America and produce glassware for ornamental purposes. Thus, this frustration may have resulted in a less achievement in the third test. In addition, there is no significant difference between the groups (.4881 > .0500).

Achievement 4. About one month after the beginning of the second semester, the fourth achievement test was given. This test consisted of analysis questions as well as knowledge, comprehension and cloze questions. The results showed a statistically significant difference between the Experimental Group and the Control Group students. It was observed that there were slight differences in the response to knowledge and comprehension questions whereas there were great differences among the responses of both groups to cloze and analysis questions. The students in the Experimental Group gave more correct responses to the application questions than those in the Control Group. This resulted in a statistically significant difference between the two groups (.0376).

As mentioned above, together with cloze test, some analysis questions were included. These questions required students to go beyond the whole and find the relation with the ideas. Therefore, it was assumed that the students in the Experimental Group gained the elaboration skills, which enabled them to make an analysis of the sentences and find the right answer. The students in the Control Group, on the other hand, were not familiar with the strategy they needed in these kinds of

questions; therefore, they tried to overcome this by using their vocabulary, and structure knowledge, which caused an impaired comprehension.

Achievement 5. This was the last achievement test and administered about one month after the 4th achievement test. No different question type was included. That is, the questions were similar to those administered one month before; i.e. knowledge, comprehension, analysis and cloze questions. When the results were obtained, it was observed that the success of the Experimental Group students was statistically significant at .0059 level of probability, especially in cloze and analysis questions.

When the means of the each achievement tests were correlated, it was found out that there was statistically significant difference in 2nd, 4th and 5th achievement tests. It is observed in the Table 6-3 that the increase in the achievement tests was performed gradually. The 5th achievement tests results had crucial value, which showed statistically significant change (.0059) when compared to others (2nd with a statistical value of .0397 and 4th with a statistical value of .0376). These tests were given in the second term, after six months the training started. It was thought that this statistical change between two groups was resulted from the treatment. O'Malley and Chamot (1990) state that learning to use a skill requires any learner to spend quite a long period of time on practising. Additionally the same researcher states that complex skills can be achieved by processing it automatically. This automatic process is acquired by the transformation of the declarative knowledge to procedural knowledge.

Thus, as it was pointed out in the second and third chapters in the definition of learning and knowledge types and memory working that in order to use the knowledge it should be stored in long term memory. This storage provides the opportunity for the learners to relate it to the existing one(s) so that they use it

properly. According to Gagne (1985) this transformation should be goal-oriented and in this stage learners convert their intention and plans into creativity. This creativity in production takes a long time, and requires training. As the students in the Experimental group were trained to gain appropriate strategies and use the strategies they acquired, the achievement tests show to what extent they have gained strategies, thereby they transferred their declarative knowledge to procedural knowledge.

The achievement tests showed that there were differences between the students in the Control Group and those in the Experimental Group. The main reason of this improvement in the Experimental Group resulted from the fact that the students in this group were trained in order to gain appropriate (cognitive learning strategies in reading comprehension). As discussed previously that the students in the Experimental Group gained more strategies related to cognitive learning. Therefore, in order to see the total effect of the training, the pre- and post-test results will be presented below.

6.4 The Pre- and Post-tests

In order to find out if there was any significant difference before and after training, a test was used. This test served as pre- and post- test. The analysis of the data obtained with pre- and post-test was done through SPSS statistical programme in which two different analysis programs were used. The data obtained from the related groups, Experimental pre- and post- for instance, was analysed through Wilcoxon Matched-Pairs Signed Rank Test. In addition, the data obtained from the independent groups were analysed through Mann-Whitney U - Wilcoxon Rank Sum W Test.

Thus, the analysis illustrated in Tables 6-4 and 6-5 was done through Wilcoxon Matched-Pairs Signed Rank Test, and those in Tables 6-6 and 6-7 was done through Mann-Whitney U - Wilcoxon Rank Sum W Test.

Table 6-4 Control Group Pre- and Post-tests

TESTS	Num.	Mean	Std Dev.	Std Err.	Minimum	Maximum
Pre-test	22	42.227	11.110	2.369	28	76
Post-test	22	67.000	9.457	2.016	40	87
P Value = .0000						

As seen in Table 6-4, there is a significant difference between the pre- and post- test results of the Control Group at 0.000 level. In addition, when the mean value of the pre- and post-tests are considered, it is seen that the mean of the post-test is 67.000 whereas that of pre-test is 42.227. Again, the grades in the pre-test are between 28 and 76 with an 11.110 standard deviation while those in the post-test are between 40 and 87 with a lower (9.457) standard deviation. Additionally, in the pre-test, the majority of the grades fall between 28 and 76 whereas in the post-test', it is between 40 and 87.

When looked at Figure 6-1 showing the frequencies of the grades, which the students in the Control Group obtained, it is seen that there is a fluctuation (as shown with 11.110 standard deviation in Table 6-4). Of the students involved in the pre-test only 6 got over 50, one of whom was 76. In addition, the figure shows that most of the grades fall between 30 and 50 in the pre-test.

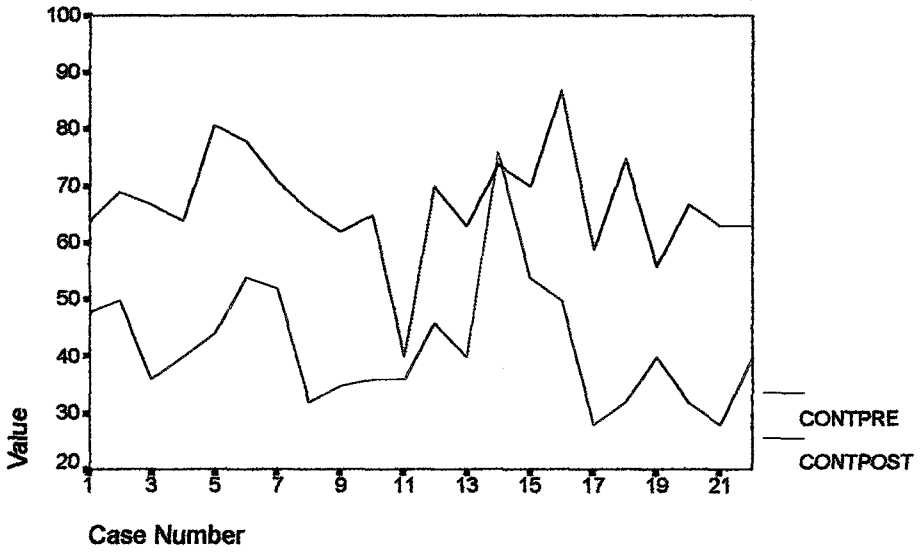

Figure 6-1 The Frequencies of the Pre- and Post-tests of the Control Group

It was assumed that the significant increase in the Control Group was the result of the training they get throughout two semesters. Although the students in the Control Group were trained with the traditional method in reading comprehension, different instructors trained them for the skills grammar, listening/speaking and writing as they are in their curriculum. This training, therefore, may have improved language skills of these students. However, it is seen in Table 6-4 and Figure 6-1 that the grades are too low and the value of standard deviation (11.110) is considerably high in the pre-test. This was attributed to the fact that the language level of the students were too low when they took the pre-test. They may also have not been familiar with the test administered, which caused them not to show their real achievement.

The results shown in Table 6-5 below helped the researcher come to this conclusion because the grades obtained from the students in the pre-test shows a similarities to the results obtained in the Experimental Group. However, the post-tests the results of the Experimental Group were far better than those of the Control

Group although the pre-tests results show similar results, even the results of students in the Control Group were better.

Table 6-5 Experimental Group Pre- and Post-tests

TESTS	Num.	Mean	Std Dev.	Std Err.	Minimum	Maximum
Pre-test	22	40.818	12.393	3.063	10	65
Post-test	22	75.682	8.335	1.777	57	91
P value = .000						

The results shown in the table above indicates that there is statistically significant change at .000 level between the pre- and post-tests of the Experimental Group. This shows a striking similarity to that of the Control Group. However, when the mean values and standard deviations are correlated with those of the Control Group it is clear that there is a reasonable difference. The mean value showed a sharp increase, (almost doubled) from a 40.818 value, with a 12.393 standard deviation, to 75.682 with a lower standard deviation value of 8.335. Additionally, while the minimum grade was 10 and the maximum grade was 65 in the pre- test they became 57 minimum and 91 maximum.

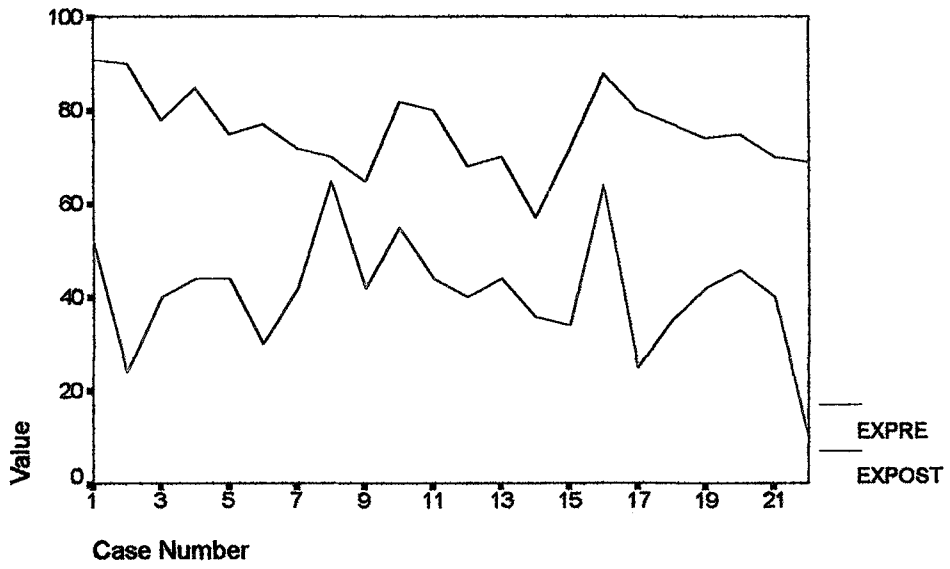

Figure 6-2 The Frequencies of the Pre- and Post- tests of the Experimental Group

In addition, when the distribution of the grades in the Experimental Group in pre-and post-tests is considered in Figure 6-2, it is seen that there is not consistency among the grades the students obtained. In the pre-test, of the 22, 10 had a grade between 40 and 44 whereas 7 got a grade below 40 and only four above 50. In the post-test, on the other hand, there is not any grade below 50, and most of them fall between 70 and 90.

There are noteworthy differences between the results obtained in the post-tests of the Control Group and the Experimental Group as shown above in the tables 6-4 and 6-5. However, the pre-test results do not show any differences when the results are compared. Therefore, the results of the pre-tests were correlated in order to see if there was any significant difference between the results of the Control Group and of the Experimental Group. Table 6-6 shows the correlation of the pre-test results obtained from the both groups.

Table 6-6 Control and Experimental Groups' Pre-tests

TESTS	Num.	Mean	Std Dev.	Std Err.	Minimum	Maximum
Experimental Pre-test	22	40.818	12.393	3.063	10	65
Control Pre-test	22	42.227	11.110	2.369	28	76
P value = 0.7677						

The results obtained from the Control Group and the Experimental Group with the help of pre-examination indicated that there was no significant difference between the groups (.7677). However, the difference between the two groups was not significant although there were more students whose grades were over 50 in the Control Group. As seen in Table 6-6, the mean of the Experimental Group was 40.818 whereas that of the Control Group was 42.227. Additionally the minimum grade in the Experimental Group was 10 and the maximum was 76 as opposed to the minimum 28 and maximum 76 in the Control Group. When the standard deviations

are considered, it is seen that both groups are almost homogenous (Experimental Group=12.393, Control Group 11.110).

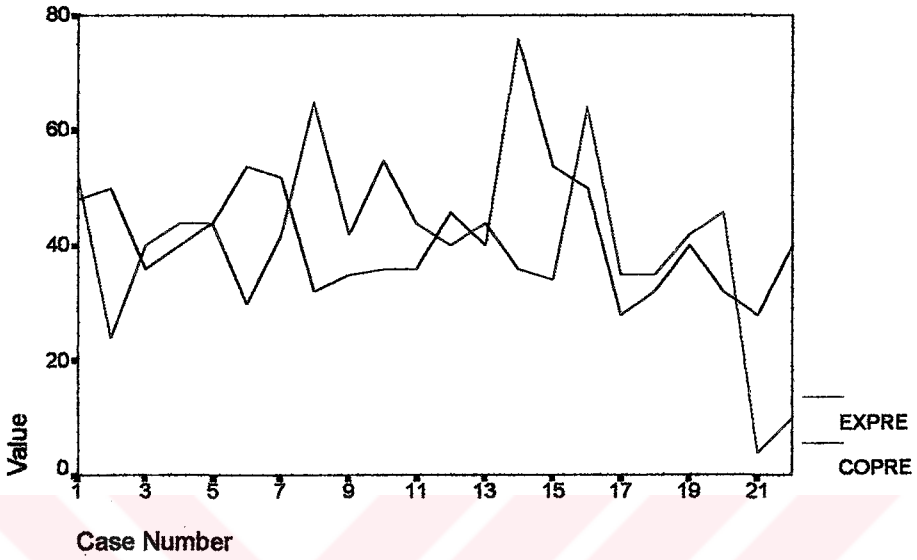

Figure 6-3 The Frequencies of the Pre-tests of the Experimental and the Control groups.

