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OKUMA ÖNCESİ SÖZCÜK TANIMANIN YABANCI DİLDE OKUDUĞUNU ANLAMAYA KATKISI: ÖĞRENCİ HEMŞİRELERLE BİR UYGULAMA

THE VALUE OF WORD IDENTIFICATION AS A PRE-READING

SCHEMA ACTIVATOR IN A NURSING SETTING

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ÖZET

Bu çalışmada Hemşirelik alanındaki İngilizce teknik metinleri okumaya başlamadan önce, bu dalda öğrenim gören öğrencilerin teknik ve yarı teknik kelimeleri tanıma ve sınıflandırma aktivitesi yapmalarının okuduğunu anlamadaki değeri araştırılmıştır. Böylelike bu tür metinlerde geçen ve bilimsel Türkçe metinlerde de kullanılan, yani öğrencilerin de aslında kendi mesleki alanlarından bileceği teknik ve yarı teknik (bilimsel kavramları açıklamaya yarayan) kelimelerin farkına varılması ile öğrencilerin parçaları anlamada daha başarılı olacakları varsayılmıştır.

Bu tanıma sürecinin öğrencilerin okudukları parçaların içerdiği konu hakkındaki varolan bilgilerini harekete geçireceği ve böylece metinlerde daha fazla detayın farkına varacakları düşünülmüştür.

Sözü edilen amaçlarla ilgili olarak Osmangazi Üniversitesi Sağlık Meslek Lisesi son sınıf öğrencileriyle deneysel bir çalışma yapılmış ve her biri yaklaşık 28 kişi olan iki sınıf sırasıyla ikişer kez hem deney, hem de kontrol grubu olmuştur.

Gruplar hemşirelikle ilgili dört adet özgün metin okumuş ve her okumanın ardından test edilmişlerdir. Deney grubu, kontrol grubundan farklı olarak, okumaya başlamadan önce kendi başına, yani öğretmenin hiç bir müdahalesi olmaksızın bir kelime tanıma aktivitesi yapmış ve kelimeleri "teknik", "yarı teknik" ve "bilmiyorum" (anlam ya da sınıflandırma açısından) şeklinde sınıflamıştır.

Testler çoktan seçmeli, açık uçlu ve Türkçe olarak anladığını yazma bölümlerinden oluşmuştur.

İstatisitksel analizlere göre deney ve kontrol grupları arasında parçaları anlama açısından anlamlı bir fark görülmemiştir. Ayrıca öğrencilerin bazı kelimelerden, özellikle yarı teknik olanlardan yola çıkarak cümleleri yanlış yorumlayabildiği gözlenmiştir.

Sonuç olarak bu aktivitede öğrencilerin tek başlarına başarılı olamadıklarından dolayı bu işlemin öğretmenler tarafından öğretilmesi önerilmiştir.

ABSTRACT

This research attempts to investigate the value of recognising and identifying content area words as schema activators (background knowledge of subject) in reading authentic content area texts.

In order to increase students' lexical awareness, particularly on technical and subtechnical words, the students are asked to identify and classify the words in authentic materials on their own, under the headings *technical, subtechnical*, or *I do not know* (the meaning of the word or to which group is belongs to). In other words, the aim of this study is to determine to what extend transferred L1 vocabulary affects reading comprehension of scientific texts that contain technical or subtechnical cognates or borrowings.

An experimental study was conducted with control and experimental groups in order to find out the value of word identification and classification.

The subjects of this study were two single-gender (female) intact classes of fourth grade students in Osmangazi University's Nursing High School, Eskişehir. Two pre-intermediate groups of total 56 subjects were treated as both experimental and control groups in turns, and read four authentic reading passages form nursing journals and a textbook on diseases for native speaker nurses.

The experimental groups were given the vocabulary grid to fill in before reading the passages whereas the control groups read the texts directly. After each reading session, four tests were administered to the learners that consisted of multiple choice, open ended questions and a re-writing task in the native language.

The result of this study indicated that there was not a significant difference between the students who were asked to fill in the grid on technical and subtechnical vocabulary prior to reading, and the students who read the texts directly without focusing on lexical items. The content schema of the students were activated in both experimental and control groups.

The reasons for this equal result might include the fact that both the control and experimental groups had a considerably high amount of background knowledge, therefore the experimental measure had not a significant effect.

Examination of the idea units revealed also findings that were consistent with Laufer and Sim's (1985) study. Similar to Laufer and Sim's observation, the subjects in this study, operated from lexical items first, made incorrect guesses about the meaning, and arrived at an erroneous interpretation when they could not understand a sentence.

To conclude, when the students are left on their own abilities, the word identification and classification activity proved to be ineffective in increasing reading comprehension, and the results suggest that the students did not benefit from the word identification and classification activity.

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CHAPTER 1

INTRODUCTION

1.1 Background to the Problem

Language learning involves four basic skills: listening, speaking, reading and writing. One of these macro-skills used in instructional English as a Foreign Language (EFL) settings as well as non-instructional professional environments is reading. Simply defined by Williams (1984:2), reading "is a process whereby one looks at and understands what has been written." On the word 'understands,' Williams (1984:3), concludes:

> Understanding is not an 'all or nothing' process, and from that it follows that reading is not an 'all or nothing' process either. Reading can often be a struggle after understanding, especially where language learners are concerned. Part of the teacher's job is therefore to develop within the learner strategies that will help him in this struggle.

In order to help learners to overcome this 'struggle,' research in EFL/ESL reading has grown enormously in the past 30 years.

Recent reading research and practice focuses primarily on 'interactive approaches' to reading; an assumption which argues that "reading is a combination of identification and interpretation skills" (Grabe, 1991:375). These approaches have been developed mainly under the influence of the "psycholinguistic model of reading" proposed by Goodman (1967). Goodman characterises reading as a "psycholinguistic guessing game" where the reader does not just decode the visual input, but also makes

use of what he already knows, predicts information, and confirms his predictions by reading the text (Grabe, 1991).

Other suggestions of models also exist to explain different interactions during reading. Coady's model of the ESL reader (1979), for example, views reading as the interrelation of background knowledge, conceptual abilities and process strategies (in Carrell, 1984), as seen in Figure 1:

Model of the ESL Reader, Coady (1979:7)

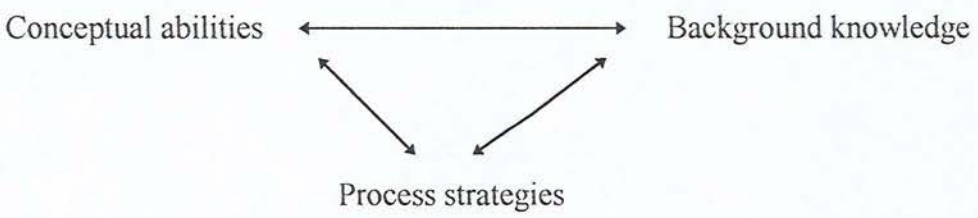

Figure 1

In this model, Coady refers to general intellectual capacity by 'conceptual abilities.' 'Process strategies' include many considerations and components related to the reading process itself such as knowledge of lexis and structure, employing reading strategies, etc. 'Background knowledge' comprises what the reader brings to the text from his own world knowledge and it also includes his expectations from the text. Some readers may make use of one of these components more than the other two depending on their level of proficiency in reading.

In both Goodman's and Coady's models, the reader's background knowledge is one of the basic components of reading comprehension. As stated in Chen and Graves (1995:664), "fundamental to text comprehension is the reader's ability to organise information and connect new knowledge to he or she already possesses."

The influence of background knowledge is commonly associated with *schema theory,* which describes how prior knowledge is processed in memory and used in higher level comprehension (Anderson and Pearson, 1984). Within the framework of schema theory, Carrell and Eisterhold (1983:556-557) mention the following:

> Efficient comprehension requires the ability to relate the textual material to one's own knowledge. Comprehending words, sentences, and entire texts involve more than just relying on one's linguistic knowledge.

It is often necessary to highlight the distinction between *formal schema* (background knowledge of the structure) and *content schema* (background knowledge of content). In common, it has been found out that the higher the background knowledge of a text's content area, the greater the comprehension of that. The role of content schema might be so effective that it might overcome linguistic deficiencies, i.e. formal schema (Coady, 1979:12).

Contrary to these suggestions, it is argued that previous knowledge may cause the reader to create false hypotheses about a text. In such cases, the reader operates first from lexical clues to meaning, then he creates erroneous hypotheses about the content, i.e., he makes incorrect guesses about the meaning and forthcoming information, and finally he imposes his own belief of structure to the whole so that he ends up with an inadequate interpretation of the text (Laufer and Sim, 1985; Schumm, 1993). This miscomprehension occurs especially in reading authentic, unsimplified texts, where the content requires cultural background of the subject or the target language. As pointed out by Gebhard (1987:22), the effects of cultural bias increase if the text is especially non-technical.

In order to avoid culture bias, an alternative approach to reading is the *content centred approach,* in which this problem is at a minimum level. Content centred approach would be most beneficial in settings where the students have "no basic need to learn English other than to gain information from journal articles, manuals, and textbooks in their university studies and future employment "(Hudson, 1991). This seems to be the case in most of the English teaching programmes in Turkish schools, even universities where the students do not have the opportunity to communicate with native speakers or to go abroad. Research on reading in student's own content area usually implies that content based approach is intrinsically motivating, interesting, relevant, and appeals to students' future needs. Etchells (1987:29), for example, says that if the English of the medical students is lacking, "at least they can compensate by showing off their medical knowledge" in a medical content area setting.

What needs further emphasis is that most of the theoretical bases in favour of reading comprehension that are mentioned above already exist in English for Specific Purposes (ESP) or English for Science and Technology (EST) settings. According to Philips (1981:101) EST has the following principles:

1. reality control
2. nontrivialty
3. authenticity
4. tolerance of errors

These principles help the students to become independent readers in the future and provide real life like situations during reading authentic materials. In other words, taking advantage of what the students already know would be a better point to start instead of what he failed to learn (Mackay and Mountford, 1978).

One of the essentials of ESP methodology is the use of *authentic materials*, and the value of authenticity has also been realised recently in ESL/EFL settings. The term authenticity is defined and its implications have been stated elsewhere in growing literature (e.g. Hague and Scott, 1994; Rogers and Medley, 1988; Haines, 1995; Wong, Kwok and Choi, 1995; Yuk- Chun Lee, 1995; Bacon and Finneman, 1990; also cf. Glossary). It is commonly accepted that authentic materials are normally produced for native speakers rather than for foreign language learners. The primary goal of such material is to communicate meaning but not to teach or exercise language structures or vocabulary. The learners' future needs are especially of great concern to ESP reading because, as Kuo says, (1993:178) "What we should not forget is that the learner eventually must cope with unsimplified materials."

There is no doubt that English has been accepted as the principal language of science and technology for many years. In 1957, UNESCO reported that nearly two thirds of engineering literature was published in English, however, only one third of the world's professional engineers could read in English (Mackay and Mountford, 1978). Similarly, Baldauf and Jernudd (1983) have found that since 1965, the use of English in professional settings has increased dramatically and more than 65% of all international chemistry, biology, physics, medicine and mathematics journals are now in the English language (Johns and Dudley-Evans, 1991:302). Therefore the learners are likely to read authentic materials concerning their professions, and need help in comprehending these kinds of texts.

Reading in ESP has three major roles. The primary role is to enable the student to understand information in occupational textbooks, journals, magazines, research reports, abstracts and other authentic materials. The second role is to reinforce

professional background knowledge and to gain new information from different sources (Emener, 1989) as well as to practise structure and vocabulary which are the fundamentals of reading and language (Valette, 1969, cited in Emener, 1989:2). In addition, the third and most important role is to enable the student to master linguistic forms by focusing mainly on structure, since problems on vocabulary will be reduced considerably in ESP texts because of the technical terms and due to students' prior knowledge of the subject .

Both in EFL and ESP settings, reading comprehension is often facilitated through pre-reading activities, which have significant effects in eliciting background knowledge. Pre-reading activities increase students' interest and concentration, motivate the students to predict the content of the text and to confirm their prediction by reading. They also provide a purpose for reading through accomplishing meaningful tasks, e.g. gaining new information or finding answers to previously stated questions. Most importantly they activate students' prior knowledge, which is an essential component of interactive approaches to reading.

Usually pre-reading activities are devised or selected by the teacher. In a reading class, the teacher has more responsibilities than just assigning the student to read authentic materials. As Stoller states (1994), the teacher has to develop exercises and activities that "a) prepare the student for the reading task, b) aid students in improving their reading abilities, and c) help students comprehend the passage." She describes pre-reading activities as activities designed to prepare the student for the actual reading of the selected article and continues(1991:3) :

> Because comprehension will be determined partly by a student's own background knowledge, pre-reading activities can be utilised (a) to tap students' already existing background knowledge, and/or (b) to provide students with new information that will help them comprehend the passage.

Some of the pre-reading options are as follows: 1) creating a semantic map; 2) studying the layout of the reading passage; 3) skimming for main idea(s); 4) scanning for details; 5) matching main ideas with paragraphs; 6) examining visuals; 7) consulting the dictionary; and 8) considering new vocabulary, which includes a) providing or letting students find synonyms or antonyms, b) finding contextual clues, c) familiarising students with word families, e.g. by identifying semantic word lists. The selection of appropriate pre-reading tasks may depend on the learner's background knowledge and the type of the reading material (Stoller, 1991:3).