When all the grades are considered in the Figure 6-3, it is obvious that the grades of almost all students in both groups (even if Control Group is better) are different from each other. Those obtained from the students in the Control Group fall between 28 and 76 whereas those obtained from the students in the Experimental Group fall between 10 and 65.

These results indicate that before training, there was no significant difference between the Control and the Experimental Group. In addition, although the students in the Experimental Group were trained two semesters, the Control Group did not get any training. Therefore, after having the results of the pre- and the post-tests were correlated in order to see if there were any differences between the two groups after training. When the post-tests of the both groups were correlated it was seen that

there were differences between the grades of the two groups, and these differences resulted in a statistically significant difference between groups at .0028 level. Table 6-7 below shows the correlation of the post-test results of the two groups.

Table 6-7 Control Post- and Experimental Post-tests

TESTS	Num.	Mean	Std Dev.	Std Err.	Minimum	Maximum
Control Post-test	22	67.000	9.457	2,016	40	87
Experimental Post-test	22	75.682	8.335	1.777	57	91
P value = .0028						

The pre-and post-tests results of the Control Group showed a significant difference. However, as seen in Table 6-7 above and Figure 6-4 below there is a considerable difference between the two groups. The students in the Experimental Group increased their mean value from 40.818 to 75.682. Those in the Control Group, on the other hand, did not achieve the same increase. They reached from 42.227 to 67.000.

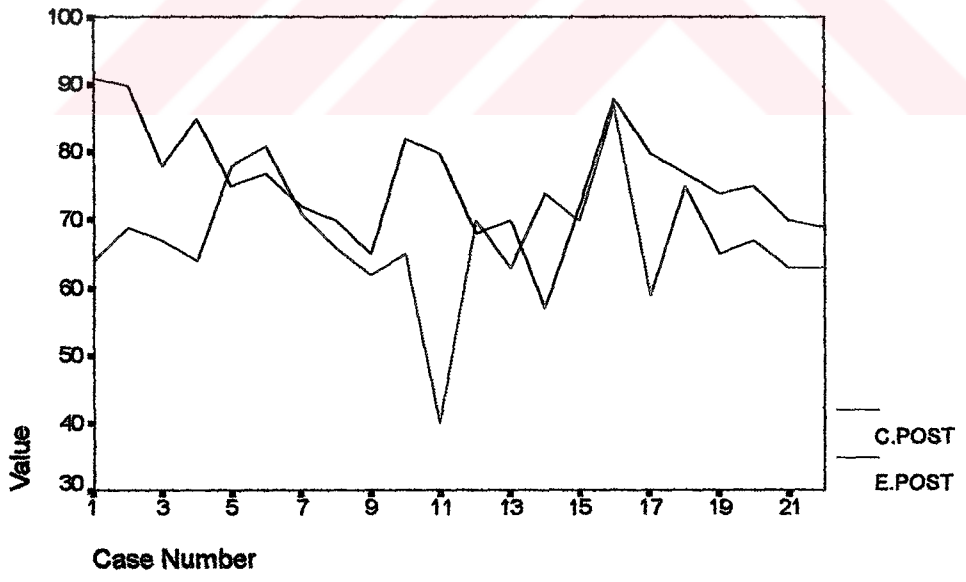

Figure 6-4 The Frequencies of the Post-tests of the Experimental and the Control groups.

The analysis of pre- and post-test result showed that the students in the Experimental Group were more successful in the post-test than those in the Control Group even if the students in the Control Group were more successful in the pre-test (see Table 6-6). However, more detailed analysis was carried out in order to find out the effect of the training, the items in the pre-and post-tests were analysed and the answer of the both groups were correlated in order to find out the effect of the training. The item analysis of knowledge, comprehension, analysis and cloze questions responded by the students in the Control Group and the Experimental Group are shown in the tables below.

6.5 The Item Analysis of the Pre- and Post-tests

The results of each item were analysed through Mc Nemar, one of the SPSS statistical programmes. The data were collected through the pre- and post-tests. However, in order to understand in which questions the students became more successful all the items of each level questions were analysed. The analysis was achieved by giving "1" if the student's respond was correct and "0" if it was wrong, and/or when it was not responded. Thus, all the items of each level questions obtained from the same group were correlated. This correlation needed a statistical programme, which is used for related samples. Therefore, Mc Nemar was the best among the others in the non-parametric tests. The superiority of the test was that it gave more accurate results with the p value of .0500. Thus, in the correlation of the test items if the value of correlation was $\leq$. .0500 the result was accepted 95 % accurate and significant. The knowledge, comprehension, analysis, and cloze questions included in the pre- and post-tests were analysed and correlated in order to see whether or not there was any difference.

6.5.1 Knowledge Questions

There were seven questions related to knowledge level, and all the students in the pre-and post-tests responded to these questions. The students were expected to recall, define, or identify specific information presented in the text they read. Tables 6-8 and 6-9 below show the correlation of knowledge questions responded by the students in the Control Group, and in the Experimental Group.

Table 6-8 Control Group Knowledge Questions

ITEMS	PRE-TEST		POST-TEST		P Value
	TRUE %	FALSE %	TRUE %	FALSE %	
1	72.7	27.3	81.8	18.2	.5000
2	364	63.6	59.1	40.9	.0625
3	81.8	18.2	100	0.00	.1250
4	90.9	9.1	100	0.00	.5000
5	95.5	4.5	100	0.00	.1000
6	27.3	72.7	81.8	18.2	.0005 (S)
7	50.0	50.0	100	0.00	.0010 (S)

p = .0500 **S**= Significant

As seen in Table 6-8, the analysis of knowledge questions responded by the students in the Control Group shows that there is a considerable increase in the answers of the students, especially in the items 6 and 7. This increase in the correct answers to knowledge questions is one of the reasons why there is a quiet high increase in results of the post-test, which caused a significant change when compared to that obtained in the pre-test. The similar results were observed in the results of the Experimental Group when the same types of questions were considered. Table 6-9 below shows the results of the pre- and post-tests of the Experimental Group.

Table 6-9 Experimental Group Knowledge Questions

ITEMS	PRE-TEST		POST TEST		P Value
	TRUE %	FALSE %	TRUE %	FALSE %	
1	59.1	40.9	100	0.00	0.0039 S)
2	86.4	13.6	100	0.00	0.2500
3	100	0.00	100	0.00	1.0000
4	77.3	22.7	100	0.00	0.0625
5	54.5	45.5	100	0.00	0.0020 S)
6	31.8	68.2	86.4	13.6	0.0005 S)
7	81.8	18.2	95.5	4.5	0.2500

p = .0500 **S**= Significant

When the results of the knowledge questions obtained from Experimental group during pre- and post-test compared, we can see in Table 6-9 that there are similarities between the result of the Control and Experimental groups. However, there are more items which show significant increases in the Experimental Group (items 1, 5 and 6). The analysis of knowledge questions shows that the item 1 (.0039), item 5 (.0020) and item 6 (.0005) indicate statistically significant increase in the post-test.

Knowledge questions require students to remember or to retrieve the information obtained from the text and stored in mind (Orlich et al. 1985). In other words, students memorise the information, and thereby find the answer. Therefore, knowledge questions are not within the scope of the study. However, according to Tekin (1982), knowledge must also be evaluated because it is within the scope of teaching and learning. Additionally, Orlich et al. (1985) claim that knowledge questions are the base for other questions in the taxonomy, and the same researchers state that knowledge level "provides the subject matter on which the other categories are based" (p. 86).

6.5.2 Comprehension Questions

The second step in the Bloom's Taxonomy is the comprehension questions and in pre- and post-tests there were eight questions related to this level. In the comprehension level of questioning, students were required to demonstrate understanding of information by translating it into various forms. They were also expected to recognise the information translated into different forms. Tables 6-10 and 6-11 below show the results of the comprehension questions obtained from the Control and Experimental groups.

Table 6-10 Control Group Comprehension Questions

ITEMS	PRE-TEST		POST-TEST		P Value
	TRUE %	FALSE %	TRUE %	FALSE %	
1	31.8	68.2	59.1	40.9	.0703
2	68.2	31.8	100	0.00	.0156 (S)
3	36.4	63.6	77.3	22.7	.0039 (S)
4	4.5	95.5	22.7	72.7	.0625
5	40.9	59.1	77.3	22.7	.0078 (S)
6	22.7	77.3	68.2	31.8	.0020 (S)
7	22.7	77.3	50.0	50.0	.0313 (S)
8	36.4	63.6	54.5	45.5	.1250

p = .0500 **S**= Significant

It is shown in the table above that the students in the Control Group made a significant increase in the comprehension questions except item eight. The "p" values of items 2, 3, 5, 6, 7 shown in the table justified this increase. This result is another reason of why there is a considerable increase in the post-test given to the students at the end of the year. Students in that group were slightly better than those in the Experimental Group (as shown in Table 6-11). At the end of the year, when they were given the post-test they made a considerable increase, however this increase was

contributed to the results of the knowledge and comprehension questions. Additionally, this conclusion was supported by the "p" values shown in Table 6-8 and Table 6-10. On the other hand, the results of the comprehension question of the Experimental Group (seen in Table 6-11) show that there are some similarities between two groups.

Table 6-11 Experimental Group Comprehension Questions

ITEMS	PRE-TEST		POST-TEST		P Value
	TRUE %	FALSE %	TRUE %	FALSE %	
1	77.3	22.7	95.5	4.5	.2188
2	59.1	40.9	100	0.00	.0039 (S)
3	13.6	86.4	59.1	40.9	.0020 (S)
4	22.7	77.3	54.5	45.5	.0156
5	100	0.00	95.5	4.5	1.0000
6	36.4	63.6	72.7	27.3	.0078 (S)
7	0.00	100	18.2	81.8	.1250
8	4.5	95.5	31.8	68.2	.0313 (S)

p = .0500 S= Significant

The analysis of the answers given to the comprehension questions in the Experimental Group shows that students in this group raised their grades significantly. However, when they are compared to those of the Control Group, it is seen in Table 6-10 and 6-11 that the Control Group is quite better than the Experimental Group. This is attributed to the fact that five of the questions in the comprehension level were the words, which require the readers to use the context and find the synonym. In other words, they require the interpretation rather than translation or definition. In addition, there are synonym/antonym activities requiring memorisation in the textbook used. Therefore, the students in the Experimental Group, as they were trained to use mental power for thinking and deciding did increase in the knowledge questions less than the Control Group students who were likely transfer their memorised words and find

the answers to the questions randomly. Because, in responding to the comprehension level questions students do not elaborate, rather they only use the knowledge and integrate it into their understanding (Bloom, 1956).

6.5.3 Analysis Questions

For the elaboration skills, the higher order level questions (application, analysis, synthesis and evaluation) were considered within the scope of this study. When the results of these questions in pre- and post-tests were analysed it was figured out that there was somewhat difference between the Control and the Experimental groups. By means of analysis questions, students were forced to recognise the structure of information or the constituents of this information by specifying the relationship between its constituents. Therefore, ten questions were included in the pre- and post-test in order to see if there would be any increase the previously mentioned skills of the students after training. Tables 6-12 (of the Control) and 6-13 (of the Experimental Group) below show the results of the analysis question.

Table 6-12 Control Group Analysis Questions

ITEMS	PRE-TESTS		POST-TEST		P Value
	TRUE %	FALSE %	TRUE %	FALSE %	
1	81.8	18.2	81.8	18.2	1.0000
2	68.2	31.8	81.8	18.2	.3750
3	13.6	86.4	36.4	63.6	.0625
4	22.7	77.3	18.2	81.8	1.0000
5	45.5	54.5	54.5	45.5	.1250
6	13.6	86.4	22.7	77.3	.6875
7	72.7	27.3	59.1	40.9	.5078
8	40.9	59.1	59.1	40.9	.3438
9	0.00	100	18.2	81.8	.1250
10	22.7	77.3	36.4	63.6	.5078

p = .0500 S= Significant

When the results of the analysis questions obtained from students in the Control Group is observed in the table above, it is seen that there is not a statistically significant change between the responses given to the analysis questions in pre- and post- tests. However, there is a considerable increase in the result of the Item 3 (.0625). In addition, although Item 1 remains the same, there is a slight increase in percentage of almost all of the items. For example, Item 9 did have a value of 0.00 % percentage in the pre-test but it reached to a value of 18.2 % in the post-test. When compared to those obtained from the Experimental Group it is seen in the tables that there is a great gap between the results obtained from the Control Group and those obtained from the Experimental Group. As seen in the table 6-13 below, the students in the Experimental Group did much better than those in the Control Group.