Background knowledge and simple pre-reading activities are also utilised in everyday reading. As Grabe (1991) says, "One needs only to pick up a newspaper in an unknown language to verify that background knowledge and predicting are severely constrained by the need to know vocabulary and structure." Therefore it might be a useful point to start by trying to identify as many words as possible in that news magazine. If it is a scientific text, perhaps the reader would be able to identify at least some of the technical terminology, which are usually cognates in different languages, and would be able to guess what the text is about even if he may not understand the whole text.

Word recognition and identification seem to be valuable and naturally occurring activities as a first step before one starts to read; the reader scans the text quickly, tries to understand what the text is about, attempts to catch a few familiar words, and tries to figure out what the details are. While this procedure appears to be quite normal, very few research studies exist on background knowledge and word identification as a pre-reading activity.

Usually word identification is considered to be helpful for beginning readers. Carrell (1984), for example, states that pre-reading activities that involve key-word or key-concept association tasks are more relevant for less proficient ESL readers. Tasks, such as word association, may also help to determine what students already know and what they need to learn (Pearson and Johnson, 1978). Shank (1982) indicates that reading in a first language becomes successful if the words already exist in reader's oral-aural background and they only need to recognise the words (in Carrell, 1984). In his discussion of interactive compensatory model of reading fluency, Stanovich (1981) points out that readers of weak word recognition skills compensate by making use of contextual information (in Taglieber, Johnson and Yarbrough, 1988). Rogers and Medley (1988:470) propose to ask students to find words that "look familiar" in coping with authentic materials, and add, "this task, while it may appear to be quite simple, calls their attention to the fact that sometimes their native language can be an asset in reading in a second language." Even beginning readers can cope with authentic materials of considerable length if appropriate tasks are set, for example, searching for cognates in foreign texts (cf. Glossary).

Cognate recognition enhances confidence, motivation and reading speed since "any scientific or technical text can be expected to contain at least 30% cognates" (Moss, 1992:143). However, Moss (1992:141) draws attention to the fact that ESP students reading technical and semitechnical text

> were not aware of the high frequency of cognate words in such texts, and that their reading efficiency was adversely affected by this lack of awareness... further...most teachers of English, having themselves a relatively high level of linguistic sophistication, are unaware of this problem and tend to assume that cognate lexical items are automatically recognised and do not therefore constitute a problem .

Marshall and Gilmour (1993) remind us of some researchers (Cheong, 1976; Cowan, 1974; Meyer, 1988) who have suggested that comprehension problems are not usually caused by words which are specific to a subject area, i.e. technical words. Instead, what seems to be difficult to learners is to cope with nontechnical general English words or grammatical vocabulary. Especially subtechnical words that are used to explain more technical concepts or relations, and which do not belong to a certain discipline are found to be the most problematic category (Marshall and Gilmour, 1993; Robinson, 1989). Cowan (1974) regards these words as context independent which occur across disciplines with a high frequency (cf. Glossary).

Consequently, in reading authentic scientific texts, it is suggested that teachers set appropriate pre-reading tasks to enable the students to use strategies of word recognition and also include subtechnical vocabulary within the context so as to build structural relations (e.g. Marshall and Gilmour, 1993).

1.2 Problem

Students of English in instructional settings are often exposed to and expected to read simplified texts from different sources. Their comprehension ability is often facilitated and controlled through pre-reading activities, and their background knowledge is activated by the teacher who constantly guides the students. However, when readers read in a foreign language outside the classroom, or in their postgraduate lives, they are usually left alone with unsimplified, authentic, 'real life' materials such as professional journals, reports, and articles.

One of the major objectives of reading in English in the Turkish educational system is generally to qualify the learner with the skills of reading authentic foreign

publications in his own professional field. Because more than half of the professional publications appear in English, it is essential to develop appropriate skills especially in reading scientific and technical texts. Although this goal seems to be hard to achieve because of the linguistic features of technical prose and the content words such as technical terms and nominalizations (see Uljin, 1978 in Barnett, 1986), evidence exists that the more readers know about a specific subject, the more quickly and accurately they will read (Day, 1994).

Further, because subtechnical vocabulary seems to be problematic in ESP reading, increasing the students' awareness of these kinds of words might help them to increase their understanding of the text. Therefore the students might be asked to focus on technical and subtechnical vocabulary before they start to read .

Consequently, some problems in reading might include the questions that normally happen in real life situations when the reader is left to his own talents, especially when he is expected to read foreign publications in his own area, and to what extend his background knowledge of the subject and technical vocabulary increases his comprehension of the text.

1.3 Statement of the Hypothesis

In order to highlight the problems mentioned in the previous section, an experimental study will be conducted between experimental and control groups. The following hypothesis will be tested throughout this research:

- There will be a significant increase in the comprehension of authentic content area texts by the experimental group readers whose lexical awareness is raised and thus

whose content schema is activated by a word identification and classification task as a pre-reading activity.

1.4 Aim and Scope

This research particularly attempts to find the value of recognising and identifying familiar vocabulary, such as content area words acting as content schema activators (background knowledge of subject) in reading comprehension. In other words, one of the aims of this study is to determine to what extent transferred L1 vocabulary affects reading comprehension of scientific texts that contain terminological cognates. This research also questions the role of lexical consciousness raising (adapted from Hudson's citation on *grammatical consciousness raising*, 1991:83) by means of word recognition.

In this study, the students are not explicitly pre-instructed on how to recognise and use these familiar words. It undertakes to describe how successful the learners are if they take the responsibility of their own understanding. Therefore, the scope of this research study does not include the effects of formal cognate recognition teaching.

As mentioned in the previous section, Moss (1992:143) states that one third of a scientific article may consist of cognates which may be both technical and subtechnical. If the students are able to recognise them through this activity, this will give them confidence of understanding nearly 30% of the text. This ability will also help them to save time since they will not look them up in a dictionary. Therefore, this study also aims to find out to what extent an authentic text can be understood without dictionary work.

The subjects of this study are assumed to possess the necessary background knowledge found in the texts. Therefore, the suggested pre-reading activity, i.e., familiarising students with certain word families through word identification and sorting them into semantic groupings (cf. Stoller, 1994) is used to activate the students' existing background knowledge. It is expected that this pre-reading activity will prepare the student for the actual reading, introduce the topic, make them recognise the textual organisation, motivate the students, and also prepare them for the language found in the text.

Text structure is not dealt with in this study, because the aim is to determine the value of the semantic dimension in reading comprehension. It is also limited to authentic texts that appear in nursing journals and magazines, therefore the study does not account for other content areas and broader ESP reading settings.

If the expectations are to be confirmed, the word recognition and classification activity could be suggested in other ESP settings where the students have heightened background and terminology knowledge. This reading task might aid students to make use of what they already know and perhaps reduce the problems of formal schema, i.e. syntactic knowledge of scientific prose. Beginning readers, especially, might benefit from a word recognition activity as a starting point in authentic reading which might also reduce their stress in facing difficult kinds of texts.

Research studies on cognate recognition are usually conducted in ESL settings (e.g. Moss, 1992; Martinez, 1994). This study, however, is conducted in an EFL context. Therefore, lesser common words that could be accepted as cognates might appear in this context, except some borrowings and terminology. Therefore, another aim to focus on ESP reading material is to assume that the amount of common cognates

would be at a relatively higher level in technical texts rather than the other genres because of the technical and subtechnical vocabulary.

1.5 Assumptions

The following assumptions are held throughout this thesis:

i) The subjects of this study are assumed to have mastered the reading skills in their native language, and do not have problems in reading in English at a pre-intermediate level.

ii) It is assumed that the use of authentic scientific texts will increase the interest of the students and will avoid cultural bias.

iii) The students are assumed to have the same content area background knowledge, and are also assumed to be at the same level because of having received the same instruction, by the same teachers under equal circumstances. Therefore, it might be asserted that by exposing them to subject related texts, the individual differences on content schema will be at a minimum level, which is a point in favour of ESP reading.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

In this chapter, relevant research on reading comprehension will be discussed with a particular emphasis on the following: reading comprehension, the relationship between reading comprehension and background knowledge, schema theory in reading, using authentic materials in reading classes, the relationship between reading and ESP, the role of pre-reading activities including word recognition, the effects of technical and subtechnical vocabulary and cognates in reading comprehension.

2.2 Reading Comprehension in General

Before discussing the value of background knowledge, it might be necessary to focus on reading comprehension itself. Dakin (1969) suggests that three interdependent elements are involved in reading, i.e., recognition of the visual input, structuring of the input into meaningful stretches, interpretation of the input. These elements occur simultaneously with a complex interrelation (Morrow ,1980:10).

Reading effectively, in general, is a complicated process which involves various abilities such as knowing the graphic symbols of a language, understanding or inferring the meaning of words, knowing the structural and morphological patterns, being aware of different styles such as informal writing, understanding the main idea of the text and the point of view of the writer (Harris, 1969:59).

Components of good reading may vary from one context to another depending on different aims. This variation prompted research on reading comprehension in the

past 30 years to improve reading skills and to facilitate better reading skills in different circumstances.

One of the most influential reading theories developed at the beginning of 70's is Goodman's *psycholinguistic model* of reading (1969) in which he argues that reading is a psycholinguistic guessing game. The reader does not just pick up letters, words and information from the page but uses the graphic display selectively to predict the forthcoming information, to sample and to confirm his prediction. Sampling becomes effective when the reader uses his background knowledge in making inferences (Grabe, 1991).

Based on Goodman's model, Williams (1984) comments that in written texts, there is usually more information than required. In order to infer meaning, the efficient reader does not use all of the visual input on the page, but chooses the information selectively by focusing only on what is necessary. Goodman's psycholinguistic guessing game does not occur randomly but in a 'principled' manner which entails two 'sources to guide' the first of which is the text. The second factor is what the reader brings to the text. According to Williams (1984:11), the latter includes the following:

1 knowledge of the writing system
2 knowledge of the language
3 ability to interpret
4 appropriate knowledge of the world as assumed by the writer
5 a reason for reading that determines his style.

Obviously, the foreign language learner is assumed to have mastered the writing system. Unlike the efficient native reader who knows most of the vocabulary and syntax, the foreign language learner is imperfect in most of the language skills in the target language. Therefore, Williams (1984:4) says, "In fact a fundamental difference between the native speaker and the foreign language learner is that the former uses knowledge of

the language to help him read, whereas the latter uses reading to help him learn the language." 'Knowledge of the world' is used here instead of background knowledge in order to refer to what the reader brings with him to the text. He states that the role of world knowledge in understanding texts is closely related to the nature of the text and the nature of the knowledge. The knowledge of the world also includes 'knowledge of a particular culture or way of life' which can be fairly problematic to the foreign language learner because of cultural differences. To summarise the reasons for different reading styles, Williams (1984:12) provides the following diagram:

Diagram of reasons for different reading styles

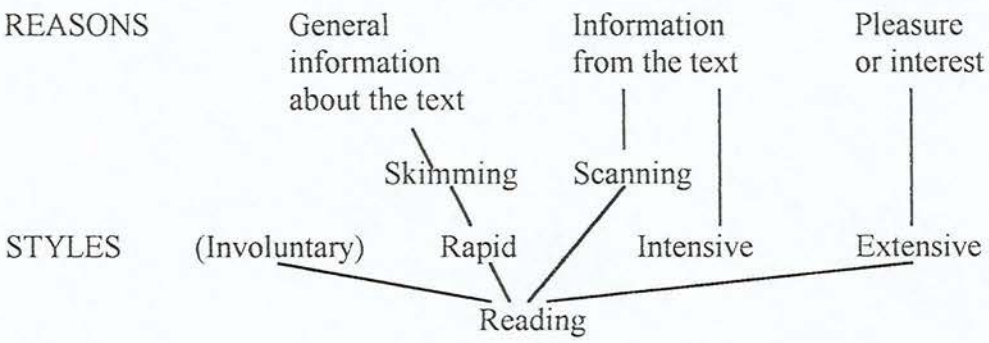

Figure 2

Goodman's model motivated others to design new and more specific models of reading comprehension. Coady's (1979) model of the ESL reader, for example, has three elements, and the degree of interaction of these elements affects reading comprehension. They are *process strategies, conceptual abilities,* and *background knowledge.* Beginning readers may rely more on process strategies, such as word identification, whereas more proficient readers may focus on conceptual abilities and background knowledge, by using, for example, textual clues to make and confirm predictions about the information (Grabe, 1991:377). In this model, Coady refers to

general intellectual capacity by 'conceptual abilities.' 'Process strategies' include many considerations such as grapheme-morphophoneme correspondence, deep and surface structure, lexical and contextual meaning (Carrell and Eisterhold, 1983:555). On 'background knowledge' Coady (1979:12) concludes:

> The subject of reading materials should be of high interest and relate well to the background of the reader, since strong semantic input can help compensate when syntactic control is weak. The interest and background knowledge will enable the student to comprehend at a reasonable rate and keep him involved in the material in spite of its syntactic difficulty .