Table 6-13 Experimental Group Analysis Questions

ITEMS	PRE-TESTS		POST TEST		P Value
	TRUE %	FALSE %	TRUE %	FALSE %	
1	72.7	27.3	100	0.00	.0313 (S)
2	59.1	40.9	90.9	9.1	.0391 (S)
3	9.1	90.9	45.5	54.5	.0078 (S)
4	4.5	95.5	31.8	68.2	.0313 (S)
5	54.5	45.5	77.3	22.7	.1250
6	18.2	81.8	54.5	45.5	.0574 (S)
7	72.7	27.3	81.8	18.2	.7539
8	50.0	50.0	68.2	31.8	.3877
9	0.00	100	22.7	77.3	.0625
10	18.2	81.8	50.0	50.0	.0391 (S)

p = .0500 S= Significant

The figures given in the table above show that the students in the Experimental Group made a statistically significant increase in 6 out of 10 questions. The "p" value level of .0078 of item 3, for example, indicates this increase in the

results of the items in the analysis questions. As it is seen in Table 6-12, the Control Group has lack of handling the analysis questions, which require students to use their higher order level thinking. Analysis questions in a way are similar to those of comprehension questions. As mentioned above, the students in the Control Group showed a great achievement in comprehension questions; however, they did not show the same achievement in the analysis questions. Orlich et al. (1985) points out that although there are similarities between comprehension and analysis level in making comparisons, "analysis goes beyond just understanding a communication and involves being able to look beneath the surface and discovering how different part interacts" (p. 93). In the same line of reasoning, the results of this study show that the students in the Control Group were not able to go beyond the total effect. In other words, they were not aware of how all parts fit together to come to a solution. It is because of the fact that they did not get any training in order to use their higher order thinking by elaborating.

6.5.4 Application, Synthesis and Evaluation Questions (Cloze Test)

In these levels of higher order thinking questioning, students were expected (1) to apply the information into a new situation, (2) to bring information from different sources so that they could create a product on their own, and (3) to apply a standard in order to come to a conclusion. Thus, a cloze test were administered to cover all of the expectations mentioned previously since cloze tests are the instrument which could best be used in evaluating the higher order thinking process (see Section 5.5.2). Tables 6-14 and 6-15 show the results of the cloze test obtained from the Control and the Experimental groups

Table 6-13 Control Group Application, Synthesis and Evaluation Questions (Cloze Test)

ITEMS	PRE-TESTS		POST-TEST		P Value
	TRUE %	FALSE %	TRUE %	FALSE %	
1	59.1	40.9	54.5	45.5	1.0000
2	45.5	54.5	31.8	68.2	.6250
3	31.8	68.2	36.4	63.6	1.0000
4	36.4	63.6	31.8	68.2	1.0000
5	40.9	59.1	63.6	36.4	.0625
6	50.0	50.0	45.5	54.5	1.0000
7	72.1	27.3	77.3	22.7	1.0000
8	63.6	36.4	68.2	31.8	1.0000
9	59.1	40.9	63.6	36.4	.5078
10	40.9	59.1	50.0	50.0	.6875
11	36.4	63.6	45.5	54.5	.6875
12	63.6	36.4	54.5	45.5	.6250
13	63.6	36.4	81.8	18.2	.2188
14	40.9	59.1	54.5	45.5	.4531
15	54.5	45.5	36.4	63.6	.1250
16	36.4	63.6	22.7	77.3	.2500
17	54.5	45.5	63.6	36.4	.6875
18	50.0	50.0	54.5	45.5	1.0000
19	68.2	31.8	81.8	18.2	.3750
20	40.9	59.1	59.1	40.9	1.0000

p = .0500 S= Significant

The application, synthesis and evaluation questions were made up cloze questions, and as it was stated in the instrumentation section (see Section 5.5.2), these kinds of questions could be used to test the higher order level of thinking. In this cloze test, students were supposed to fill in the blanks with appropriate words.

Table 6-13 above shows the responses given to the each word in the cloze test included in the in pre- and post-tests. There is not any significant difference between the pre-and post cloze test results obtained from the students in the Control Group. This result could be justified by the fact that poor readers are less aware of the strategies that affect the reading (Kletzien, 1991). The students in the Control Group might approach these kinds of questions randomly in order to find out what the answer could be. In other words, random approach to the questions during the exam could be the reason of why there are fluctuations in the responses given to these items.

Additionally, the responses given to the questions in the pre- and post-tests showed that the students in the Control Group improved their skills in the knowledge and comprehension questions however, they did not show any improvement in higher order level thinking questions; analysis, application, synthesis, and evaluation questions. As seen in Table 6-15, the students in the Experimental Group, on the other hand, made a significant increase in the higher order level questions even though they had the same level of increase with the students in the Control Group regarding the knowledge and comprehension questions.

Table 6-15 Experimental Group Application, Synthesis and Evaluation Questions (Cloze Test)

ITEMS	PRE-TEST		POST-TEST		P Value
	TRUE %	FALSE %	TRUE %	FALSE %	
1	68.2	31.8	95.5	4.5	.0313
2	40.9	59.1	86.4	13.6	.0020 (S)
3	4.5	95.5	68.2	31.8	.0001 (S)
4	9.1	90.9	54.5	45.5	.0020 (S)
5	9.1	90.9	72.7	27.3	.0001 (S)
6	31.8	68.2	63.6	36.4	.0156 (S)
7	77.3	22.7	86.4	13.6	.6250
8	45.5	54.5	72.7	27.3	.0313 (S)
9	4.5	95.5	50.0	50.0	.0020 (S)
10	0.00	100	45.5	54.5	.0020 (S)
11	13.6	86.4	63.6	36.4	.0010 (S)
12	54.5	45.5	72.7	27.3	.2188
13	72.7	27.3	81.8	18.2	.5000
14	22.7	77.3	86.4	13.4	.0001 (S)
15	18.2	81.8	54.5	45.5	.0078 (S)
16	4.5	95.5	40.9	59.1	.0078 (S)
17	27.3	72.7	81.8	18.2	.0005 (S)
18	36.4	63.6	72.7	27.3	.0078 (S)
19	68.2	31.8	81.8	18.2	.2500
20	22.7	77.3	77.3	22.7	.0005 (S)

p = .0500 S= Significant

The analysis of the items in the cloze test results obtained from the Experimental Group showed that the students in the Experimental Group were greatly affected by the training based on improving and enriching the students' elaborative skills. The results of the training affected strikingly the responses of the students in the Experimental Group to the cloze questions. As it was previously stated, the strategy training requires long term study and the effects of the training may reveal gradually. Therefore, the gradual improvement observed in the achievement tests reached its peak point, and almost all the students in the Experimental Group did far better in all the items in the post-test. Table 6-15 above reveals that there is a

statistically significant improvement in almost all of the items. However, Items 7, 12,13, and 19 show no statistically significant change.

In the cloze test assigned in the pre- and post-test, students were expected to use the content so that they could apply, analyse, synthesise, and evaluate in order to come to a conclusion. The cloze test also forced the students to use higher order level thinking strategies they had acquired. Additionally, the students became obliged to use the elaborative skills, thereby higher order thinking so as to understand the text. Therefore, this created a great gap between the students in the Control group and those in the Experimental Group. The students trained during two semesters were likely to have acquired the strategies they could use at any time need arises. Those in the Control Group, on the other hand, failed to use strategies requiring higher order level thinking.

6.6 Summary of the Findings

One of the findings of this study is related to the results obtained from the pre- and post- interview strategy use. The findings of strategy usage shown Tables 6-1 and 6-2 proved that the students in the Experimental Group enriched their strategies in reading comprehension, especially in strategies 8, 9, 10, 11, and 12. These strategies were related to the training, and it was aimed that the students in the training would gain the elaborative strategies together with other strategies. The results obtained from the strategy interviews in the Experimental Group also indicated that vocabulary and sentence structure uses take the priority in the strategy usage.

Strategy usage in the Control Group, on the other hand, did not show any remarkable difference between the pre- and post-interviews. The vocabulary and sentence structure use in the post-interview was observed to be the same as that in the pre-interview. Strategy 6 (.0005) and strategy 11 (.0020) were significantly improved although there was no significant improvement in the other strategies.

The second finding is that the students' grades in the achievement tests made a gradual increase throughout the two semesters. The striking results obtained with the help of the achievement test can be seen in the last two achievement tests. There is a significant difference between the students in the Control group and those in the Experimental Group (Table 6-3). This may be attributed to the effect of the training based mainly on schemata theory, and carried out two semesters. The analysis of the achievement tests also indicates that the students in the Experimental Group did not perform well in the event that the reading texts were far different from what they had experience with.

The pre- and post-test results provided the third finding of this research. The processed data illustrated in Tables 6-4, 6-5, 6-6 and 6-7 supported by the figures indicate that there are significant changes between pre- and post-test of the two groups. When the pre-test results of both groups were correlated with the help of Mann Whitney statistical analysis program, no significant difference between the groups was found. However, although there was no significant difference between the two groups before training, there was a striking difference after training. The post-test results, as shown in Table 6-7, clearly indicate this improvement. In addition, when the two groups are compared, we can notice great differences among the grades the students get in pre- and especially in post-tests.

The significant results between the two groups are due to the fact that there is a close relation between appropriate strategies and the success of students who use these strategies whenever the need arises. In addition, the results of pre- and post-strategy interview show that strategy training is possible, and students needs to acquire strategies they are likely to use not only in reading comprehension but also in other language skills they would like to improve. One more finding of the strategy training is that students not only need the knowledge of strategies but also how and where to use them.

Therefore, the results show that training the students with cognitive strategies can also be beneficial for improving metacognitive strategies. While studying on thinking and recalling process, students are likely to become aware of what strategies they need in order to come to a conclusion. That is, they are likely to improve the "if... then theory" while they are altering their declarative knowledge to procedural knowledge (see Section 3.1.3).

The final finding of this study is that, the treatment helps students improve their higher order level thinking. This improvement brings about a statistically significant difference between the students in the Experimental Group and those in the Control Group. When the pre- and post-tests results shown in the Tables are considered it is obvious that although there is almost no difference between the knowledge and comprehension questions included in the pre- and post-tests, there are noteworthy differences in the analysis and cloze questions. Both groups show similar improvement in answering the knowledge and comprehension questions. However, when analysis and cloze questions are compared, it is seen that the students in the Control Group failed to make a significant increase. Those in the Experimental Group, on the other hand, made a significant increase in most of the items of the analysis and cloze questions.

CHAPTER 7

CONCLUSIONS AND IMPLICATIONS

7.1 Conclusions

Language learning and teaching requires those who are involved in teaching/learning process to use the right method in the right place. Rather, it involves the whole process of human thought. In other words, while learning human beings should use their thinking power in order to anchor what they are learning. This process is called meaningful learning (Ausubel, 1963). In this process, individuals go through a learning process which help them make associations with the existing knowledge acquired before. Ausubel, in his meaningful learning theory insists that no learning can occur if learners cannot make associations. In order to make associations, learners need to use their long-term memory in which all the acquired information is stored. In other words, declarative knowledge turns into procedural knowledge that shows the learning process overtly. It is obvious that for this process to take place some steps should be taken in teaching/learning process. Irwin (1991) states that the relation between declarative and procedural knowledge is imperative for reading comprehension that is the base of the other skills such as writing and speaking.

How learners achieve meaningful learning in reading comprehension lies on having appropriate strategies which enable them to overcome any difficulties they may encounter. In addition, these strategies can enable readers to understand what they are reading even if they are not highly proficient in language skills. Block (1986) argues

that strategy usage is not related to specific language features. In other words, strategy use does not require readers to have a good knowledge of the target language rather, they can develop the usage of the strategies even if are not competent in the language-specific features.

The results of this study indicate that schema theory could provide meaningful learning, that is cognitive learning strategies, in reading comprehension since it enables students to think and elaborate on what they are reading. Hence, the readers can activate the knowledge stored in their long-term memory (see Sections 3.2, 3.3 and 3.4). In addition, without the language specific feature in the texts, they could understand the implicit ideas by using their thinking power in order to predict. This study also indicates that if the students are trained to gain appropriate strategies which facilitate their skills such as thinking, judging and coming to a conclusion, they are likely to be successful in reading comprehension. Studies carried out by different researchers such as Jones et al (1987), O'Malley and (1990), Irwin (1991), Kletzien (1991), show that this could be provided with strategic teaching.