As Coady states above, one of the most important dimensions of reading comprehension is the reader's background knowledge. However, few research studies investigated the influence of this dimension

2.3 The Significance of Background Knowledge on Reading Comprehension

An educational psychologist, Frank Smith (1971:9), said, "the information that passes from the brain to the eye is more important than the information that passes from the eye to the brain." His contention implies that the information perceived through our receptive skills are interpreted and gain meaning only when we have already some existing relevant knowledge in our memories to compare and contrast with this new input. This pre-existing knowledge helps us to evaluate, to accept, or to reject the information or to decide that it is completely new for us. The idea that new information becomes meaningful only if it is related to what a person already knows is not new, and it was also claimed as early as 1781 by Kant (see Carrell, 1984:332).

Interest in background knowledge increased during the past two decades and a large body of literature is devoted to prior knowledge of textual content (e.g. Chen and Graves, 1995; Lee, 1986). As Swaffar (1988:126) points out, abilities such as language

recognition, concept recall, and inferential reasoning become improved if the L2 reader has prior familiarity with the subject matter, and comprehension increases in a parallel manner to the degree of sophistication of background knowledge. Yet, she adds that more research is needed on the 'activation' of prior knowledge.

Smith (1987) draws attention to the assumption that good readers ask "What do I already know about this topic?" and "How does this new information relate to my previous knowledge?" during the reading process. He claims that although some textbooks may appear to contain entirely unfamiliar knowledge, there are rarely any textbooks that include totally new information. Mostly, it is possible to find "a link, an information that you can associate with new ideas" (Smith, 1987:43).

Another study related to background knowledge belongs to Chen and Graves (1995) who claim that the reader's ability to organise and connect new information to what he already knows is essential to comprehension of a text. Appropriate reliance on prior knowledge and text will result in efficient comprehension. In their study, Chen and Graves tested the role of previewing and providing background knowledge as pre-reading activities. At the end of the treatment, they also wanted the subjects to answer semantic differential attitude questions to which all the experimental groups responded positively in general. The control groups who did not receive any pre-reading activities but read the texts directly, on the other hand, indicated that understanding the texts were difficult for them. Eighty-nine percent of the students in this group said that they needed more instruction on difficult vocabulary, 83% students recorded that it was necessary for them to know the characters in the stories, and 82% needed more information about the texts themselves. Moreover, 51% of all students in the control group indicated that the cultural content of the materials caused difficulty in reading or

they had lost their interest during reading because they did not like to read about foreign cultures.

As can be observed in the research mentioned above, cultural content seems to be considerably problematic for ESL, especially for EFL readers. Elmas (1992:18) agrees on the difficulty of cultural content and says "texts with familiar content are easier to read and comprehend than texts on content from a distant, unfamiliar cultural heritage." In her study, Elmas conducted an experimental research study on the effects of prior knowledge on reading comprehension of EFL students with Turkish linguistic background. She investigated whether activating prior knowledge through using an Anticipation Guide as a pre-reading activity would affect students' immediate and delayed oral recall of the text.

The result of Elmas' (1992) study seemed to reveal conflicting conclusions on the effects of prior knowledge on reading comprehension, and Elmas claimed that "there was no relationship between EFL subjects' prior knowledge and their comprehension of a text. Therefore, activating prior knowledge did not significantly increase subjects' retelling of the text." The reasons for this result might be because of the difficulty of oral recall without referring to the text, a measure which also tests students' memory. Moreover, the text used as an instrument in this study might be culturally biased since the topic was related to 'nomads,' which could be a drawback that Elmas agrees upon, saying at the end the topic was 'uninteresting.' Therefore she suggests that further research may compare reading passages related to students' own culture and to a foreign culture to study the effects of cultural background. Besides, Elmas admits that not all of the pre-reading activities can be accepted to be equally

efficient in activating prior knowledge, and activities other than the one used in this study might arrive at a different conclusion.

Taglieber, Johnson and Yarbrough (1988:455) agree with previous research on cultural content:

> Students of English as a foreign language experience considerable difficulty in comprehending English texts when reading them for the first time. Not only do these texts usually contain unfamiliar vocabulary, but they also may contain unfamiliar concepts and cultural allusions that make comprehension difficult.

They continue that the message of a text can be distorted when the culture, beliefs and assumptions of the reader are different than that of the writer, which, in turn, would cause considerable interference with the EFL reader's comprehension. The finding of their study supported the idea that when used adequately, background knowledge helps students to overcome language problems during the reading process.

Other research, on the other hand, holds that previous knowledge may cause the reader to create false hypotheses about a text which would result in miscomprehension. Although it is widely accepted that a student's competence of using his background knowledge of a subject and his knowledge of the foreign language will help him comprehend the text during reading, this might not really be the case. Normally, a reader is expected to recognise contextual clues such as syntax, lexis or lexical redundancy to guess meaning of unknown words from context, and finally understand the text a great deal better. Laufer and Sim (1985:7) say:

> It has been observed that extratextual knowledge of the subject under discussion is often quite helpful to the foreign reader, particularly in texts of a specialised nature, academic or technical. Also information from the earlier parts of a text can provide a useful background for understanding the rest of it. From this general knowledge of the subject matter and information acquired from the text itself, the reader can make predictions about what will follow, and then test those predictions against the actual content of the passage.

However this seems to be the ideal situation, and in their study, Laufer and Sim (1985) found out that readers often do not read in this manner. They established that due to cultural bias and partial linguistic knowledge, students may sometimes misinterpret sentences. According to Laufer and Sim (1985:10), the process of interpretation seems to follow these steps:

> 1. The student clings to lexical items first: those he knows and those he sometimes tries to guess by using the clues in the word itself. However he is also prepared to disregard an unknown word altogether.
> 2. Having created some kind of meaning through the lexis, he adds to it whatever relevant knowledge he has, textual or extratextual.
> 3. Having arrived at more precise interpretation, on the basis of lexis and his "knowledge of the world," the student then tries to impose a sentence structure to fit his interpretation.

Distortions of the original text occur especially when the reader's extratextual "knowledge of the world" involves attitudes different than that of the author.

Similarly, Schumm (1995) states evidence from first language, and says that journalists often assume readers have enough background knowledge and experience to interpret the news adequately. However, because not all of the readers are equally well educated, some readers may not have the amount of prior knowledge on cultural concepts, conventions and events which are usually gained throughout formal education. No matter how developed the decoding skills, the reading of news articles would be problematic for readers with incomplete education. Schumm mentions of Grebelsky's doctoral dissertation (1990) on comprehension of news articles with limited background knowledge. Despite decoding adequately, much of the subjects' retellings reflected omissions, alterations of actual organisation, and evidences of personal experiences and background in this study. Schumm reminds us of Grebelsky's

(1990:31) warning that the "decoding without understanding can lead to the construction of an 'erroneous world'. "

It is known that reading authentic, unedited texts, where the content requires cultural background of the target language community, is notably difficult. However, this does not mean that texts of cultural content should never be used in language classes.

Much of the reading material mirrors the cultural understanding of the writer and is culturally biased. The effects of cultural bias increase especially when the text is non-scientific. One possible advantage of using such non-scientific texts is that they can be used to acquaint the students with different foreign cultures and increase their cultural awareness. In this case, the role of the teacher is to explain the new cultural elements and to provide background information which can be achieved in at least three ways: previews, pretests and class discussions. This gives the student the opportunity to gain new information and to activate his prior knowledge that helps him read successfully (Gebhard, 1987).

Speed and accuracy in reading increases the more the readers know about a particular topic. It is necessary for teachers to choose passages with topics that are familiar to the students. According to Day (1994:21), if this is not the case, another passage might be selected or the students can be accustomed to the topic beforehand, which would be rather time consuming and would reduce the time spent on reading skills:

> The time spent in reading class expanding the students' knowledge on such topics would be meeting one of the goals of the course. However if increasing students' knowledge of the English-speaking world is not one of the goals of the course, the reading teacher might not care to spend class time building up her students' background knowledge of the English-speaking world.

The question of whether or not to provide cultural background knowledge as part of a language course is dependent on the overall policies of the language programme. Some views may accept increasing awareness of target culture as an integral part of language learning whereas some may consider this as time consuming and often unnecessary, especially in circumstances where the students have no basic needs other than reading and understanding scientific texts in their own professional areas, and do not need to communicate with members of the target culture. In fact there are examples of courses which have established their whole programmes without focusing on culture specific elements of the target language, such as some instances of English for Specific Purposes courses. The advantage of these courses might be, then, primarily the avoidance of cultural bias and the unity of the background knowledge of students. The problem of individual differences regarding the amount of background knowledge would possibly decrease as well, since the theoretical basis of a discipline would be instructed more or less in the same manner.

2.4 Reading Research and Schema Theory

Comprehension of a second or foreign language was viewed merely from the language basis, and the learner was disregarded as a factor for a long time. After the psycholinguistic model of reading was suggested by Goodman (1967), the role of the learner in the reading process attracted interest, and especially the importance of the reader's prior knowledge became a concern of recent reading research. It is now accepted that "what is understood depends on the reader rather than on the text" (Swaffar, 1988:123). From a reading point of view, what is received from the printed page gains meaning in the mind of a reader when it is realised in the mind and related to

what already exists there. This pre-existing knowledge in the mind of the reader and its relation to the process of comprehension is referred to as *schema theory.*

Although it is still hypothetical and not well defined, schema theory is often defined as a theoretical framework for formalising the role of a reader's prior knowledge. The mental representation of the previously acquired knowledge structures are called *schemata* (Carrell, 1984; Carrell and Eisterhold, 1983). Yule (1985:113) says that "we 'build' interpretations of what we read by using a lot more information than is actually in the words on the page," and "schemata are considered to be conventional knowledge structures which exist in memory and are activated, under various circumstances, in the interpretation of what we experience."

From a discourse point of view, Cook (1989:73) defines schemata as "data structures representing stereotypical patterns which we retrieve from memory and employ in our understanding of discourse." When 'mental representations of typical situations' are accelerated by the help of syntactic, semantic or other contextual clues, the schema becomes activated and used in making sense of the text, either written or spoken (Cook, 1989:69). Cook (1989:70) provides sample evidence for schema indicating the fact that "people questioned about a text or asked to recall it, frequently fill in details which were not actually given, but which a schema has provided for them." As mentioned in the previous part on background knowledge, Cook says that mismatches of schema may occur especially in language classes where the interaction involves different cultures and languages.

Schema theory has been developed after the suggestion of the *interactive approaches* to reading which hold that "reading comprehension is a combination of identification and interpretation skills" (Grabe, 1991:375). According to Grabe,

interactive approaches can be used to indicate two different notions; firstly, to explain the interaction between the reader and the text which is described so far as the reader's making use of his prior knowledge to reconstruct the information received from the text, and secondly for the interaction between two kinds of processing which are known as 'bottom-up' and 'top-down.'

Carrell (1984:333) says:

> The process of interpretation is guided by the principle that every input is mapped against some existing schema and that all aspects of that schema must be compatible with the input information. This principle results in two basic modes of information processing, called bottom-up and top-down processing.

Bottom-up processing is concerned with what the reader receives from the printed page at lexical, semantic, syntactic levels and related features. According to Carrell and Eisterhold (1983), bottom-up processing involves the input that enters to the decoding system by means of the most suitable bottom-level schemata. They add, "Schemata are hierarchically organised, from most general at the top to most specific at the bottom. As these bottom-level schemata converge into higher, more general schemata, these too become activated. Bottom-up processing is therefore called *data-driven*" (p.557).

Unlike bottom-up processing, the direction of interaction starts from the reader towards the material in top-down processing. This processing is stimulated by the schemata through which predictions on a text are made at a higher level. During reading, the reader explores the text to find information in order to confirm his prediction. Therefore this processing is thought to be *conceptually-driven* (Carrell and Eisterhold, 1983).

It is still debated whether utilising top-down processing would be more effective than attending to bottom-up processing or vice versa. Research in favour of bottom-up considerations emphasise the role of 'automatic lower-level processing' such as the automatic word recognition skill, and the recognition of syntactic and lexical items. Current research focuses on bottom-up versions of interactive approaches following the lower-level structures. The motives for this trend derive from research on eye-movement and related recognition of words, letters, features and syntax, which might be investigated within or without context. Paran (1996) supports the bottom-up view and asserts that good readers do not actually formulate hypotheses during reading and do not seek for confirmation as suggested in Goodman's model (1967). Instead, drawing attention on eye-movement research Paran (1996:29) remarks, "I would go further, and claim that one of the goals of the reading instruction is to make readers less reliant on top-down processing, and help them progress towards greater reliance on bottom-up strategies as they become more proficient." Paran cites evidence from a study of Stanovich (1991) and says that recent research on models of reading are more in favour of bottom-up processing. Paran (1996:29) claims that meaning is facilitated through the process of lexical access, therefore "reading is heavily seen as text-bound: texts are said to be sampled in a fairly dense manner and guessing is minimal."

Roller and Matambo (1992:130) propose that the process of reading might be related to learner's language proficiency. They mention about Carrell's (1983) study where she says the readers were dependent mainly on bottom-up processing at word and sentence level because they were more concerned with the language rather than with the content, so top-down processing such as background information and top-level organisational features could not be used effectively. Therefore a threshold level of

proficiency is thought to be involved for the ability of attending top-down processing (Carrell, 1983; Paran, 1996; Laufer and Sim, 1985).

Research mentioned in the previous part on 'background knowledge' supports the influence of top-down processing. Swaffar (1988:126) summarises this as "Every L2 study published confirms the theory that familiarity with a schema will facilitate reading comprehension." Although one of these two kinds of processing might be used more than the other in some instances, it is not possible to isolate one of them completely since reading involves the interaction of these two strategies. According to Marshall and Gilmour (1993), in skilled reading, the skilled reader does not attend to every word, i.e. in a bottom-up manner, but relies on his background knowledge and his awareness of text structure, i.e., on top-down processing. However, they add that skilled reading does not stand for top-down processing, rather, it is the skilful interaction of the two types of processing. Similarly, Grabe (1991) mentions about a range of lower-level rapid skills such as automatic recognition, and a scope of higher-level skills related to comprehension and interpretation which are responsible for the process of reading. According to him it is not possible to assume one of these two processings as more effective than the other. Carrell (1984:333) also stresses the importance of simultaneous occurrence:

> The data needed to fill out the schemata become available through bottom-up processing; top-down processing facilitates their assimilation if they are anticipated or consistent with the reader's conceptual expectations. Bottom-up processing insures that the reader will be sensitive to novel information; top-down processing helps the reader resolve ambiguities, i.e., to select between alternative possible interpretations of the incoming data.

Another influence on the schema theoretic view stems from the distinction between the types of schema: *formal* and *content schema*. Formal schema is often

defined as the background knowledge of the text structure, whereas content schema is the background knowledge relevant to the content of a text. Formal schema includes the formal rhetorical and organisational structures such as different genres (Carrell and Eisterhold, 1983).

Empirical research to find out the effects of formal and content schema has been conducted generally through keeping one of them constant and operating on the other. Johnson (1981) for example, kept formal schema constant and studied the effects of cultural and non-cultural schema. Usually, it is stated that successful reading comprehension is also dependent on the interaction of these two kinds of schema. According to Carrell and Eisterhold (1983), comprehension becomes impaired in different degrees if these two types of schema are not activated and not used appropriately. Although they add that there is not much research that attempts to find out the value of one of them over the other, there are a few studies that might provide evidence for the assumption that content schema is more urgent than formal schema when a comparison has to be made between them. Coady (1979), for example, holds that it is possible to defeat language problems with a high degree of background knowledge, i.e. content schema (cf. Section 2.2, p.17).

2.5 Reading and Authentic Materials

The value of authentic materials has been widely appreciated in ESL/EFL settings, and has become an integral part of other contexts such as ESP (English for Specific Purposes) methodology. The term *authenticity* is defined and its pedagogical implications are stated in growing literature. The simplest definition is "authentic material is written or spoken language which has been produced for native speakers, rather than for foreign learners of a language" (Haines, 1995:60). Genuinely authentic

materials are not simplified in terms of syntax and lexis and do not aim to practise a certain linguistic feature. According to Haines (ibid.), the degree of authenticity varies from simplified, roughly-tuned, quasi-authentic towards authentic materials.

Some characteristics of authentic materials are "genuineness of time, location and people. ... current events in real world and happenings in familiar places" according to Wong, Kwok and Choi (1995). These features help the student to relate the content to their own lives and thus, to appraise the language use through authentic materials.

A precise definition of authenticity which can work for different texts has not been made yet. Hague and Scott (1995:348-349) established the following criteria for authentic texts in their own study:

> (1) it had the appearance of text that *could* appear in a natural context; in other words, it looked like it was lifted directly from a magazine or newspaper;
> (2) it contained minimal glossing and editing; and
> (3) its purpose was to convey information to the reader. In contrast, a contrived passage was one that appeared to be written for a particular textbook lesson with an obvious attempt to teach vocabulary and syntax; we could not imagine this type of text appearing in any sort of natural setting.

Swaffar (1985) regards a text as authentic if it is written for native speakers having communicative intentions such as *informing, persuading, thanking*, etc. She argues that a text written for language learners can also be authentic as long as the writer has an 'authentic communicative objective' in mind. However, usually language learning materials have the purpose of reinforcing language structures rather than communication goals, therefore are often edited and simplified.

Authentic materials are assumed to be produced by native speakers of a specific language. However, it is necessary to emphasise the fact that they are also produced *for* native speakers of that language. Bacon and Finnemann (1990:469, fn.) explain this emphasis by giving the following example: "Having a native speaker (NS) as the

classroom instructor does not necessarily guarantee authentic input." Other researchers might suggest that the 'quality, appropriateness, and naturalness' of the language should be taken as a basis in deciding upon authenticity, rather than focusing on the source and communicative aim (e.g. Rogers and Medley, 1988).

The usefulness of authentic materials might be viewed from cognitive and affective perspectives, too. Bacon and Finnemann (1990:459) state that authentic materials are claimed to provide context for the students so that they can relate form to meaning in terms of cognitive considerations. In affective terms, this type of materials increase the students' motivation and expose them to the culture of the target language, thus, helping them to overcome cultural bias. They also add that "even beginning readers could cope with authentic texts of considerable length, 250-300 words" (Bacon and Finnemann, 1990: 460).

It is commonly the case that until the students start to study at universities, they do not encounter authentic academic texts or other types of scientific discourse during secondary school foreign language education. Nonetheless, the overall aim is usually to enable the students to read and understand texts related to their own academic fields. According to Hirsch and Gabbay (1995), delaying such exposure would cause 'traumatic' results to the students when they start university. In their current events approach, Hirsch and Gabbay selected authentic texts which the students were likely to encounter in their academic studies from periodicals, academic journals, newspapers, magazines, research reports, critical essays, book reviews, editorials and new articles. They observed high instrumental and intrinsic motivation in the students' attitudes.

An issue of argument about authentic materials is whether to select purely authentic texts or materials that are simplified or modified. The advantages of using

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unmodified authentic materials are several. First, these materials represent real English as it is actually spoken or written, therefore they do not seem artificially constructed. Next, they do not reflect any presuppositions about the language level of the reader, therefore the language of these materials is natural and not graded and simplified. Furthermore, learners find reading genuinely authentic materials interesting and enjoyable. Moreover, dealing with unsimplified materials also help the learners to develop appropriate strategies in coping with the difficulties of such real life materials. Finally, although authentic materials are thought to be suitable for advanced levels, it is possible to use them at elementary and intermediate levels as well, if appropriate tasks are designed (Haines, 1995:62-63).

On the contrary, the possible disadvantages of using purely authentic materials are that these materials are often assumed as rather difficult for students of lower-levels. They may be longer than required with some irrelevant parts and may often contain ungrammatical language. Lastly, since these materials are usually drawn from newspapers, journals, etc., they easily become outdated after a period (Haines, 1995:63-64).

According to Haines (1995), sometimes teachers need simplified, contextualised examples to practise a grammatical structure, so it is better to use both authentic and simplified materials , and there would be no harm in making the students aware that the latter instances are non-natural. He adds "Equally students need to cope with real-world language and this is where authentic material comes into its own. We should not leave their exposure to authentic material until they are so brain-washed by simplified material that the shock of the revelation proves fatal to their progress" (Haines, 1995:64).

Although different aims may require either simplified or authentic texts, it is necessary to consider some advantages of authentic materials . This is important in making decisions about the goals of a programme, especially if the programme demands unmodified texts such as ESP/EST courses require, where the students have to cope with real instances of texts related to their own fields. Hudson (1991:84) lists the factors in favour of unsimplified materials under three headings. Firstly, when authentic texts are simplified, the loss of some meaning and ideas, and distortion of discoursal features such as cohesive elements are inevitable. Thus, reading simplified texts may become more difficult. Secondly, while reading simplified or modified material, the readers may develop strategies which are appropriate to those styles but which are not transferable to authentic texts. Thirdly, the tasks should be also real life like, and often, while working with simplified materials that are artificially constructed, the activities may not be realistic.

Various views make a distinction between *textually authentic* and *learner authentic* materials pointing out that any authentic text may not necessarily be really authentic when brought to class. For instance, they should be relevant and appropriate to the purpose of curriculum (Kuo, 1993).

Yuk-Chun Lee (1995:323) approaches this idea from a different point of view arguing that authentic materials may seem 'unauthentic' or unauthentic materials may seem 'authentic' to learners depending on how they are presented. Therefore, it is necessary to highlight the distinction between *text authenticity* and *learner authenticity*. The interaction between the learner and the text with 'appropriate responses' and 'positive psychological perceptions' is referred to as learner authenticity. These kinds of materials are motivating, interesting, useful, and do not cause culture-shock or

annoyance regarding the content. The rhetorical structure of the texts has to serve the needs of learners as well. Yuk-Chun Lee (1995:324) concludes, "When learners read an authentic text, their prior knowledge, interest, and curiosity make it easier for them to engage with it."

Another parameter for authenticity is *task authenticity*. In addition to the third issue in Hudson (1991) above, Rogers and Medley (1988) put forward that the activities used in authentic reading classes should include the same heterogeneity as it occurs in "real-life" reading; for example, reading a recipe or a telephone directory employs different tasks and reading strategies. Therefore, reading such texts would be successful through associating tasks with the texts.

2.6 Pre-Reading Activities

Pre-reading activities are the activities that prepare the students for the actual reading of a text. Most teachers now accept the effective role of pre-reading activities in reading comprehension, and textbook designers employ them as reading tasks. The aims of pre-reading activities are clarified by Williams (1984:37) as follows:

1 to introduce and arouse interest in the topic
2 to motivate learners by giving a reason for reading
3 to provide some language preparation for the text.

Williams (1984:37) adds that language preparation does not mean to explain unknown vocabulary and forms in the text, but to "ensure that the learners will be able to tackle the text tasks without being totally frustrated by language difficulties."

A number of pre-reading activities have been devised to accomplish these things depending on the desired task. Stoller (1994:3-4), for example lists some of the activities:

1. Create a semantic map.
2. Study the layout of the reading passage.
3. Skim for the main idea.
4. Scan for details.
5. Match main ideas with paragraphs.
6. Examine the visuals.
7. Read select paragraphs carefully.
8. Present main idea(s).
9. Consult the dictionary.
10. Consider new vocabulary.

On the last pre-reading activity Stoller (1994:4) comments that it is possible to introduce unknown crucial vocabulary through "(a) providing or having the students discover definitions, synonyms, and/or antonyms, (b) pointing out contextual clues, (c) familiarising students with word families, etc." She concludes that the instructors can ask the students to identify semantic groupings as pre-reading activities.

Taglieber, Johnson and Yarbrough (1988) suggest pictorial context, vocabulary pre-teaching and prequestionning, and Carrell (1984) suggests text previews in addition to vocabulary preteaching and prequestionning as pre-reading activities to facilitate reading.

Apart from the purposes mentioned above, pre-reading activities could also be used for two critical reasons: first, to provide background knowledge, especially if the students lack cultural background knowledge; second, to activate the students' already existing background knowledge. In these two senses, Chen and Graves say "Pre-reading activities are devices for bridging the gap between the text's content and the reader's

schemata"(1995:664). Research related to the firstly mentioned aim revealed significant effects of providing background knowledge to students (e.g. Chen and Graves, 1995).

However, the existence of research that did not find positive effects suggest that the type of pre-reading activity plays a key role and it has to be carefully selected depending on the preferred outcome (e.g. Elmas, 1992). In making decisions on the most appropriate pre-reading activities, the instructors might consider the amount and characteristics of the students' background knowledge as well as the type and other features of the text (Stoller, 1994).

As stated in Stoller (1994:4) one of the pre-reading activities is to familiarise the student with word families. Two ways of doing this might be word recognition and categorisation or classification activities. Word recognition is a kind of bottom-up processing whereby the student uses the graphic display on the page to construct meaning (cf. Glossary). Research related to word recognition focuses merely on automatic recognition skills and eye-movement (e.g. Paran, 1996). But there are also other views on word recognition, as Rogers and Medley suggest (1988:470):

> Besides questions with a content focus, there should be activities that call attention to the linguistic features of the language sample. In early stages, students might be asked simply to see if they can find any words that "look familiar." This task, while it may appear to be quite simple, calls their attention to the fact that sometimes their native language can be an asset in reading a second language. At more advanced levels, students can be asked to identify words and expressions used in the language sample to express emotions, or condolences or impatience, for example. Similarly, students can be asked to locate words used to create sensory appeal in products, or words used to distinguish fact from opinion or to indicate sequencing, again using the language as it occurs naturally and spontaneously in authentic materials as the data base.

Coady (1979) refers to word recognition as one of the process strategies in his model of an ESL reader.

On categorisation of vocabulary Holden (1996:32) comments:

> Categorisation encourages students to think not only about the meaning of discrete vocabulary items but about semantic relationships, connotative and denotative meanings, collocations, and

> the context(s) in which they are likely to occur... For example...specialised/technical vocabulary work at higher levels.

Although these two activities may have positive effects on reading comprehension, research studies on them seem to be insufficient in regards to literature.