Strategic teaching and learning takes a great role in education, thereby, in reading comprehension. O'Malley and Chamot (1990) suggest that there is no difference between learning strategies and other cognitive processes, "yet if one's purpose is to facilitate learning and teaching, there are advantages to isolating component mental processes that can be imparted to learners as ways to make learning more effective" (p. 42). However, the results of the pre- and post-interviews for strategy use in this study reveal that the readers who participated in this study were unaware of the strategies, in other words they did not know or did not use the appropriate strategies which may facilitate reading comprehension. Almost all of the

students in both groups tend to view the vocabulary and sentence structure knowledge as the only way of understanding what they are reading.

We believe that if students are trained properly they are likely to become more successful in reading comprehension than they used to be. This can be observed in the results obtained from the Experimental Group since at the end of the training, they became aware of most of the strategies especially those related to using their background knowledge and elaborating on what they are reading.

These strategies are related to the training they got throughout the two semesters. By elaborating, they could broaden their memory for the new knowledge. Anderson (1985) insists that students should be provided with elaboration skills in order to broaden their memory with meaningful information. Jones (1987) states that "if students do not have an appropriate strategy for learning a specific content objective, then teaching such a strategy is likely to enhance improvement" (p. 43). Therefore, this study may provide valuable insights for the application of schemata theory in reading comprehension. In other words, an instructional plan based on schema theory for improving strategies can be implemented in reading comprehension classes.

This kind of lesson plan enables students to use their mental power in order to find associative of unknown by means of using their existing schemata. This lesson plan also enables students to improve their higher order thinking skills. Implementation of a lesson plan based on schemata theory in order to improve the strategic learning which facilitates higher order thinking process may add a new dimension to schemata theory since the results obtained in this study support the view that learning reading comprehension is strategic and strategic learning facilitate higher

order level thinking. In addition, an instructional lesson plan for improving students' strategies for thinking can also improve students' comprehension as well as language level.

When the research questions and hypotheses of this study are considered in the light of the results it is obvious that those who were trained with a programme based on developing students' thinking skills are more successful than those who did not get a similar training. The results of the strategy interviews and the pre- and post- tests proved that there are considerable differences between the two groups. The students in the Experimental Group did make a striking improvement in both strategy use and in the post-tests.

Those in the Control Group, on the other hand, insisted on using the strategies (being unaware of what is used for what) related to vocabulary and structure. The increase in the level of language knowledge made a significant difference between pre and post-tests of the Control Group. However, when compared to those in the Experimental Group it is seen that there are great differences between the two groups. In addition, when the post-test results obtained from the two groups are compared, it is obvious that the statistically significant difference between the two groups is far reaching.

Strategy interviews also show that the students in the Experimental Group increased their metacognitive strategies while studying cognitive learning strategies. It is accepted by most researchers such as O'Malley and Chamot (1990) and Jones et al. (1987) that metacognitive strategies are in relation with cognitive strategies and are vital in the use of cognitive strategies. In addition, Tang and D. Moore. (1992) state that readers' control over what they are reading can enable them to use a

specific strategy whenever they need for a particular situation they encounter in what they are reading. Thus, this study shows that the students in the Experimental Group increased the use of metacognitive strategies related to thinking about learning process, planning for learning, monitoring the learning tasks, and tracking how well a strategy is working. These were observed in interviews; almost no students tended to use these kinds of strategies in the pre-interview. However, in the post-interviews this changed significantly. The results revealed that they transferred their poor reading habits into good strategies in order to overcome the impurity in reading comprehension.

The results also support our third hypothesis that the students in the Experimental Group made a significant increase in higher order level thinking process. The item analysis of the pre-test indicated that there were almost no difference between the pre-tests of both groups. In addition, the item analysis of the post-test results revealed that both groups were almost at the same level in knowledge and comprehension questions although the students in the Experimental Group were better at analysis and cloze questions than those in the Control Group.

The results may also suggest that the students who are trained strategically are likely to gain their self-confidence (one of the metacognitive strategies) more than those who approach learning tasks randomly. The interviews showed that the gradual increase in the use of strategies that enabled students to overcome the difficulties they were facing helped them become field-independent and problem solver, hence, being more self-confident. In the post-interview, most of the students in the Experimental Group pointed out that "I believe that I will be able to answer more questions correctly without getting any help." Thus, it is assumed that training students in order

to use their thinking power with the help of using background knowledge would provide a good opportunity for students to gain their self-independence. In addition, it was observed in this study that being field-independent, problem solver and self confident were the major factors influencing success in the learning/teaching process.

7.2 Implications for ELT

The results of this study indicate that strategic learning can be fostered in reading comprehension courses. They also emphasise that students could be directed to use the necessary strategies in whatever they are studying. As for reading comprehension in ELT, the results of this study indicate that most students use a few strategies related to vocabulary and structure knowledge. This clearly shows that there should be some alterations to the teaching of reading comprehension. Thus, students should certainly be trained to approach reading strategically, and strategies should be taught in the context in which real reading comprehension is carried out. They should be trained in order to be aware of the fact that they do not merely need vocabulary and sentence structure knowledge in order to comprehend what they are reading rather they need to make use of world knowledge. Kletzien, (1991) suggests that students should be encouraged to manage their own cognitive resources (background knowledge) while they are reading. The findings of this research support the idea of strategic learning and teaching of strategies in real reading comprehension context.

In addition, students need to have adequate background knowledge which would enable them to make associations facilitating thinking. However, the pre- and post- strategy use interviews revealed that most students tend only to accomplish

class reading activities, which is not enough for building sufficient background knowledge. Therefore, students should be directed to read externally in order to improve their world knowledge; in other words, background knowledge or schemata by having them read and report articles, books, and whatever is available to be read.

Irwin (1991) suggests that whatever is available can be used to help students build up knowledge that they would need in reading comprehension. The more they read the more knowledge they acquire and store in their long-term memory for future use. However, while having students read more, teachers should not forget that motivation is the key factor in reading as it is in other skills. Having motivated the students, teachers should also facilitate background knowledge usage in order for a full comprehension to occur.

The more they read the easier the readers can comprehend what they read and this gradual process further activates readers. It was observed in this study that in the beginning of the training, the students were so reluctant for reading that they even did not want to attend the lesson regularly. However, the activities carried out in the class and gradual improvement in their level of understanding while reading help the students become well motivated. Thus, the results of this study indicate that students should first be well motivated in reading comprehension courses.

Irwin (1991, p.145) states that "motivation should always be a prime consideration when giving students reading assignments." Irwin also suggests that increasing expected rewards or decreasing the expected efforts are crucial for increasing the motivation. The researcher also suggests the following activities most of which were used in this study in order to facilitate reading comprehension (see Section 5.6.1).

Increasing expected rewards	Decreasing expected effort
Provide regular praise	Provide background information
Provide interesting activities	Give specific purposes
Write fair tests	Preview assignments
Provide high success tasks	Preview vocabulary
Involve students in purpose setting	Discuss reading strategies
Involve students in questioning	Use high-success materials
Use meaningful reading tasks	Divide long chapters into shorter tasks

Another implication of this study is that students need to be activated so that they recall and use their background knowledge. In strategic learning and teaching in reading comprehension courses, using semantic mapping that visualise the related concepts is one way helping students trigger their background knowledge. Semantic mapping can be organised by having students use the titles, subtitles, or any other textual marks so as to associate these with their existing knowledge. Langer, (1984) suggests that key words, phrases or pictures would help readers stimulate their background knowledge. Thus, as is the case in this study, students become more interested in the activities carried out.

In addition, it was observed that giving little clues would help students recall related ideas stored in their long-term memory. This study supports the idea that questioning technique adapting the levels in Bloom's Taxonomy would be very beneficial in facilitating recalling (see Section 4.4.5). Students' responses to the questions should be written on the board, or may even be shown on a map. These responses help students share the ideas. While working on the groups, the interaction is the key factor for sharing ideas. The results of this study also suggest that students need interaction in order to generate more ideas. Interaction helps students reformulate new ideas using the shared ones. Therefore, using the levels of Bloom's

Taxonomy (higher order level ones in particular), especially in pre-reading is beneficial for students to generate more ideas about the text.

Ogle, relatedly, (1986) proposes a model which develops active reading, and it could especially be used for younger learners. This model is called K-W-L (K= What I know, W= What do I want to learn?, and L= What I learned). The model, according to the researcher, can be used with the help of related questions while having students recollect their previous knowledge. K, and W can be used as pre-reading activities, and L after reading. Ogle states that with K and W activities students develop their own reasons for what they are going to read. With L activities students are directed to write what they have learned. All these steps can be organised in a chart that shows the whole process of the K-W-L (see Appendix 4). In addition, while and after reading, students should be directed to use the ideas they formulated in pre-reading. In other words, the ideas stimulated in pre-reading can be justified and enriched in during reading and post-reading activities.

In the pre-interview most of the students pointed out that "pre-reading is time consuming". Therefore, they start reading without having any idea about what they are going to read. However, students should be helped to use the key concepts they formed in pre-reading activities while they are reading the text. According to Irwin (1991), this can be achieved by encouraging students to read on and suspend judgement if there is anything they do not understand because while reading they will be likely to eliminate the ambiguities. Moreover, they should reread the previous context in order to resolve contradiction within the sentences paragraphs.

Post-reading is another important activity that is likely to be ignored by most of the teachers of reading. In pre-interviews, almost all the students' in both groups

stated that they were unaware of post-reading activities. They added that they usually focused on the comprehension questions that are included at the end of the texts. However, it is a good opportunity for the students to anchor and change the ideas they have formulated during pre-reading and developed during reading. In addition, the "L" step of the K-W-L can be applied effectively in post-reading and students can be directed to write on the topic they have just read about.

Furthermore, Tang and Moore (1992) and some other researchers such as Royer and Carlos (1991) demonstrate that learners tend to transfer the strategies they have acquired in their first language to the second language. They also point out that this transfer (see Section 2.2, learning components) could be possible if they have attained a proficiency level in their first language. In other words, those who are proficient in their first language are likely to benefit more from cognitive learning strategies than those who are not. Therefore, students should first be proficient in their first language.

7.3 Suggestions for Further Research

The results of pre and post-test and the item analysis of these tests used in our study showed that there were noteworthy differences between students in the Control Group and those in the Experimental Group, regarding the strategy usage in reading comprehension. Therefore, future research needs to find out if there are any relations between the students socio-economic structure and the strategy gaining since the socio-economic background of the students were not taken into consideration in this study. In addition, a further study focusing on the types of strategies students use in relation with their socio-economic background before training and after training would provide more information on strategy usage.

It would be helpful to conduct a further research in order to find out at what point students begin to use particular strategies while developing their reading skills, and whether there is any individual differences. O'Malley and Chamot (1990, p. 160) state that characteristics of students such as " age, sex, prior education, cultural background, and learning style, aptitude or effectiveness as a learner" may play an important role in strategy training, and thereby in students' ability to acquire new learning strategies."

However, most of the students involved in this study (both in the Control and Experimental groups) were female and therefore, sex differences were not taken into consideration. However, age, prior education and most importantly motivation factors were considered. Therefore, sex, effectiveness as a learner, learning style, and cultural background need to be investigated in further research.

In addition, the reading passages used in this study were included in the text book they used. The passages were almost at the same level, and they were used in

both groups. However, a further study may be helpful providing more information for strategy training if the reading texts with different levels of difficulty or authentic texts are used. It would also provide more information on whether there are any variations in students' strategy use based on the readability level of the text.

Furthermore, for foreign language strategy instruction in reading , more research has been conducted on adolescents than on young learners. This study was also carried out on adolescent learners. Many studies on strategy use in first language reading comprehension was conducted by researchers such as Gagne (1985); and Presley, Levin, and Ghatala (1984). However, there have been fewer studies conducted on young learners in order to investigate their strategy use in reading comprehension. Therefore, a further study is needed with young learners of foreign language.

To sum up, this study shows that reading comprehension can be facilitated by enabling students to gain and use appropriate cognitive strategies. Some factors may affect strategy gain and usage. In this study, some of these factors were considered but some others were not. Therefore, further studies suggested previously may be beneficial for strategy usage.

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APPENDICES

APPENDIX 1

THE QUESTIONNAIRE USED FOR STRATEGY USAGE

Sevgili arkadaşlar, Çukurova Üniversitesi, Eğitim Fakültesi İngilizce Bölümü hazırlık sınıflarında okutulan Okuma Anlama yetisinin en iyi şekilde geliştirilmesi için yaptığım çalışmada sizlerin görüşleri çok önemli bir yer tutmaktadır. Bu nedenle aşağıdaki soruları titizlikle okuyup yanıtlamanız dileğiyle derslerinizde başarılar dilerim.

Öğrt. Grv. Hasan BEDİR

I. KİŞİSEL BİLGİLER

1. Mezun olduğunuz lise ve yılı
   .....

2. Mezun olduğunuz ilkokul ve orta okul:
   .....

3. İngilizce bölümünü isteyerek mi, yoksa başka nedenlerden dolayı mı seçtiniz?
   .....

4. Ailenizde İngilizce eğitimiyle ilgili bir işte çalışan var mı? Varsa size çalışmalarınızda yardımcı oluyor mu?
   .....

5. İngilizce bölümünü kazanmak için .....
   (Birden fazla seçebilirsiniz)

   A. Dil Bilgisi ağırlıklı çalıştım. .....
   B. Okuma -Anlama ağırlıklı çalıştım. .....
   C. Başka .....

7. ÖSS sınavında İngilizce sorularında en çok zorlandığım bölüm;
   (Birden fazla seçebilirsiniz)

   A. Dilbilgisi ve kelime
   B. Çeviri
   C. Okuma parçaları
   D. Paragraf doldurma veya paragrafa uymayan cümleyi bulma .....
   E. Verilen cümleye anlamca yakın cümleyi bulma
   F. Verilen durumda söylenecek cümleyi bulma

II. OKUMA ANLAMA İLE İLGİLİ BİLGİLER

1. ÖSS sınavında yanıtlamakta okuma anlama ile ilgili bölümlerde zorlandıysanız nedeni sizce ne olabilir? Belirtiniz.

.....
.....

2. Daha önceki okul hayatınızda okuma anlama dersine nasıl çalıştınız, belirtiniz?

.....
.....

3. Sizce, okuduğunuz parçadaki tüm dilbilgisi yapısını ve kelimeleri bilmek parçayı anlamanıza yeterli olur mu? Belirtiniz.

.....
.....

4. Okuma işlemi sırasında nasıl bir yol izliyorsunuz? Her okuduğunuz metin için aynı yolu mu izliyorsunuz? Belirtiniz

.....
.....

5. Okuma anlama da, yeni okuduğunuz parça ile, eski bilgileriniz arasında bir ilinti kurabiliyor musunuz? Belirtiniz.

.....
.....

6. Okuyacağınız parçanın başlığını, parçadaki şekilleri, değişik karakter yazı tarzı ile (italik, koyu) yazılı yerleri göz önüne alıyor musunuz? İlgili anahtar kelimeleri ve alanları düşünebiliyor musunuz? Belirtiniz.

.....
.....

7. Okuma eylemi sırasında cümleleri ve paragrafları bağlayan kelimeleri, isim, zamir, zarf ve sıfat gibi kelimelerin işlevlerini göz önüne alıyor musunuz? Belirtiniz.

.....
.....

8. Okuma eylemi sırasında daha sonra takip edebilecek olayları veya fikirleri tahmin edebiliyor musunuz, veya böyle bir yol kullanıyor musunuz? Belirtiniz.

.....
.....

9. Okuma işlemi sırasında bilmediğiniz kelimelerle karşılaştığınızda anlamını bulmak için nasıl bir yol izliyorsunuz? Belirtiniz.

.....
.....

10. Okuma işlemi sırasında daha önce oluşturduğunuz fikirlerinizi geliştirebiliyor musunuz veya değiştirme gereği duyuyor mususunuz? Belirtiniz.

.....

.....

11. Okuma işlemi bittikten sonra parçanın özetini çıkarıp ana düşünceyi ortaya çıkarabiliyor musunuz? Belirtiniz.

.....

.....

12. Okuma işlemi bittikten sonra, okuma başlamadan önce sorulan soruları daha iyi anlayıp yanıtlayabiliyor musunuz? Belirtiniz.

.....

.....

13. Okuma işlemi bittikten sonra daha önce oluşturduğunuz fikirlerinizin veya konu hakkında ki düşüncelerinizin bir değerlendirmesini yapıyor musunuz? Belirtiniz.

.....

.....

15. Okuma işlemi bittikten sonra, yazar ile aynı fikirde veya karşı düşünce de olduğunuzla ilgili öğretmeninizle veya arkadaşlarınızla tartışıyor musunuz? Belirtiniz.

.....

.....

15. Okuma bittikten sonra, parçanın edebi türünün ne olduğunu, hangi okuyucu kitlesine ve ne için yazıldığı gibi sorulara yanıt arıyor musunuz?. Belirtiniz.

.....

.....

16. Okuma bittikten sonra, ilgili alanlarda ki sorunlara çözüm önerileri ileri sürüp savunu yapabiliyor musunuz? Belirtiniz.

.....

.....

APPENDIX 2

CLASSIFICATION OF READING COMPREHENSION STRATEGIES

CLASSIFICATION OF READING COMPREHENSION STRATEGIES	
STRATEGIES	**STUDENTS' RESPONSES**
1. Recognising and using the structure of the sentences	I believe I do not understand the sentences and thereby the paragraphs finally the texts without finding the meanings of words and I do not feel confident if there are words or phrases I do not understand
2. Trying to find out the meanings of vocabularies in a dictionary and translate the text into native	I am grammar-oriented and I like learning the meaning of the sentences through understanding the structure of the sentences in the texts
3. Comparing sentence and paragraph meaning while reading	I would like to understand the texts through my vocabulary and grammar knowledge. I do not care the relation between ideas
4. Finding main ideas	In fact if I could find the main idea I could understand the whole text but I am unable to find the main idea. How could I find the main idea in a text easily? Does every text has a main idea or are there more than one main idea in a text?
5. Rereading previous or subsequent paragraphs	I often go backward and forward. If I do not reread the sentences again I do not understand the proceeding sentences or paragraphs.
6. Recognising the function of vocabulary and chunking them to make meaningful sentences and thereby paragraphs	I do not approach the whole idea in fact I put the vocabulary together in order to understand the whole
7. Understanding the relations between sentences and paragraphs by recognising the function of linking words, transitions and anaphors.	I read a text in order to understand. I only consider the meaning of the words and phrases. I try to approach the sentences with my grammar knowledge. When I encounter the words "because", 'if" "however" and so on I recall the dictionary meaning of these words. I sometimes use reference words "pronouns." In paragraph building activities we studied this kind of examples while studying for the university examination.

CLASSIFICATION OF READING COMPREHENSION STRATEGIES	
STRATEGIES	**STUDENTS' RESPONSES**
8. Paraphrasing sentences and paragraphs or making a summary of what has already been read by ignoring unimportant information and finding the general or main ideas; understanding the authors general organisation patterns.	In university examination, there is a part related to transformation. That is you write a sentence again without changing its original meaning. While studying these sentences we focused on the grammar points and what word we could use instead of the other. I tried to memorise some grammatical features such as when I see the word "despite" I should think "although" or the other related ones. We did not actually transferred one sentence into another rather we were taught how to recognise the transformed sentenced of the original one.
9. Selecting key vocabulary or phrases by using the context, which would help recall the whole.	I myself think there are some significant words and phrases in each text, yet I don't know how to use them to predict the whole text. It seems impossible.
10. Making elaboration; making predictions by pre-reading; skimming title, subtitles, graphics and questions; making analogies by using the previous acquired knowledge; visualising the events; using higher level thinking (application, analysing, synthesising and evaluation process).	I only consider what is involved in the text I don't pay attention to the titles, charts, or other things. I only read by finding out the meaning of every word, phrases or sentences. I read the text sentence by sentence. Nobody has told me how to go beyond the text I read. I have never read any texts in that way even in my native language. I find pre-reading activities time consuming. If I must comprehend the text I must spend much of my time on reading and finding out the answer to the questions
11. Feeling themselves actively involved in the reading text and making logical responses	I find the most of the texts in the book boring. I do not understand the sentences and there are a lot of vocabularies I do not know. While answering questions I try to find the factual information in the text if I do not find I usually ignore or read the related part again.
12. Using a specific process in a specific way because of specific context; evaluating the comprehension process while reading and if there is any lack finding a new way to overcome it; remembering certain parts of the text by selecting evaluating and adjusting the strategies	Usually I find it difficult to understand what I am reading even in my own language. In my school life most of the time I have told to read and find out the vocabulary I do not know and teachers give the meaning of the vocabularies or I have looked them up in a dictionary. After finding the meanings of vocabulary I reread the text trying to translate it into my native language. Lastly we give the answers. If there is any we do not know teachers give it.

APPENDIX 3

PRE- AND POST-TEST USED IN THE STUDY

Is language like food, a basic human need without which a child at a critical period of life can be starved and damaged? Judging from the drastic experiment of Frederick II in the thirteenth century it may be. Hoping to discover what language a child would speak if he heard no mother tongue he told the nurses to keep silent.

All the infants died before the first year. But clearly there was more than language (1) *deprivation* here. What was missing was good mothering. Without good mothering, in the first year of life especially, the capacity to (2) *survive* is seriously affected.

Today, no such drastic deprivation exists as that ordered by Frederick. Nevertheless, some children are still (3) *backward* in speaking. Most often, the reason for ***this*** is that the mother is insensitive to the cues and signal of infant, whose brain is programmed to (4) *mop up* language rapidly. There are critical times, it seems, when children learn more (5) *rapidly*. If these sensitive periods are neglected, the ideal time for acquiring skills passes and ***they*** might never be learned so easily again. A bird learns to sing and to fly rapidly at the right time, but the process is slow and hard once the critical stage has passed.

Linguists suggest that speech milestones are reached in fixed sequence and at a constant age, but there are cases where speech has started late in a child who eventually turns out to be of high IQ (Intelligence Quotient). At twelve weeks a baby smiles and utters vowel-like sounds; at twelve months he can speak simple words and understand simple commands; at eighteen months he has vocabulary of three to fifty words. At three, he knows about 1000 words which he can put into sentences, and at four, ***his*** language differs from that of his parents in style rather than grammar.

Recent evidence suggests that an infant is born with the capacity to speak. What is special about Man's brain, compared with ***that of*** monkey, is the complex system which enables a child to connect the sight and feel of, say, a teddy-bear with the sound pattern 'teddy-bear'. And even more incredible is the young brain's ability to pick out an order in language from the hubbub of sound around him, to analyse, to combine and to recombine the parts of a language in new ways.

But speech has to be activated, and this depends on interaction between the mother and the child, where the mother recognises the cues and signals in the child's babbling, clinging, grasping, crying, smiling, and responds to ***them***. Insensitivity of the mother to these signals dulls the interaction because the child gets discovered and sends out only the obvious signals. Sensitivity to the child's non-verbal cues is essential to the growth and the development of language.

I. READ THE TEXT ABOVE CAREFULLY AND THEN ANSWER THE FOLLOWING QUESTIONS. (knowledge and comprehension questions)

1. Frederick II's experiment was drastic because (comp.)
   A. he wanted to prove that children are born with the ability to speak.
   B. he ignored the importance of mothering of the infant.
   C. he was unkind to the nurses.
   D. he wanted to see if the children would die before they reached the age of one.

2. The reason some children are backward in speaking today is that (know.)
   A. they do not listen carefully to their mothers.
   B. their brains have to absorb too much language at once.
   C. their mothers do not respond to their attempts to speak.
   D. their mother are not intelligent enough to help them.

3. By "critical times" the author means (comp.)
   A. difficult periods in the child's life.
   B. moments when the child becomes critical towards his mother
   C. important stages in the child's development.
   D. times when mothers often neglect their children.

4. Which of the following is not implied in the passage? (comp.)
   A. The faculty of speech is inborn in man.
   B. Children do not need to be encouraged to speak.
   C. The child's brain is highly selective.
   D. Most children learn their language in definite stages.

5. If mother does not respond to her child's signals (know.)
   A. the child will never be able to speak properly.
   B. the child will stop giving out signals.
   C. the child will invent language of its own.
   D. the child will make little effort to speak.

II. CHOOSE THE WORD WHOSE MEANING FITS BEST TO THE ONES UNDERLINED IN THE TEXT ABOVE. (comprehension questions)

1. **deprivation**
   A. inability B. removal C. need D. disturbance
2. **survive**
   A. learn B. live C. communicate D. overcome
3. **backward**
   A. inaccurate B, shy C. undeveloped D. slow
4. **mop up**
   A. absorb B. analyse C. understood D. develop
5. **readily**
   A. slowly B. by reading C. easily D. systematically

III. FIND THE NOUNS THAT THE FOLLOWING WORDS REFER TO (knowledge questions)

1. ***this*** in line 9 refers to .....
2. ***they*** in line 12 refers to .....
3. ***his*** in line 20 refers to .....
4. ***that of*** in line 23 refers to .....
5. ***them*** in line 31 refers to .....