2.7 Reading and English for Specific Purposes

English for Specific Purposes (cf. Glossary) is an area of English Language Teaching (ELT) which departed from general purpose English in the late 1960's and has developed since this time. A common acceptable definition of ESP has not been made yet, and views vary along with different goals and applications of ESP. LSP is usually accepted as foreign language teaching of any kind with an emphasis on context rather than a distinct branch of language teaching or a specialism. Besides, ESP deviates from general purpose English not only because of its content, but also on the emphasis on the learners needs, i.e., its purpose, its methodology, and the emphasis on specialised language. Strevens (1988:1-2) explains ESP and related claims as follows (see Johns and Dudley-Evans, 1993:116):

> A definition of ESP needs to distinguish between four absolute and two variable characteristics:
> 1) Absolute characteristics:
> ESP consists of English language teaching which is:
> - designed to meet specific needs of the learner
> - related in content (i.e., in its themes and topics) to particular disciplines, occupations, and activities
> - centered on the language appropriate to those activities in lexis, discourse, semantics, etc., and analysis of this discourse
> - in contrast with "General English"
> 2) Variable characteristics:
> ESP may be, but is not necessarily:
> - restricted as to the language skills to be learned (e.g. reading only)
> - not taught according to any pre-ordained methodology
> Claims: the claims for ESP are
> - being focused on the learner's need, wastes no time
> - is relevant to the learner
> - is successful in imparting learning
> - is more cost-effective than "General English."

The need in learning English and ESP courses are now well understood since it has become the medium of communication and the language of literature of many disciplines (cf. Chapter I, p.4). Johns and Dudley-Evans (1993) add that because of the foundation of economic communities such as the European Community, a common global language for internal communication is often needed, and therefore some ESP courses were implemented for this demand.

One of the differences between ESP and EFL/ESL is that ESP has a definitely stated purpose depending on the learner's needs. Mackay and Mountford (1978:2) state this as follows:

> When English as a foreign language is taught to children at primary or secondary levels of education, it is generally taught with a general aim in mind - that is, it is regarded as a 'good thing' for them to learn a language as a part of broad education. There is usually, however no immediate and specific requirement for such learners to make use of the language in any communicative situation. The purpose of learning the language is essentially a 'deferred' purpose, deferred till the tertiary level of education .

Mackay and Mountford also add that the aim of the students' attendance to general English courses in their curriculum is usually to pass the exams through learning the necessary linguistic features, which are often inadequately contextualised. However, when the content is neglected, it violates the rules of meaningful communication and learning since language is a means of conveying messages. Mohan (1986:1) states: "In subject matter learning we overlook the role of language as a medium of learning. In language learning we overlook the fact that content is being communicated."

Similarly, Snow, Met and Genesse (1989) note that content provides not only a motivational basis for language learning because it is interesting and is worth learning, but it also provides a cognitive basis. In cognitive terms, content affords a natural

context for communicating real meaning. Snow et. al. (1989:202) remark: "In the absence of real meaning, language structures and functions are likely to be learned as abstractions devoid of conceptual or communicative value. If these motivational and cognitive bases are to be realised, then content must be chosen that is important and interesting to the learner." In their paper, Snow et. al favour the integration of content and language in second or foreign language instruction. Likewise, many researchers tried to combine content area and ESL/EFL, and ESP teaching (e.g. Graham and Beardsley, 1986; Hudson, 1991). Graham and Beardsley (1986:229) point out the common principles of content area ESL and ESP as "the importance of context; the importance of attending primarily to the meaning, not to language form, and consideration for the needs of the learner."

As mentioned above in Stevens (1988), ESP may focus on a single skill, although there are some objections to that approach. Hutchinson and Waters (1987), for example, argue that focusing on reading solely does not help to gain good command in ESP situations, and it is not fruitful to isolate reading from listening, speaking and writing since the improvement of each of these skills is also dependent on the other skills (see Hutchinson and Waters, 1987:75-76 for a more detailed discussion). Yet, there are some reading-based courses which have implemented their programmes successfully over the years, such as the Brazilian ESP project (in Johns and Dudley-Evans, 1993), the University of Malaya ESP project (in Emener, 1989), and EST reading courses in Mexican Universities (in Hudson, 1991). Hudson (1991:78) says that in such programmes, "the students had no basic need to learn English other than to gain information from journal articles, manuals and textbooks in their university studies and future employment."

Obviously, it is not necessary to assert that reading is the only and most important skill in ESP methodology. But it needs to be accepted that the skill of reading is still very important for the students in order to be able follow foreign publications and literature such as scientific journals, magazines, reports and similar academic texts in English to update their professional knowledge.

In Turkish secondary schools, English is taught in the way as mentioned at the beginning; it is thought to be a useful tool for the students for future employment without obvious immediate expectation until the university level (cf. Mackay and Mountford, 1978:2). However, when the students start their academic studies, they become overwhelmed when they are exposed to authentic texts, academic literature, or lectures in English. Therefore, it is usually necessary for them to attend preparatory courses first, if the medium of instruction is in English, or the students start to learn English from pre-intermediate, even beginning levels if English is one of the regular courses. This may predicate that English Teaching Programmes at pre-tertiary level need to be re-developed. Arslan (1991:2) comments:

> After graduation, pupils rarely attain a useful command of the target language. In the Turkish University system, the teaching process, based on mechanical analysis of the grammatical structure and vocabulary of the language, does not lead to a functional competence in the tongue. The lesson materials are often divorced from any reality that the speaker might encounter in teacher's need to use the language.

Based on this claim, it is possible to add that there is no reason to delay content area EFL or ESP reading applications in combination with other skills and grammar at a secondary school level, especially if the schools have a definite professional aim with homogenous groups of learners with similar needs. Blackie (1979:266) schematises the suggestion of an alternative approach as follows:

Figure of an alternative approach to implement an ESP programme

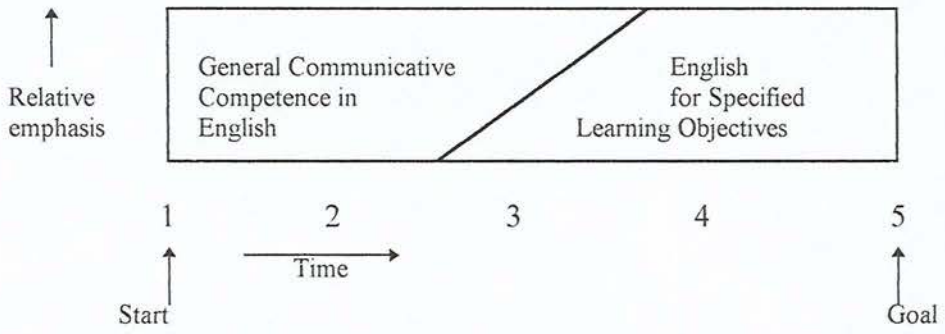

Figure 3

This approach extends over a transitional period in time. Blackie (1979:266) says: "The start represents the point at which a complete beginner would enter the programme, and where the course would concern itself with objectives which are specified but which are applicable to a broad spectrum of long-term objectives. Students entering at point 4 (on a five-point scale) would be learning the specific skills required for their situation. In the interim period, the course would be developing the learners' fluency and accuracy, with continuous reference to the learning needs of the group" .

The value of implementing such an additional reading programme along with regular English courses would be parallel to the advantages of content-based or ESP reading over general English reading. From this perspective the implications of such materials might be discussed as follows:

1. ESP reading materials appeal to students' increased background knowledge of subject area, i.e., to content schema which facilitates reading comprehension in various ways as mentioned in 2.3.

2. ESP reading uses content schema to operate on scientific discourse and other linguistic features, i.e., on formal schema of the learner. Here, Mackay and Mountford (1978:9) point out:

> By taking advantage of what the learner already knows, from study in his own language, about the organisation of scientific discourse and the way in which scientific procedures are presented in language, the teacher can lead to an understanding of how scientific communication in English handles these functions. This implies, firstly, a shift in emphasis away from assessment of a learner's linguistic knowledge in terms of what he has failed to learn earlier, towards the effective communicative use he can make of what he has learned .

3. ESP reading may avoid cultural bias usually found in non-scientific materials where the text may reflect the cultural viewpoint of the writer, as mentioned in the previous parts on background knowledge.

4. Most of the ESP reading materials are authentic since the general aim is to cope with unedited, unsimplified or modified texts. This would help the learner to develop strategies appropriate to read real world texts. Unlike general content authentic texts, ESP reading materials do not usually become out of date (cf. Haines, 1995) since they involve scientific facts, theories, developments, procedures, etc.

5. ESP reading materials are interesting, motivating and directly relevant to the learners' needs, therefore have a relatively greater potential to be learner authentic than general reading materials. Since they are real-life texts, it is also easier to devise real-life tasks for them, so they can also be task authentic.

6. ESP materials contain standard formal language, therefore do not break the rules taught by teachers (cf. Haines, 1995). ESP reading materials also contain technical terminology, some of which can be familiar to the students from their specialised background knowledge.

2.8 Technical, Subtechnical Vocabulary and Cognate Recognition in Reading Comprehension

Reading is defined as a combination of identification and interpretation skills (Grabe, 1991). During the reading process, the reader constantly decodes grammatical patterns and lexis, as Valette (1969) points out, "reading consists of two fundamental bases which build a particular language: structure and vocabulary." Laufer and Sim (1985) found out that in order to interpret a text, the students operate from the lexical items first, create hypotheses, i.e., make wrong guesses about the meaning from these items, add whatever relevant knowledge they have (textual or extratextual), and lastly impose a sentence structure that suits their interpretation when they have incomplete information. Hence Laufer and Sim (1985:10) comment: "the solid language base that is required to enable the reader to use contextual clues seems to be mainly of a lexical nature...Students look first and principally for lexical clues, while syntactic clues tend to be disregarded."

While the reader is assumed to initiate reading with lexis first, some kinds of words may cause difficulties more than the others in reading comprehension. Especially in ESP reading, it is possible to think that problems are caused mostly by technical vocabulary. However, Marshall and Gilmour (1993) report that comprehension deficiencies do not often arise by subject specific words, i.e., technical terms such as *electricity, molecule* or *entropy* (cf. Glossary). Instead, they (1985:70) suggest that "the problems are caused by general English words (i.e., nontechnical words such as *because, instant*, and *either.... or*) or by other context-independent words which occur less generally but with high frequency across disciplines (i.e., subtechnical words such as *limit, theory*, and *sequence*)."

Robinson (1989) refers to subtechnical vocabulary as "more general 'core' words" used to convey the meanings of technical words. Marshall and Gilmour (1985:71) also agree that these words modify or express relations between the key concepts of a discipline:

> For example, words such as *characteristic* and *standard* express comparative relations; *limit, maximum*, and *rate* express quantitative relations; *evacuate, exert, influence*, and *modify* express operations or activities; *partial, initial, source*, and *agent* express ideas about the role of an object in an activity; and *diagnose, devise, estimate*, and *theory* express relations between people and the objects of study.

According to Robinson (1989), subtechnical words occur relatively more in spoken language rather than written language. He gives the following example for the 'enabling facility' of such words by citing the definition of the word 'vermicelli' from the *Longman Dictionary of Contemporary English:*

> ***vermicelli:*** a food made from flour paste in the form of very thin strings which have been dried and made soft again by boiling.

Robinson (1989:274) concludes that the words such *as made soft, form of thin strings*, etc., provide the enabling facility, which "is a feature too of the subtechnical language used in the oral explanation of more technical concepts."

The definitions above throw light in understanding subtechnical vocabulary. Yet, the distinction between general, specialised and subtechnical categories has not been clearly specified and recent studies attempt to classify these words into families. Martinez (1994:81) reports that one way of identification of such categories is to use statistical operations of frequency and distribution:

> The method is based on the assumption that technical terms occur fairly frequently in their discipline, but rarely occur in other disciplines; in contrast, items of general vocabulary maintain a

stable pattern of frequency and distribution across disciplines. It is then assumed that the remaining lexis falls into the subtechnical category .

Subtechnical words are particularly difficult to identify since these words carry different meanings in different contexts. Therefore Sinclair and Renouf (1988) call these words as 'delexical' (see Robinson, 1989), and a single concept can be referred to with two or more subtechnical words as well.

Although this category has not been adequately defined in literature, and is often genre-dependent, i.e., it may occur in one genre but not in another, it still seems to be one of the most influential features that effect reading comprehension (Martinez, 1994). Research on the categorisation of subtechnical vocabulary may have valuable implications in the teaching of vocabulary and developing instructional materials in ESP. Martinez (1994:82) adds, this "can also help the ESP student to learn the vocabulary used to express the genre-specific nature of the texts that they will encounter in their academic studies."

Research on subtechnical vocabulary is combined with 'cognate recognition' in some studies (e.g. Moss, 1992; Martinez, 1994; Nagy, Garcia, Durgunoğlu, and Hanchin-Bhatt, 1993). The term 'cognate' may have different definitions according to various views (cf. Glossary). In the Oxford Companion to English Language, the word cognate is explained as to have its decent from the Latin word *cognatus* meaning 'born together.' The cognates are described as more or less similar to each other in form, but the meaning does not have to be the same. It is also added that "Cognates are easy to find in related (or cognate) languages such as English, German, Greek and Latin, but unrelated languages may also have cognate items" (p.229-230).