READ THE FOLLOWING STATEMENTS AND FIND THE BEST ANWER BASED ON THE INFORMATION GIVEN (analysis questions)

1. ***Studies show that bike races in Mexico City, where air is 20 percent less than at see level, tend to be 3 to 5 percent faster than at lower altitudes.***

In which area would a bike race probably be the slowest?
A. along the coast
B. on an indoor track
C. on a high plateau
D. at the snowline of a volcano

2. ***Owners of famous and valuable painting have recently commissioning talented artists to paint copies of these art treasures to exhibit in their homes.***

What is the most likely reason an owner of a valuable painting might want to exhibit a copy instead of the original?
A. because they need to trick the experts
B. because the hope to foil would-be thieves
C. because they want to encourage talented artists
D. because they enjoy buying fake paintings

3. ***Few school curriculum include a unit on how to deal with bereavement and grief, and yet all students at some point in their lives suffer from losses through death and parting.***

What topic would not be included in a unit on misfortune?
A. how to write a letter of sympathy
B. what emotional stages are passed through in the healing process
C. how to give support to a grieving friend
D. what the leading causes of death are

4. ***Schools based upon the philosophy of Rudolph Steiner are all coeducational, practice mixed-ability teaching, and discourage competition between children.***

Which of the following activities would probably not be seen in a Steiner school?
A. a class period devoted to the teaching of mathematics
B. a game involving both boys and girls
C. a poetry writing contest
D. a classroom of children reading at different levels

5.***The microbiologist exposed bacteria to increasingly higher levels of cyanide until he had a type of bacteria that could destroy the cyanide that had been dumped into rivers by chemical plants.***

In what way could this bacteria be useful?
A. for saving the water from toxic wastes
B. for poisoning undesirable fish
C. for cleaning swimming pools
D. for increasing the cyanide in the chemical plants

EACH OF THE FOLLOWING PASSAGES CONTAIN AN IRREVELANT IDEA. READ THEM AND FIND OUT THE SENTENCE THAT DOES NOT FIT THE PASSAGE (analysis questions)

1. (I) Among the major grain crops, the only one that is grown almost exclusively as human food is rice. (II) Rice constitutes half the diet of 1.6 million people, and another 400 million people rely on it for between one-fourth and one-half of their diet. (III) Rice originated in the hot, humid tropics, where monsoon rains and flood waters create an aquatic environment for at least part of the year. (IV) Millions of people would have been severely underfeed had it not been for a series of remarkable genetic advances that have made possible the cultivation of high-yield varieties that are resistant to disease and insect pests.

   A. I B. II C. III D. IV

2. (I) The earliest known domestic turkey were found in Mexico among the Aztecs. (II) Hernando Cortes, the Spanish conquistador, took specimen back to Spain. (III) The turkey spread throughout Europe. (IV) The wild turkey is a close relation to the domestic turkey. (V) The Pilgrims then brought the domestic turkey back to the Western Hemisphere from England

   A. I B. II C. III D. IV

3. (I) Addiction to cigarette smoking is basically an addiction to nicotine. (II) Cigar or pipe smokers are more likely to get lip cancer than lung cancer. (III) Switching to low-nicotine cigarettes simply causes problem smokers to smoke more. (IV) Zero-nicotine cigarettes are usually rejected. (V) For these reasons, a chewing gum containing nicotine may be an effective aid for those who want to stop smoking.

   A. I B. II C. III D. IV E. V

4. (I) Underground homes are more expensive to build than conventional houses. (II) Earth shelters are not nothing like a dank, dark basement. (III) Well-placed windows and skylights ensure brightness and fresh air. (IV) Sophisticated waterproofing techniques keep moisture out. (V) Heating and air-conditioning require less energy because the soil temperature is relatively stable and the concrete walls can not store the sun's heat and radiate it into the rooms at night.

   A. I B. II C. III D. IV E. V

5. (I) In 1772, Caroline Herschel leaped at the chance to live in England with their her astronomer brother, William. (2) He taught her mathematics, and she began to help him keep a record of his discoveries. (III) In Germany, her mother only allowed her t learn how to knit. (IV) The two of them would often stay up until down and in all temperatures, gazing upward. (V) They build their own telescopes, which were even bigger and better than those at the Royal Observatory in Greenwich.

A. I B. II C. III D. IV E. V

CLOZE TEST
(Application, Synthesis and Evaluation Questions)

COMPLETE THE STORY WITH APPROPRIATE WORDS FROM THE LIST BELOW

the patient,	capable,	carried out,	even,	major,	defects,	life-saving,	
shortened,	back,	they,	too,	that time,	safely,	lung,	remarkably,
qualified,	ones,	satisfactory,	directions,	most			

SURGERY

In early years of this century there was little specialisation in surgery, ie. cutting into a part of the body. A good surgeon was (1) ..... of performing almost every operation that had been devised up to (2) ..... . Today, the situation is different. Operations that were not (3) ..... dreamed of fifty years ago, are now being (4) ..... . The heart can be (5) .....
opened and its valves repaired. Clogged blood vessels can be cleaned out, and broken (6) ..... mended or replaced. A (7) ..... , the whole stomach, or even part of the brain can be removed and still allow (8) ..... to live a comfortable and (9) ..... life. However, not every surgeon wants to, or is (10) ..... to carry out every type of modern operation.

The boundaries of surgery have widened (11) ..... in this century and safety has increased (12) ..... . Deaths from most operations are about 23% of what (13) ..... were in 1910 and surgery has been extended in many (14) ..... , for example to certain types of birth (15) ..... in new-born babies and at other end of the scale, to (16) ..... operations for old people. The hospital stay after surgery has been (17) ..... to as little as a week for most (18) ..... operations. (19) ..... patients are out of bed on the day after an operation and may be (20) ..... at work in two or three weeks.

APPENDIX 4

TEACHING MODELS

A TEACHING MODEL FOR MAKING STUDENTS PARTNERS IN READING COMPREHENSION PROCESS: *POSSE* (Predict, Organise, Search, Summarise, and Evaluate)

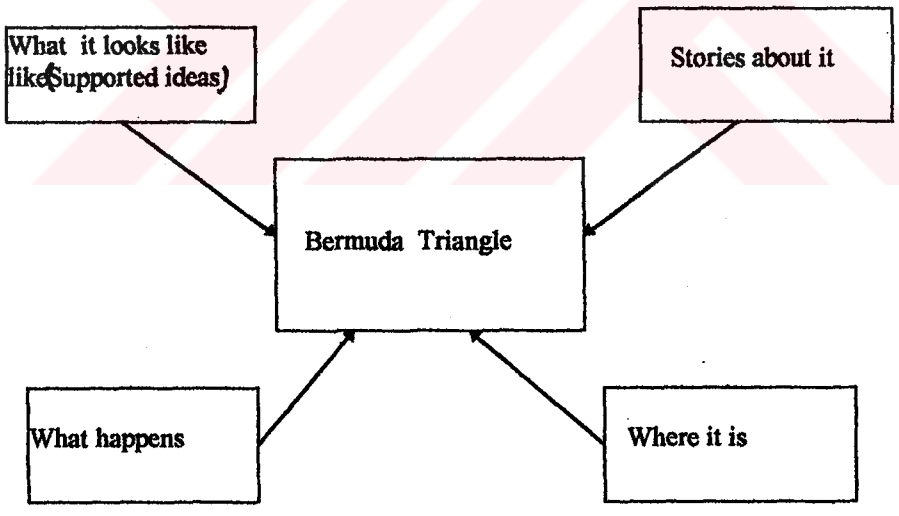
PRE-READING ACTIVITIES

1. Predict what ideas are in the text.

People disappear.
Ships and planes disappear.
Instruments don't work.
.....
.....
.....
.....
.....

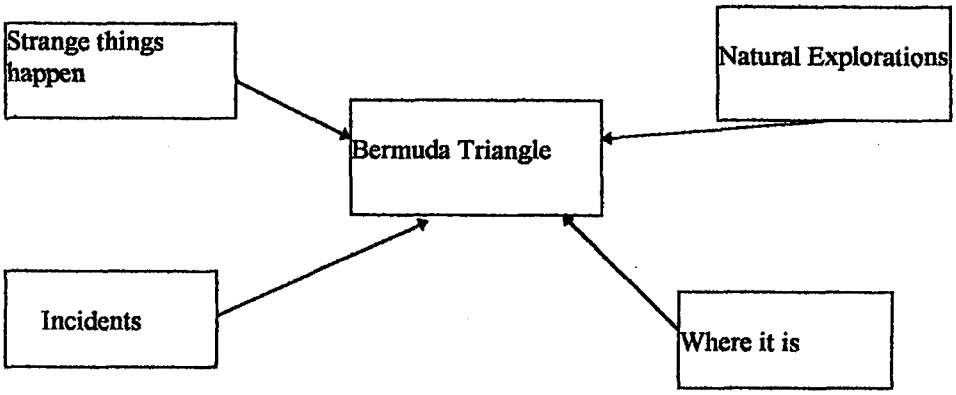
2. Organise thoughts about the text.

Students organise their brainstormed ideas into a semantic map. Teachers use Wh-questions to elicit more ideas.



WHILE READING ACTIVITIES

1. ***Search for the structure***
   Students read the text while searching for the author's text structure. They also generate new ideas while reading.



POST-READING ACTIVITIES

1. ***Summarise***

   Students summarise the main idea using their own words.

2. ***Evaluate***

a. Compare (Students compare their ideas and the semantic maps they constructed)

b. Clarify (Students clarify the meanings of words or phrases and they also clarify the ambiguities in the text)

c. Predict (Students predict the next section of the text by using the ideas in the semantic maps and the information provided in the text.

A TEACHING MODEL FOR ACTIVE READING: K-W-L (What we know, What we want to learn, What we learned)

Reading text: **Global Warming**

PRE-READING ACTIVITIES

1. **WHAT WE KNOW**
   High temperature.
   Ozone layer.
   It threatens human health.
   Ultraviolet rays.

2. **WHAT WE WANT TO LEARN**
   What causes global warming?
   How can it be stopped?
   Which parts of the world are affected most?
   What are possible results of global warming?

POST-READING ACTIVITIES

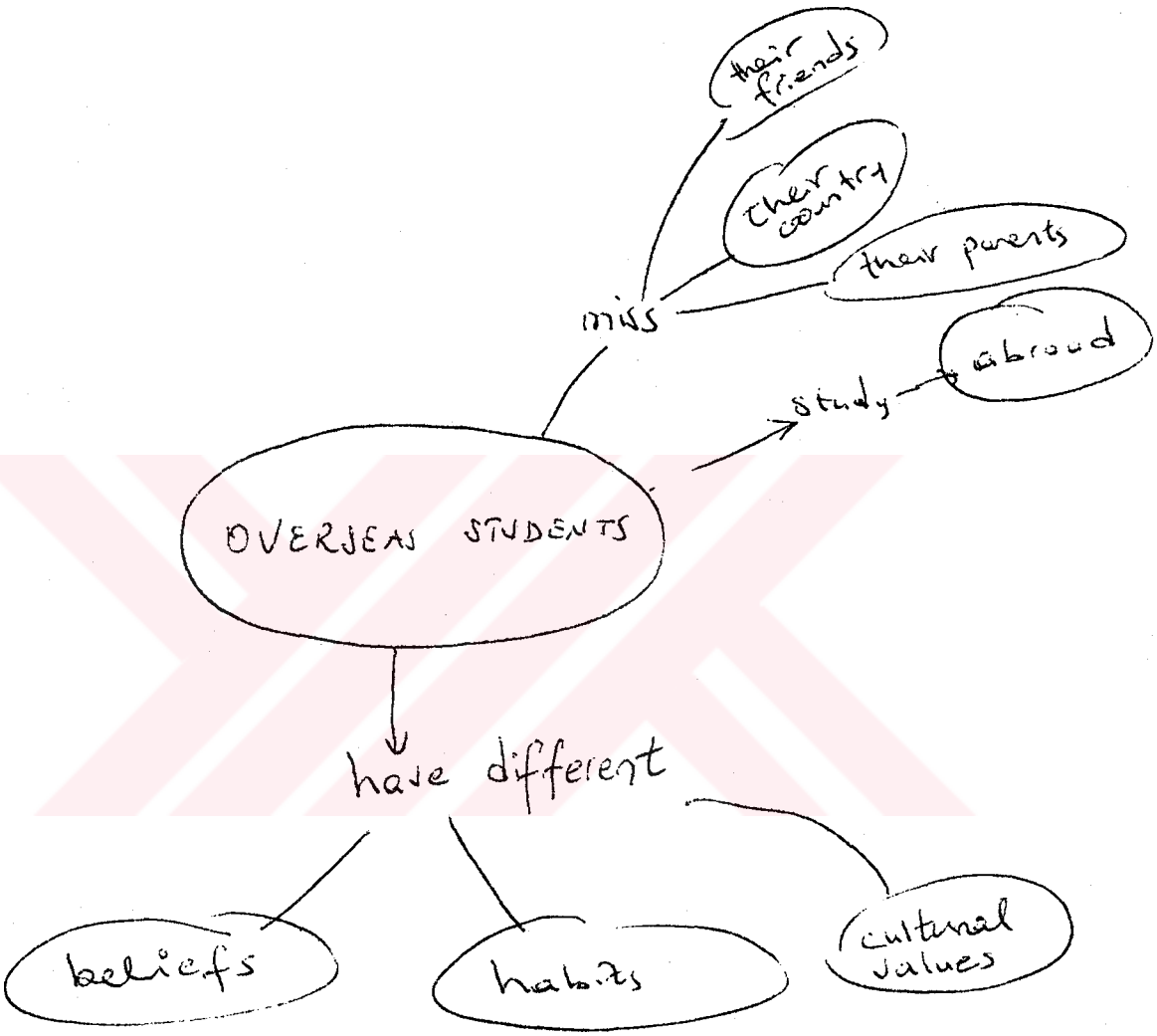
3. **WHAT WE LEARNED AND STILL NEED TO LEARN**
   Carbon dioxide in the air causes global warming.
   Greenhouse effect is responsible for the increase of carbon dioxide.
   Ice in the Antarctica can melt because of increasing temperature.
   There are other sources which cause carbon dioxide increase.
   Scientists have tried to prevent increasing carbon dioxide.
   Prevention of carbon dioxide increase needs global act.

APPENDIX 5

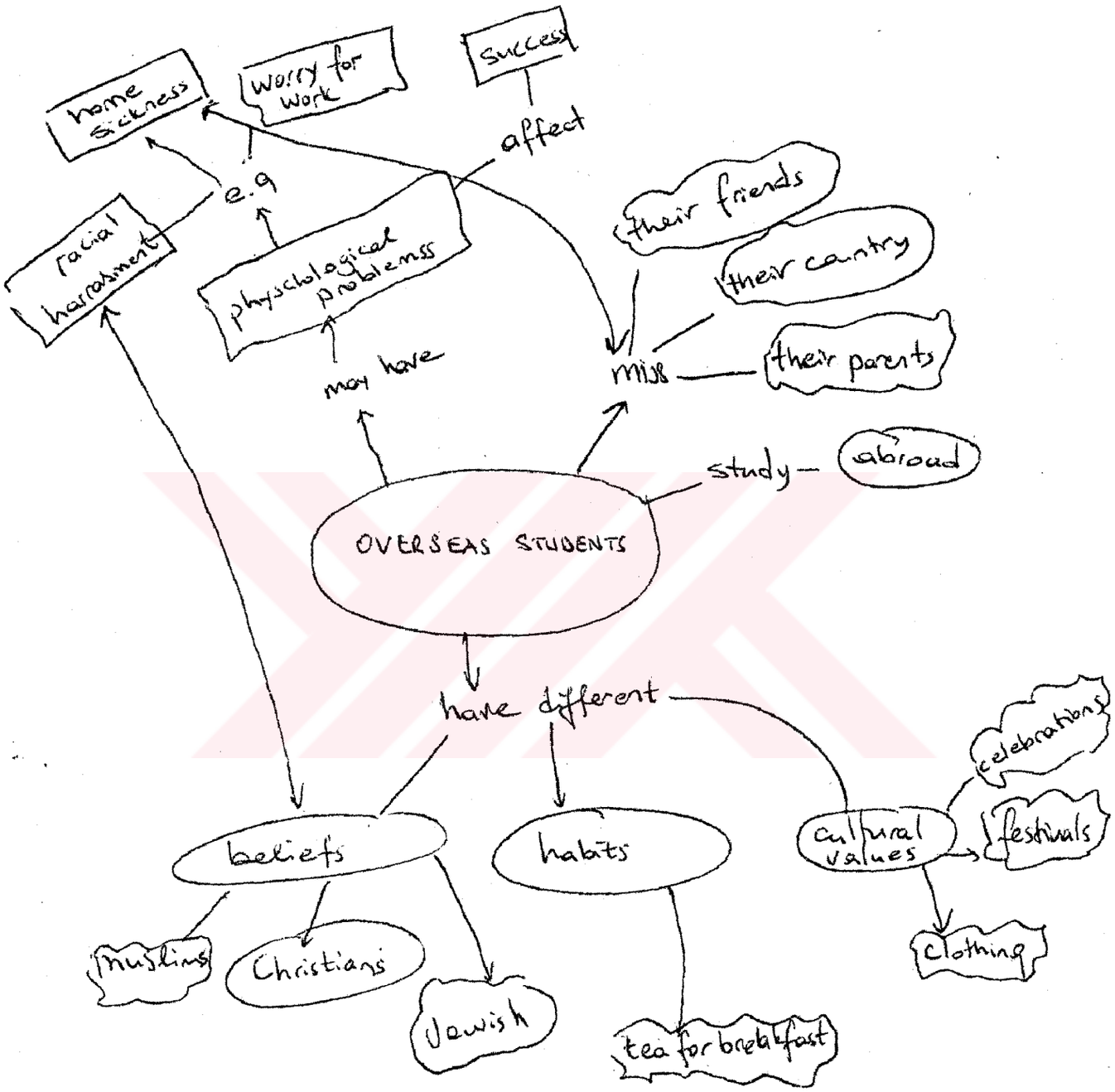
SOME EXAMPLES OF SEMANTIC MAPS FORMED BY THE STUDENTS IN THE EXPERIMENTAL GROUP

TEXT: Counselling overseas students

PRE-RADING

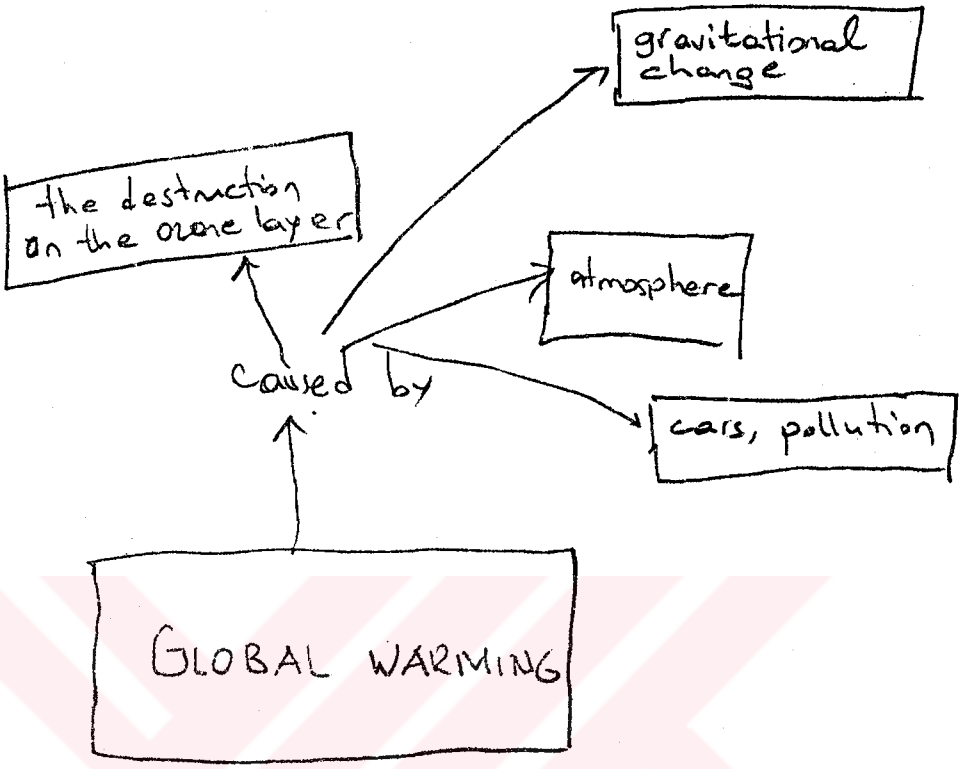


POST READING

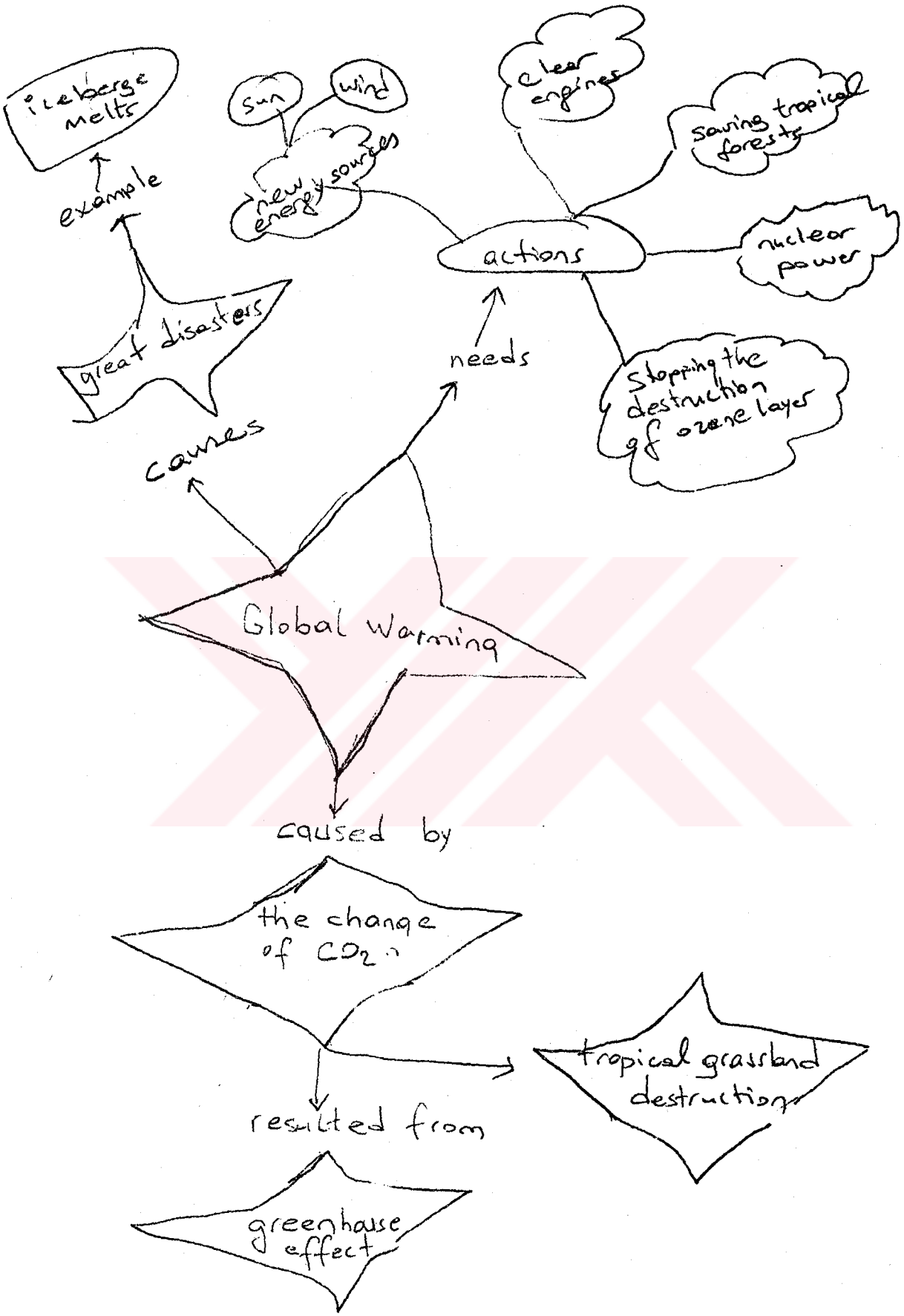


TEXT: Global Warming

PRE READING

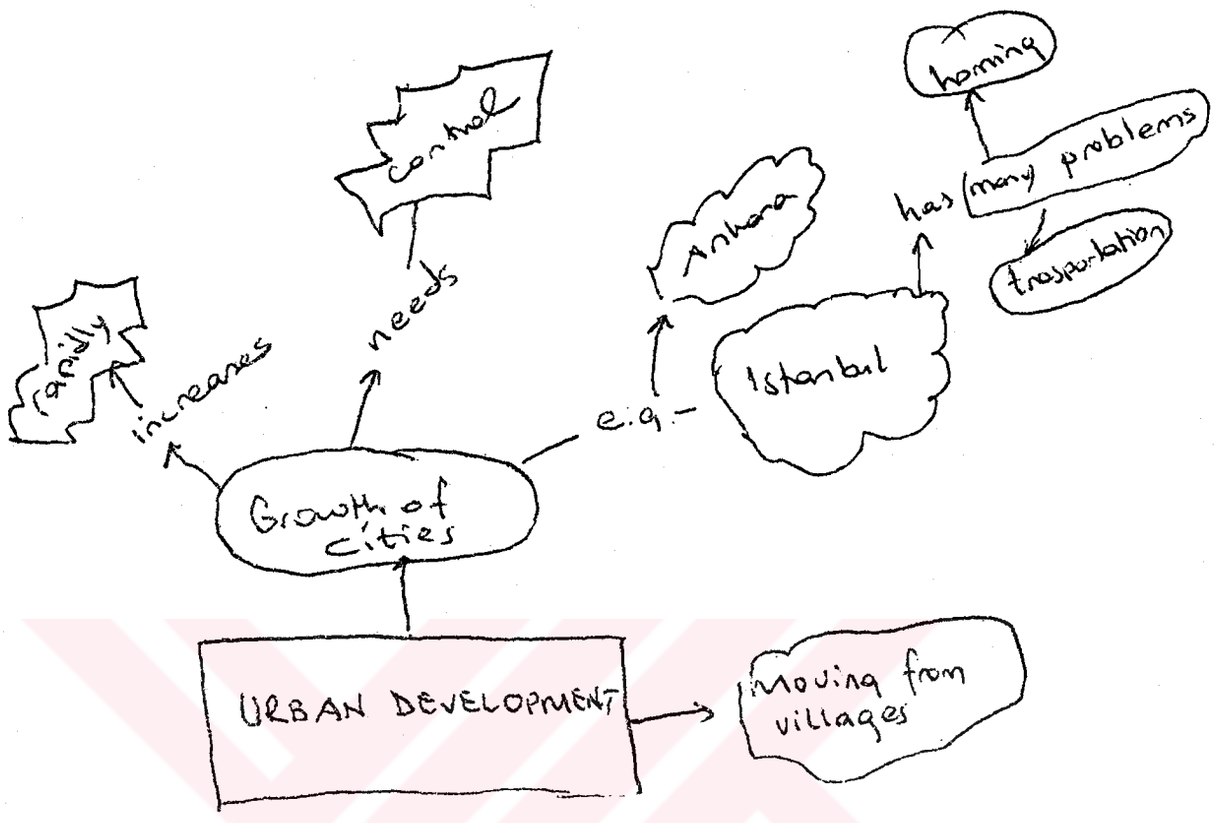


POST-READING

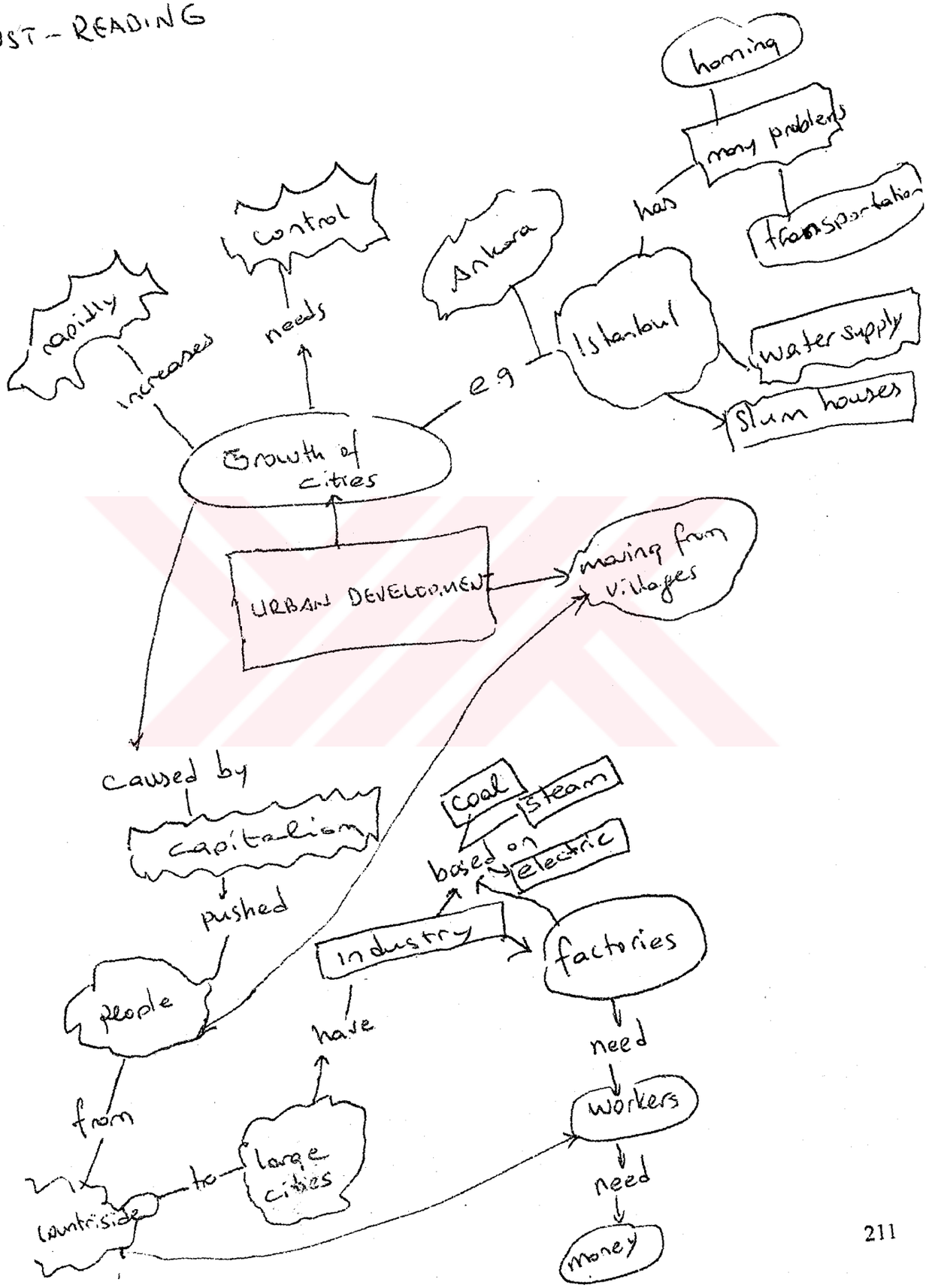


·TEXT: Urban development

PRE-READING



POST-READING



APPENDIX 6

THE MODEL ADAPTED FROM JONES (1991) AND USED IN TRAINING

Pre-reading

This step is the most important part of the training. Because, meaningful learning from text can occur only if readers is actively engaged in the cognitive activities of triggering background knowledge and focusing on the task. That is, this process help reader calls up and organises prior knowledge relevant to the topic in one hand and they can establish purpose of reading on the other.

TEACHERS' ROLE

1. Explains the aim of reading (such as reading to learn) and identifies text to be read.
2. Points out the key vocabulary and explains them.
3. Asks students to go through the text by skimming the title, subtitles, or graphics, and questions. If possible ask students to respond the questions by making predictions or hypothesis.
4. Generates questions based Bloom's Taxonomy (higher order thinking questions) in order to focus students' attention on the text and activate them to bring their previous experiences and expectations to the text they are going to read.
5. Provides advance organisers such as concept or semantic mapping by choosing critical word or phrases or using the critical words in the title. Use the board for visual displaying of this map.
6. Encourages readers to generate related words or phrases to add the map on board.

7. Asks students to formulate their hypothesis about the text.
8. Suggests and explain what strategy can be useful in understanding the text.

During reading

This is the on line process and provides students to engage in reading and thinking. According to cognitive theory of learning for meaningful learning to occur during the actual reading of the text readers must acquire the skills of selecting and organising. In selecting process, readers identify the relevant information to their purpose. While organising readers construct logical connections between ideas along with structures presented in the text. While reading they could also refine their hypothesis considering the ideas in the text.

TEACHERS' ROLE

1. Asks the students to read the text by using the text clues such as graphics, bold faces parts, cause and effect cues, and so on.
2. Asks them to seek the unfamiliar word in the context.
3. Asks them to find out the text confirming their hypothesis.
4. Asks them search for links to their prior knowledge.
5. Asks them to take notes in prose or graphic form.

Post-reading

At this stage students would construct the detailed meaning, increase knowledge of concepts they hypothesised during pre and while reading process. While doing so, they engage in the cognitive process of integrating prior knowledge with new information. In addition, they understand the author's purpose.

TEACHERS' ROLE

1. Discusses the assigned purpose for reading,