According to some views, some of the technical terms or subtechnical vocabulary in Turkish scientific prose that seem familiar when students read in English might be considered as *borrowings* rather than cognates, although there are also opposing ideas (cf. Glossary). Lexical borrowing is "taking a word or a phrase from one language into another...Borrowing is a major aspect of language change" (Oxford Companion to English Language, 1992:141). It is inevitable for languages to borrow lexical items from one another depending on the contact between them. Reasons for borrowing are listed as follows:

> (1) Close contact in especially multilingual situations, making the mixing of elements from different languages more or less commonplace. (2) The domination of some languages by others (for cultural, economic, political, religious or other reasons), so that material flows 'down' from those 'high' languages into 'lower' vernaculars. (3) A sense of need, users of one language drawing material for another for such purposes as education and technology. (4) Prestige associated with using words from another language. (5) A mix of some or all of these (The Oxford Companion to English Language, 1992:141).

The reason for borrowing words into Turkish scientific discourse might include all of them. These words can be directly borrowed, assimilated, diffused or adapted in terms or spelling and pronunciation, such as *maximum/maksimum, to tolerate/tolere etmek, echinococcus/ekinokok.*

Research conducted on cognate recognition focus mainly on the Germanic language English vs. Romance languages such as English/Spanish, English/French. These studies usually take place in ESL settings (e.g. Moss, 1992; Martinez, 1994). Although less amounts of cognates may occur in general EFL contexts, ESP reading materials may contain more common cognates in technical texts rather than the other genres because of the technical and subtechnical vocabulary.

Either accepted as cognates or as borrowings, the transfer effects of these words have been reported as influential in reading comprehension. Koda (1989) investigated the effects of transferring L1 vocabulary knowledge on L2 reading proficiency. Based on the findings, Koda (1989:529) suggests that "transferred vocabulary knowledge increases L2 reading comprehension; moreover, the initial advantage magnifies its effect over time as task complexity increases, thus enhancing the overall development of L2 reading proficiency."

The role of transfer in L2, specifically, the use of cognates has been the subject of a number of studies. Some of these studies suggest that the students should be given instructions on how to use their background knowledge of cognates effectively. Treville (1993), for example, conducted an experimental study on systematic cognate instruction, and the results revealed that receptive vocabulary increased in all of the areas tested when the students were guided and studied interlingual cognates systematically. Other studies focused on the extent to which students recognise and use cognates.

Moss (1992:141) draws attention to the following fact:

> Spanish-speaking students taking university-level ESP courses designed with the sole objective of achieving reading comprehension in technical and semitechnical texts were unaware of the high frequency of cognate words in such texts, and that their reading efficiency was adversely affected by this lack of awareness. .... further ..... most teachers of English, having themselves a relatively high level of linguistic sophistication, are unaware of this problem and tend to assume that cognate lexical items are automatically recognised and do not therefore constitute a problem.

Moss puts forward that because of paying more attention to rhetorical and syntactic structures and reading skills, vocabulary is often neglected in ESP/EAP practice. He adds that successful recognition of cognates, which occur frequently in scientific texts,

will increase the students' speed of reading, motivation and confidence; therefore, it should be a part of the reading class. In his research, Moss studied the effects of morphological differences in cognates, and suggested that the students need instruction on the following patterns of cognates which were found to be most problematic based on the findings (Moss, 1992:157):

> - words with a proportional difference of between 40% and 60%;
> - words with initial difference;
> -words with both initial and final difference;
> - words with more than two vowel differences;
> - verbs;
> - simplification of consonant groups;
> - specific difficulties, such as verbs in *-ate*.

In another study, Nagy, Garcia, Durgunoğlu, and Hanchin-Bhatt (1993) studied whether there was transfer of L1 vocabulary knowledge to L2 reading by students, and to what extend this transfer enabled the students to recognise cognates. Among their experimental measures, there was also a 'cognate-circling' task. On the results, Nagy et. al. (1993:250) comments:

> The significant effect of total target words circled indicates that students who recognised more cognates in passages did better on the multiple-choice test. That is, above and beyond any differences in proficiency in English or Spanish, student [sic] who identified more cognates were better at interpreting cognates in English text.

Furthermore, this study also revealed that the students were unaware of the high frequency of cognates and did not recognise them. Nagy et. al. noticed that the students circled only less than half of the cognates they had reported that they knew.

One reason for this non-recognition is similar to the observation of Moss (1992), that is, the degree of orthographic similarity. Nagy et. al. (1993:253) points out "They

were less likely to recognise cognates when a few letters were different. .... For example few students recognised reality as a cognate of realidad."

CHAPTER 3

METHODOLOGY

3.1 Introduction

This research aimed to determine the value of word identification and classification as a pre-reading schema activator activity in comprehending authentic, unedited ESP texts. An experimental study was conducted on control and experimental groups. This chapter gives a description of the subjects, materials, data collection, procedure and data analysis used in the experimental study.

3.2 Subjects

The subjects of this study were two single-gender (female) intact classes of fourth grade students in Osmangazi University's Nursing High School, Eskişehir, Turkey. The level of the students, who had three hours of English classes per week besides the content area courses, was pre-intermediate. Both classes were taught by the researcher. One of the classes (G1) had 29 students, and the other class (G2) had 30 students. In each of the data collection procedures, one student was absent from each class because they were on school duty. A pilot study was conducted with both of the groups in order to determine that the classes were at the same level. In this preliminary study, the students were given a passage to read on Immunisation from a UNESCO report. Both of the classes were asked to scan the text and to make a list of technical and subtechnical vocabulary before reading. They were also told that after reading the text, they were going to answer a test, which consisted of multiple-choice, matching, fill in the blanks and synonym questions.

The results show that the there is no significant difference between G1 and G2 who were exposed to the same pilot treatment ($t= -0.25$; $p > 0.05$); therefore, it is possible to conclude that these groups are at the same level of proficiency in English (cf. Appendix A for the pilot study, and Appendix O for statistical tables).

3.3 Materials

Four authentic reading passages, mainly of expository type, were selected without any simplification or editing, form nursing journals and a textbook on diseases and their treatment written for native nurses.

Authentic texts without any simplification or modification are particularly used in this study for a number of reasons. Firstly, the students might encounter such texts after secondary school when they start university or work, so they needed to be exposed to realistic material. Secondly, the students might recognise more terms related to their fields in their natural occurrence than in a general English text, since the texts were not manipulated in terms of lexis. Therefore it would be possible to suggest that the specific vocabulary that is thought to be problematic to reading authentic and unsimplified texts, might help the students to activate and use their content schema and to overcome their linguistic deficiencies related to formal schema. The third reason of using authentic texts taken directly from journals was to activate their interest and increase motivation during the reading process through relating the content to their own lives. Thus, it is possible to assume the texts as 'learner authentic' (cf. Glossary and Chapter II). These texts also serve the general purpose of the curriculum of the school. Finally, to provide task authenticity, the word identification activity is suggested as a pre-reading activity, because it is assumed that in real life situations a reader might possibly skim for some

familiar words firstly to understand what the text is about when he picks up any text in a foreign language,

The topics of the texts were carefully chosen to include the subjects that were already taught in their content area courses, in order to maintain that the students had the necessary background knowledge to be covered. Text 1 was about the techniques of nose drops administration, Text 2 on hydatid disease, Text 3 on meningitis, and Text 4 was on diphtheria (cf. Appendices C, E, G, I).

Although to highlight the effects of pictures was not one of the purposes of the study, Text 1 and Text 2 were accompanied with pictures, and these were not excluded so as to preserve the originality of the texts.

The experimental groups filled in the 'word classification grid' before reading, i.e., as a pre-reading activity, instead of the 'cognate circling' task suggested in Nagy et. al. (1993). The students were asked to underline the familiar content words first, then to fill in this grid under the headings as *technical, subtechnical,* and *I don't know*. The last heading was for the words the students were not sure of its category, or for the words they did not know their meaning (cf. Appendix B for classification grid).

3.4 Data Collection

The subjects were given a test which consisted of three parts for data collection.

Multiple-choice Questions: Not more than 10 multiple-choice questions were prepared for each text, depending on its length. The questions were based on factual information found within the texts. According to Heaton (1975), these questions test the students' ability to recognise correct information in the texts, therefore they are recognition-type of tests (cf. Appendices C, E, G, I for tests).

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Open-ended Questions: Up to 10 open-ended questions for each text were prepared to test higher-level comprehension. These questions aimed to elicit text-explicit and text-implicit (inferential) information a reader would normally expect to understand from the text. They also functioned as production type of tests since production can be tested through omitting the choices of a multiple question (Heaton, 1975). The subjects responded in English.

Writing down any information from the text in the native language and analysis of idea units: This is a procedure used instead of 'retelling,' which has been employed in numerous studies to test reading comprehension (e.g. Elmas, 1992). Retelling procedures were usually conducted in the students' native languages in order to eliminate difficulties regarding the use of English since the aim was to focus on reading comprehension (e.g. Laufer and Sim, 1985). The retelling procedure required the students to remember as much information as possible from the text and tell them orally to an interviewer.

However, the retelling procedure is changed into rewriting in some studies (e.g. Roller and Matambo, 1992), as well as in this research study. Moreover, a further modification was made in this study in order to avoid some effects that were undesired. For example, a retelling procedure and rewriting in the sense used in Roller and Matambo's (1992) study, i.e., without referring back to the text, require recalling as much information as possible from the text, thus involve testing the students' memory. In order to avoid this undesired effect, the students were allowed to refer to the text whenever they wanted to, because the aim of the study was not to overwhelm the students by causing them to memorise the text. Another difference between retelling and writing down in native language is that in the former, the students are interviewed

one by one by the experimenters and their responses are either tape-recorded or marked on a checklist. In this study, this procedure was thought to be time-consuming and impractical. Therefore, the students were asked to write down as much information as they understood instead of oral retelling. These parts are, then, divided into their 'idea units' to be scored (cf. Appendices D, F, H, J for checklists).

Idea units in a text can be determined through what Clark (1982) says, "where good readers would pause in oral reading" (Elmas, 1992). Idea units might be defined as the smallest meaningful segments that contain a single propositional idea within a stretch of a sentence. The following example is the 'chunked' form of the first sentence in Text 3:

1. The meninges consist of 3 sheaths
2. covering the brain
3. and the spinal cord:
4. the pia,
5. arachnoid and
6. dura matter.

Here, if a student writes all of the information that is included within this sentence, he will get six points. However, if she writes the following sentence "The meninges consist of 2 sheaths (the pia, and arachnoid) covering the brain" in her native language, she will be assigned scores from units 2,4, and 5, and will receive three points, i.e. the units that are mentioned will be scored and distortions of the units will not be accepted.

In this study, the texts were chunked into idea units without taking grammatical words such as 'and, but, although,' etc. into consideration, therefore, these words were not scored during the evaluation of the students' rewritings (cf. Glossary for examples of idea units and grammatical word).

The idea units within the texts were determined and counted by the help of three native speakers, and checklists were prepared and edited for each text (cf. Appendices B, C, D, E).

3.5 Procedure

The contents of the four texts were first discussed by their content-area teachers to confirm that the students had relevant background knowledge about those subjects. They were also asked to scan the texts to detect familiar vocabulary in order to determine that the passages contained the necessary vocabulary which could be transferred from their first language.

Then a procedure similar to the experimental application is followed with the teachers whose foreign language background were mainly English, and one French, and they were asked to identify the technical or nontechnical words which are recognisable and can be found in Turkish, too. One of the aims of this exercise was to determine the vocabulary the students have in their background knowledge and will probably recognise. Secondly, it was expected that even though the native teachers had a very vague or no background of English language, they might be able to recognise the medical or the technical terminology in the texts, which would consequently help to guess the content of the reading material and activate their prior content schema.

The teachers who participated were able to recognise the words, guess the content, and tell the organisation of knowledge in the text (e.g. the general introduction of a disease, its causes, epidemiology, related signs and symptoms, procedure of treatment, etc.).

G1 and G2 were both treated as experimental and control groups in turns. This was done in order to control variables such as motivational differences and avoid other bias concerning the groups or method. The design of the study is shown in Table 3.5.1:

Table 3.5.1

The Design of the Groups for the Experimental Treatment

	G1	G2	Data Collection
1	No treatment	Word identification	Text 1/Test 1
2	Word identification	No treatment	Text 2/Test 2
3	No treatment	Word identification	Text 3/Test 3
4	Word identification	No treatment	Text 4/Test 4

At the beginning, both of the groups were first introduced to the study through telling them that they were going to read texts about their own professional area, i.e., about nursing, taken from original nursing journals and textbooks.

The subjects were also informed that at the end of the reading activity, they were to answer a test which consisted of multiple choice and open ended questions, as well as write down everything they understand in Turkish by referring to the text whenever they wanted. None of the groups received pre-reading activities other than the treatment procedure to focus on the value of word identification and classification.

The experimental groups were asked to scan the texts and to fill in the classification sheet at the beginning of each reading session whereas the control groups read the texts directly. The experimental groups were given the following explanation on how to fill in the classification sheet:

"Nowadays, in your environment, it is possible to find English publications, such as journals, in your professional area. If you encounter such material, you may think that it is difficult for you to read and understand them. However, if you look at these texts, you may recognise familiar words at a glance. These words may give you an idea about what the text is about, and you may even figure out the details of the text. Now you are going to read a text taken directly from a nursing journal. Before starting to read, scan the text and try to find some familiar vocabulary. You will realise that most of these words are technical which you know from medicine and nursing, and some of them are subtechnical, i.e., words that are not about medicine specifically and may occur across disciplines such as *molecule*. If you see these two types of words, write them under the columns 'technical' and 'subtechnical.' There may be some words that you are not sure which category they belong to, or words that you may not know their meaning. If this is the case, write them below the 'I don't know' column. After you finish this activity, look through the words and think how they relate to the text. Then read the text and complete the test that accompanies your passages. To find out how valuable this activity is, and to what extend it will help you when you read out of the classroom, now imagine that you are on your own."

Each reading session lasted 60 minutes and four texts were read by the subjects within four weeks.

3.6 Data Analysis

The scores of the experimental and control groups were calculated on the basis of correct answers of the multiple choice and open ended questions, and the number of idea units mentioned.

The units mentioned by the students were compared to the idea unit checklists and only the correctly mentioned units were scored for each student. Meaningfully and logically paraphrased forms were counted, whereas distortions in the meaning were not accepted (cf. Appendices K, L, M, N for the lists of scores of the subjects in all parts).

The same evaluation procedure was repeated for all of the four texts in both the control and experimental groups. The results were examined and compared statistically by running the t-test for paired samples in terms of the following:

1) Difference between control and experimental groups in correctly answered multiple choice questions,

2) Difference between control and experimental groups in correctly answered open ended questions,

3) Difference between control and experimental groups in the number of idea units correctly mentioned.

CHAPTER IV

ANALYSIS OF RESULTS

4.1. Introduction

The purpose of this study is to assess the value of word identification and classification as pre-reading schema activator in comprehending authentic, unsimplified content-area texts. To achieve this, significant differences were sought in the performance of experimental and control groups in the tests that were administered after each reading material.

This chapter contains the analysis of the tests which consisted of three sections: multiple choice questions, open ended questions, and the idea units written in the students' own language. The data was analysed by running t-test between each test sections and also between total means of performance scores.

4.2 Analysis of Multiple Choice Question Scores

The results of the multiple choice questions answered correctly in Tests 1,2,3, and 4 are shown in Tables 4.2.1; 4.2.2; 4.2.3; and 4.2.4 respectively. As demonstrated in these tables, the subjects performed equally well in Tests 2 and 4, whereas significant contradictory differences were observed in Tests 1 and 4.

In Test 1, 6 multiple choice questions were asked concerning Text 1. As shown in Table 4.2.1, the mean score of the experimental group was 3.74, whereas the mean score for the control group was 4.39. The mean difference between these two groups is calculated as 0.65. Therefore, the control groups scored significantly ($t=2.14$; $p < 0.05$) higher than the experimental group in this test. This means that the treatment did not

help the experimental group (G2) in Test 1, and the control group (G1) made better progress without the word identification and classification activity.

Table 4.2.1

The Results of t-test for Multiple Choice Question Scores in Test 1

Groups	Mean Scores	Mean Difference
G1 (control) (N=28)	4.39	0.65
G2 (experimental) (N=27)	3.74	

($t = 2.14$; $p < 0.05$)

Table 4.2.2

The Results of t-test for Multiple Choice Question Scores in Test 2

Groups	Mean Scores	Mean Difference
G1 (experimental) (N=28)	4.07	0.11
G2 (control) (N=28)	3.96	

($t = 0.29$; $p > 0.05$)

Test 2 contained 6 multiple choice questions. The mean of results in the experimental group was 4.07, and in the control group it was 3.96 (Table 4.2.2).

Although the difference of means was 0.11, i.e., the experimental group (G1) scored slightly better than the control group (G2), the mean difference was not statistically significant (t=2.14 ; $p > 0.05$). Therefore, it can be concluded that both of the groups showed similar performance in spite of the treatment applied in the experimental group.

Table 4.2.3

The Results of t-test for Multiple Choice Question Scores in Test 3

Groups	Mean Scores	Mean Difference
G1 (control) (N=28)	4.04	0.71
G2 (experimental) (N=28)	4.75	

(t= -2.17; $p < 0.05$)

The number of multiple choice questions asked in Test 3 was 8. As Table 4.2.3 illustrates, the experimental group had the mean value of 4.75 while the control group had the mean value of 4.04. The mean difference of the groups is 0.71. It shows that there is a significant difference between the experimental (G2) and the control group (G1) and the subjects in the experimental group performed better than the control group (t= -2.17 ; $p < 0.05$). Therefore, it is possible to say that the word identification and classification had positive effects in comprehending Text 3.

Table 4.2.4 includes the means and differences obtained from the analysis of multiple choice questions in Test 4. This test contained a total number of 9 multiple choice questions. The mean was 6.29 in the experimental group and 5.96 in the control

group. The mean difference of the groups was 0.33. That is to say, the mean in the experimental group (G1) was slightly higher than in the control group (G2). However, this difference is not significant ($t= 0.82$; $p > 0.05$), thus, both of the groups made equal progress.

Table 4.2.4

The Results of t-test for Multiple Choice Question Scores in Test 1

Groups	Mean Scores	Mean Difference
G1 (experimental) (N=28)	6.29	0.33
G2 (control) (N=28)	5.96	

($t= 0.82$; $p > 0.05$)

From these results, it appeared that experimental groups made slightly better progress in Test 2, 3, and 4, but the results were statistically significant only in Test 3. Moreover, the control group was more successful than the experimental group in Test 1. Therefore the statistical analyses do not seem to suggest meaningful results to make generalisations.

4.3 Analysis of Open Ended Question Scores

Open ended questions of varying numbers were devised for the comprehension tests given after Texts 1, 2, 3, and 4. These questions were prepared to test the readers' understanding of the factual knowledge and the content in the texts. Analysis of the

subjects' correct answers did not reflect any significant difference between experimental and control groups.

Table 4.3.1 shows the means and mean differences for both groups in Test 1. A total number of 8 open ended questions were asked in this test. Here the mean score of the experimental group for the open ended questions was 3.74, and the mean score of the control group was 3.32. The mean difference was found as 0.42. The experimental group (G2) performed slightly better than the control group (G1), but at the 0.05 significance level, there is not a significant difference between these two groups in Test 1. Therefore, the treatment did not have a significant effect on the answers to open ended questions in this test.

Table 4.3.1

The Results of t-test for Open Ended Questions Scores in Test 1

Groups	Mean Scores	Mean Difference
G1 (control) (N=28)	3.32	0.42
G2 (experimental) (N=27)	3.74	

(t= -1.00 ; p > 0.05)

Table 4.3.2 illustrates the results obtained from Test 2, which included 10 open ended questions. The mean score is 4.34 in the experimental group, and 4.52 in the control group. With 0.18 mean difference, the control group scored slightly but non-significantly better than the experimental group (t= -0.44 ; p > 0.05). This means that

both the experimental (G1) and the control (G2) group performed similarly in providing answers to open ended type of question Test 2. Therefore, the treatment procedure did not have significant effects.

Table 4.3.2

The Results of t-test for Open Ended Questions Scores in Test 2

Groups	Mean Scores	Mean Difference
G1 (experimental) (N=28)	4.34	0.18
G2 (control) (N=28)	4.52	

(t= -0.44 ; p > 0.05)

Table 4.3.3

The Results of t-test for Open Ended Questions Scores in Test 3

Groups	Mean Scores	Mean Difference
G1 (control) (N=28)	5.81	0.18
G2 (experimental) (N=28)	6.09	

(t= -0.75 ; p > 0.05)

The second part of Test 3 consisted of 9 open ended questions which were responded to by the experimental group with the mean score of 6.09, and by the control

group with the mean score of 5.81 (Table 4.3.3). The difference between the mean scores was 0.18. Therefore, this slight difference between the experimental group (G2) and the control group is not significant ($t = -0.75$; $p > 0.05$).

Table 4.3.4 indicates the results of the 10 open ended questions in Test 4. According to the statistical analysis, the experimental group had the mean value of 4.31, and the control group had the mean value of 4.63. The difference between the means of the groups was 0.18 with the control group performing slightly higher. The statistical analysis indicates that there is no significant difference ($t = -0.72$; $p > 0.05$) between the students in the experimental group (G1) and the control group (G2) in terms of their correct answers to the open ended questions in Test 4.

Table 4.3.4

The Results of t-test for Open Ended Questions Scores in Test 4

Groups	Mean Scores	Mean Difference
G1 (experimental) (N=28)	4.31	0.18
G2 (control) (N=28)	4.63	

($t = -0.72$; $p > 0.05$)

From these results, it can be concluded that there is no significant difference between the experimental and control groups in the amount of correct answers to the open ended questions. In Test 1 and Test 3, the experimental group, i.e. G2 performed slightly better than the control group, i.e., G1. On the other hand, when G1 received the

treatment as the experimental group, the subjects could not make sufficient progress higher than the scores of G2 who were the control group as in Test 2 and Test 4. Thus, the non-significant results revealed that the word identification and classification activity had no significant effect on the answers to open ended questions after reading authentic content area texts.

4.4 Analysis of the Idea Unit Scores

At the end of each reading session, both the experimental and control groups were asked to write everything they had understood from the texts in Turkish. These re-writings were analysed and scored in terms of the checklists prepared by dividing the texts into their idea units (cf. Appendices B, C, D, E). The scores given in terms of the number of idea units mentioned by the students were examined through t-test. The findings did not reveal any statistically significant difference in the scores of the experimental and control groups.

Table 4.4.1

The Results of t-test for Idea Units Scores in Test 1

Groups	Mean Scores	Mean Difference
G1 (control) (N=28)	13.14	2.03
G2 (experimental) (N=28)	11.11	

($t = 1.23$; $p > 0.05$)

Text 1 was divided into 55 idea units (cf. Appendix D) and Table 4.4.1 illustrates the mean values of the idea units written by the subjects. The mean in the experimental group (G2) was 11.11, while the mean of idea units in the control group (G1) was 13.14. The difference of means was calculated as 2.03. This means that the control group wrote a few more correct idea units from the text than the experimental group. However, this result is not significant ($t = 1.23$; $p > 0.05$).

In Text 2, the amount of idea units identified was 158 (cf. Appendix F). The result of t-test revealed the mean in experimental group as 24.46 and in control group as 29.18 (Table 4.4.2). The difference in means was calculated as 4.72. In other words, the control group (G2) understood nearly five more idea units than the experimental group (G2) without the treatment. Yet this number was not statistically significant ($t = -1.95$; $p > 0.05$), and the performance of the two groups was accepted as similar.

Table 4.4.2

The Results of t-test for Idea Units Scores in Test 2

Groups	Mean Scores	Mean Difference
G1 (experimental) (N=28)	24.46	4.72
G2 (control) (N=28)	29.18	

($t = -1.95$; $p > 0.05$)

As seen in Table 4.4.3, the mean value in the experimental group was 42.07 out of 134 idea units identified in Text 3 (cf. Appendix G). The same item was 40.25 in the

control group. The mean difference was 1.82; therefore, the slightly higher progress of the experimental group (G2) was not significant and both of the groups (G1, G2) were found to have performed equally well without regard to the experimental procedure (t= -0.45 ; $p > 0.05$).

Table 4.4.3

The Results of t-test for Idea Units Scores in Test 3

Groups	Mean Scores	Mean Difference
G1 (control) (N=28)	40.25	1.82
G2 (experimental) (N=28)	42.07	

(t= -0.45 ; $p > 0.05$)

Table 4.4.4

The Results of t-test for Idea Units Scores in Test 4

Groups	Mean Scores	Mean Difference
G1 (experimental) (N=28)	27.43	8.46
G2 (control) (N=28)	35.89	

(t= -2.26 ; $p < 0.05$)

Text 4 contained 103 idea units (cf. Appendix I). The mean score of the experimental group was 27.43, and the mean score of the control group was 35.89 (Table 4.4.4). With a mean difference of 8.46, the control group (G2) performed significantly higher ($t= -2.26$; $p < 0.05$) than the experimental group (G1). In that case, the control group was able to write approximately more than 8 idea units more than the experimental group, thus, the treatment procedure, i.e., the word identification and classification activity, was not useful to recognise and understand more details.

To sum up briefly, in all the tests, no significant differences were found in terms of the idea units mentioned, except Test 4, where the control group (G2) made significantly better progress than the experimental group (G1). Although the other tests were not significant, Group 2 (G2) had a higher mean value than Group 1 (G1) in Tests 2, 3, and 4, in one of the cases as the experimental group. Either as receiving the treatment or not, Group 2 was usually more successful than Group 2. However, since the results were not statistically significant at level 0.05 in Tests 1, 2, and 3, it can be concluded that there is no difference between the experimental and control groups, and as a consequence, the treatment was not useful to increase the number of idea units mentioned.