2. Evaluates predictions or hypothesis made by students before.
3. Monitors comprehension by clarifying the parts which are obscure, asking related questions of which answers would make them clear.
4. Guides students to generate more concepts related to the map the have previously formed.
5. Discusses the author's purpose and, asks the what it would be if they were the author of the text.
6. Explains what strategy they could use for the comprehension questions. How they could distinguish what is important, how they could find the main idea. Teachers also should make the questions clear.
7. Focuses on higher order questions used in the comprehension such as inferring, application, analysis, synthesis and reasoning.

Post reading - response processing

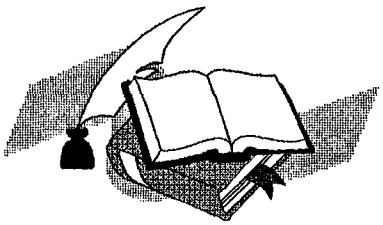
At this final stage of instructions, the students are likely to be involved in increasing in-depth processing, comprehension of content, knowledge of text structure and frames, and increasing thinking skills in order to transfer to related areas, writing in particular.

TEACHERS' ROLE

1. Guides them to find the possible answer of the comprehension questions related to the text.
2. Discusses to whom the text was written, and the structure of it: compare/contrast, cause/effect, informative, and so on.
3. Guides students to summarise what they have already by using the notes they have taken, semantic map they have formed, and so on
4. Monitors students while they are writing their summaries

APPENDIX 7

EXTENSIVE READING FORMAT USED FOR THE STUDENTS IN THE EXPERIMENTAL GROUP



HIN 104
READING COMPREHENSION
INST: H. BEDIR

ARTICLE REVIEW

YOU ARE SUPPOSED TO READ AN ARTICLE FOR EACH WEEK USING THE FOLLOWING FORMAT.

I. FACTS ABOUT THE ARTICLE

1. TITLE OF THE ARTICLE :

2. AUTHOR OF THE ARTICLE:

3. PUBLISHING DATE:

4. PUBLISHING PLACE:

II. WRITE A SHORT SUMMARY TO INTEREST THE READER

***III. YOUR COMMENTS*:**

1. WHY DO YOU THINK SOMEBODY SHOULD/ SHOULD NOT READ IT?

2. IN WHAT WAYS DID THE ARTICLE AFFECT YOU?

ÖZGEÇMİŞ

İSİM: Hasan BEDİR
DOĞUM YERİ VE YILI: Torul, 1961
ADRES: Çukurova Üniversitesi,
Eğitim Fakültesi,
İngiliz Dili Eğitimi Bölümü.
Balcalı/ ADANA

EĞİTİM

Akademik Aşama	Kurumu	Tarihi
İngiliz Dili Eğitiminde Doktora	Çukurova Üniversitesi	1998
İngiliz Dili Eğitiminde Master	Çukurova Üniversitesi	1992
İngiliz Dili Eğitiminde Lisans	Çukurova Üniversitesi	1985

İŞ TECRÜBESİ

1993- --	Cukurova Üniversitesi Eğitim Fakültesi İngiliz Dili Eğt. **Öğretim Görv.**
1989-1994	Çukurova Üniversitesi Yabancı Diller Eğitim Merkezi. **Okutman**
1985-1989	Büyük Adana Lisan Kursları. **Öğretmen**

BURSLAR

Kurum	Proğramın Adı	Tarih
MED-CAMPUS	Bilişsel Eğitim ve Öğretimde Bilgisayarın yeri	1995
YÖK DÜNYA BANKASI	İngiltere'de Öğretmen Yetiştirme Proğramı	1997

YAYINLAR

Bedir H. (1991)"İngilizce Sınava Hazırlık." ***Açık Öğretim Dergisi,*** Adana: Aşanlar Dersanesi

Bedir H. (1995)."Okuma Anlama da Kültürel Öğelerin Önemi". ***İngilizce Öğretiminde Neredeyiz*** Malatya: İnönü Üniversitesi.

Bedir H. (1997) "Okuma Anlama da Geçmiş Bilgilerin İşlevi." ***4th Dil Bilim Kongresi Kitapcığı,*** Eskişehir: Anadolu Üniversitesi.

Bedir H., E. Bada (1997) "İlköğretimde Bilişsel Eğitim/Öğretimin yeri". ***2nd Ilköğretim Kongresinde Sunulan Bildiri.*** Adana:Çukurova Üniversitesi