4.5 Analysis of the Total Scores and Discussion

From the findings above, it can be noticed that the overall results are nearly the same in experimental and control groups. Table 4.5.1 below demonstrates the means of all parts of the tests which were multiple choice questions, open ended questions and number of idea units; thus, it summarises the performance of the two groups.

Table 4.5.1

Table of Test Results

	Group	Multiple Choice Q.	Open Ended Q.	Idea Units
Test 1	G1 (cont.)	4.39	3.32	13.14
	G2 (exp.)	3.74	3.74	11.11
		(t= 2.14;p<0.05)	(t= -1.00;p>0.05)	(t=1.23;p>0.05)
Test 2	G1 (exp.)	4.07	4.34	24.46
	G2 (cont.)	3.96	4.52	29.18
		(t= 0.29;p>0.05)	(t= -0.44;p>0.05)	(t= -1.95;p>0.05)
Test 3	G1 (cont.)	4.04	5.81	40.25
	G2 (exp.)	4.75	6.09	42.07
		(t= - 2.17;p<0.05)	(t= - 0.75;p>0.05)	(t= - 0.45;p>0.05)
Test 4	G1 (exp.)	6.29	4.31	27.43
	G2 (cont.)	5.96	4.63	35.89
		(t= 0.82;p>0.0.5)	(t= -0.72;p>0.05)	***(t= -2.26;p<0.05)***

According to these results, the mean scores obtained were statistically significant in favour of the control group (G1) in Test 1, multiple choice part (t= 2.14;p<0.05); and in favour the experimental group in Test 3, multiple choice part (t= - 2.17;p<0.05). The difference of means of multiple choice questions in Test 2 and Test 4 were not significant. Therefore, the mean scores in the multiple choice questions part do not seem to suggest meaningful results.

None of the differences of means in the open ended questions part was statistically significant. Thus, both experimental and control groups performed equally well in this section of the test.

The mean scores in the idea units part were not significantly different except in Test 4, in which the control group (G2) performed higher than the experimental group ($t= -2.26; p<0.05$). Since the results in the other tests were the same in terms of the idea units, it is not possible to make generalisations out of these scores.

Consequently, in most parts of the tests no difference were found between the control and experimental groups. Therefore, in general, the treatment, i.e., word identification and classification was not effective in increasing reading comprehension.

The reason for these findings are discussed in Chapter V.

CHAPTER V

CONCLUSION

5.1 Discussion of the Results

Research in literature has shown that the effects of background knowledge, especially knowledge of content, has contributed to reading comprehension (e.g. Taglieber, Johnson and Yarbrough, 1988). Therefore, it is usually recommend using pre-reading activities which tap the students' already existing background knowledge in order to activate content schema, or to provide new background knowledge so as to help the students in comprehension. The last purpose is especially important when the text is culturally biased. In order to avoid cultural bias and the problem of vocabulary to a certain extent, and to concentrate on reading comprehension, the texts can be chosen carefully from the students' own discipline area, i.e., scientific or technical texts where they have considerably heightened background knowledge, as in this study.

The results of this research were consistent with the studies which claimed that activation of content schema contributed to reading comprehension (e.g. Chen and Graves, 1995). The students, both in control and experimental groups, were able to understand the technical texts a great deal, and wrote the main ideas and details of varying amounts after reading. Evidence existed on the activation of the students' schema since they also wrote additional details which were not given in the text (cf. Chapter II., p. 24; Cook, 1989).

In most ESP reading situations, technical and scientific materials are often genuinely authentic materials. In other words, they are not written to teach language

forms and functions to foreign students, but to communicate certain messages regarding the content to their readers. Although coping with such texts seemed to be difficult to EFL students, the subjects of this study were able to grasp a considerably high amount of knowledge from the texts, e.g. the students wrote approximately 20%-25% of the idea units found in the texts.

Although one way to cope with authentic materials is to make use of pre-existing vocabulary knowledge, one of the mostly neglected areas in reading comprehension research is the vocabulary dimension since most of the studies focus on syntactic or rhetorical concerns. One possibility for this tendency might be because of the assumption that vocabulary instruction would be the least effective pre-reading activity. However, instead of vocabulary pre-teaching, the student could be first made aware of what he knows, i.e., the vocabulary that he or she already possesses. This process becomes more important when technical reading is involved since research has found that the students usually do not recognise the high amount of cognates or borrowed words, even though these words are almost identical both in spelling and meaning.

The word classification grids revealed that the students were able to recognise the technical and subtechnical vocabulary that were similar in her native language and in English such as 'photophobia, infection, sinus, injection, viral.' Yet, not all of the students performed equally well in identifying these words. For example, some students did not write words as 'chemotherapy, inflammation, accumulation' in their lists. Therefore, this finding was consistent with previous research which suggested that these words were not recognised to a great extent (e.g. Moss, 1992; Nagy et. al. 1993). The reason for this might be because of the students' lack of knowledge of how most of

these words are pronounced. Different outcomes might have been obtained if the teacher had read the texts loudly at the beginning of the reading sessions. The students could catch familiar vocabulary through the way they were pronounced since most of these words were not written in English as they would be, if written in Turkish.

Examination of the idea units also revealed findings that were consistent with Laufer and Sim's (1985) study. Similar to Laufer and Sim's observation, the subjects in this study operated from lexical items first, made incorrect guesses about the meaning of the information in the text, and arrived at an erroneous interpretation when they had not understood a sentence. In such cases, the students preferred to act in a bottom-up manner instead of top-down processing, which is also consistent with Carrell's (1983) finding (cf. Chapter II, p.27). If the students had operated in a top-down fashion, i.e., if they had used their high content schema, the students would probably have made more logical and consistent guesses about the meaning of a sentence when they had insufficient knowledge.

From the results obtained, it was also determined that when the readers had too much increased and common background knowledge, they tended to write the same ideas instead of including further new information in their writings. Possible reasons for this behaviour could be to avoid making errors as mentioned above, or time limitations since the students had to complete a number of time consuming tasks within 60 minutes. Perhaps different results could be obtained if the students did not complete multiple choice and open ended questions but focused only on idea units.

Finally and most importantly, despite the findings mentioned above, the statistical result of this study indicated that there was not any significant difference between the students who were asked to fill in the grid on technical and subtechnical

vocabulary prior to reading and the students who read the texts directly without focusing on lexical items. When the students are left on their own abilities, the word identification and classification activity proved to be ineffective in increasing reading comprehension. However, it was expected that the experimental groups could write more details from the texts than the control groups with their increased lexical awareness, but the results suggest that the students did not benefit from the word identification and classification activity. Perhaps the reason for this conclusion was because the students were not explicitly pre-instructed, and; therefore, it was necessary to explain to the students how these words are identified and used, as suggested by Treville (1993).

5.2 Suggestions for Further Research

In this study, the students were asked to identify and classify the technical and subtechnical words on their own. Further research may investigate the effects of explicit cognate recognition instruction in order to increase the students' receptive vocabulary. Furthermore, the teacher might read out the texts loudly to expose the students to the pronunciation of the words.

The treatment procedure was to find and fill in the vocabulary grid as *technical*, *subtechnical*, and *I don't know* which was found to be ineffective in this study. Other research may focus on other ways of word or cognate recognition activities.

This study was limited to a content-area environment where all of the students were female student nurses with equal background. Therefore, other research may be conducted in different contexts such as comparing different subject-specific fields, or comparing students without content schema with students who have content schema.

Another possibility is to compare cultural (or general English) texts to specific content (ESP) texts.

According to some researchers, subtechnical vocabulary may cause difficulties or miscomprehension during reading. However, the term 'subtechnical' itself has not been clearly defined yet. Further research on identifying subtechnical vocabulary across disciplines is also needed. Thus, research may be conducted on the definition and nature of subtechnical vocabulary, or to study the effects of subtechnical vocabulary within a specific discipline area or between areas.

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GLOSSARY

Authentic materials: Authentic materials are written or spoken language produced for native speakers rather than for the foreign language learners. Newspaper articles, tourist information leaflets and 'real-life' conversations are typical examples of authentic materials (Haines, 1995:60).

Cognate : A cognate is a language or linguistic form derived from the same source as another throughout the history. Languages like Spanish, French, and Portuguese are cognate languages. Many of the words of these languages are also called cognates as the word 'father' becomes *padre, père, pai* for example (Crystal, 1992:70).

Moss (1992:142) adheres to the definition given in the Oxford Dictionary of English Etymology:

> cognate: akin, descended from a common ancestor
>
> (from the Latin *co* + *gnatus*)

He adds that the term does not refer to semantic considerations but only concerns itself to an etymological basis, and does not agree with the type of definition of cognates as words which are graphically similar between languages.

Moss also adds that Spanish/English cognates are extremely frequent in certain types of reading material and concludes "the more technical the text, the higher the percentage of cognates, an d in general, any scientific or technical text can be expected to contain at least %30 cognates."

According to Martinez (1994:87), this will include words such as "function"-"funcion" (Spanish), and also borrowed words such as "Coca-Cola," and "whisky."

Unlike Moss, in her study Martinez also considers *false cognates* which she accepts as "items that have identical or similar written form, but different meanings in the two languages (Ibid., p. 87). Martinez also draws attention on the degree of "cognability" of an item which may be "actual" or "potential." Actual cognates are very similar in their forms between two languages (e.g. in Spanish and English total/total, activities/actividades, etc.). If the degree of similarity between the word decrease, they may be potential cognates and she exemplifies this by the English word "offer" which has, to a certain extent similarities with the word "ofrecer," but is not the same as an actual cognate.

Although not as high as this amount, it is assumed that most of the terminology and subtechnical vocabulary in Turkish medical texts may be accepted as cognates or direct borrowings from English, which is the principal language of science and technology (e.g. diphtheria/difteri, diagnosis/diagnoz, lesion/lezyon, dose/doz, to eliminate/elimine etmek, complex/kompleks, etc.). Although these terms are often vocalised in terms of French pronunciation, it is expected that the students will recognise these words in their script and realise how often they are used to refer to medical concepts in Turkish.

Prior or background knowledge: This is often referred to as the knowledge a reader possesses, the knowledge brought by good readers to the reading process for predicting information and confirming predictions during reading. Background knowledge may involve good knowledge of formal discourse structure including vocabulary and syntax, and/or knowledge of content, i.e. text related information (e.g. Grabe,1991; Chen and Graves, 1995, Goodman, 1967).

Schema theory: Schema theory is a theoretical frame of reference used to formalise the reader's prior knowledge. It is not a well-defined framework for the representation of knowledge in memory. It is explained as an extremely useful notion for describing how prior knowledge is integrated in memory and used in higher-level comprehension process (Anderson and Pearson, 1984). The prior knowledge used to interpret the text is often called *schemata,* the interaction of which, with the text, facilitates comprehension. Schema may be in the form of *content schema* (background knowledge of subject) and *formal schema* (background knowledge of structure).

Pre-reading activities: Pre-reading activities are activities that prepare the student for the actual reading of the text. Pre-reading activities can be used "(a) to tap student's already existing background knowledge, and/or (b) to provide students with new information that will help them comprehend the passage" (Stoller, 1994). Pre-reading activities may prepare the readers for the culturally and conceptually new knowledge, make reading more enjoyable, and help to connect new information to already existing knowledge in a meaningful manner (Taglieber, Johnson and Yarbrough, 1988). Pre-reading activities are thus especially useful in activating the reader's schema and in providing a meaningful purpose for the reading activity.

Word: A word is the smallest single unit of grammar which can stand alone as a complete utterance, and which can be represented in writing and speech. A word may have more than one meaning and in written (orthographic) form the word has spaces on each side. In spoken form a phonological word is specified by real or assumed pauses in a string of utterance (Crystal, 1992; Collins Cobuild English Language Dictionary, 1994).

Grammatical word: This is a word having no lexical meaning and the only function of it is to build grammatical relationship. Some examples of them are *the, of, to*, etc. These are also called *form words, function words, structural words, functor or empty words*. Grammatical words can be compared to *lexical words* which have stable lexical meanings. They are more frequent than grammatical words and are also called as *content words, contentives or full words*. Some examples are *chair, come, big* (Crystal,1992:160).

Technical terms: These are words or expressions with specific meaning used in certain specialised fields of science and technology, e.g. medicine, physics, math. If technical terminology is not understood by the majority of a speech community and is used by subject specialist groups mainly, they are called *jargon.* Terms usually appear in contexts of discipline specific written language such as journalism, reports, books and spoken environments, rather than ordinary public conversation or media (Crystal, 1992).

Subtechnical vocabulary: Because the term subtechnical has not been defined adequately in literature, recent studies have attempted to classify subtechnical words by the help of statistical operations of frequency and distribution (cf. Martinez, 1994). These words are defined as words that are context-independent and which occur with high frequency across disciplines (Cowan, 1974). They usually "define, quantify, qualify, and otherwise express relations which exist between key scientific concepts" (Marshall and Gilmour, 1993). They are also accepted as 'more general core words' which are usually used in explaining of technical vocabulary (Robinson, 1989). Examples of such words are *basis, consist, devise, accumulate*, etc.

Transfer: The effects of linguistic features of one language on another is called transfer or transference. Transfer may occur positively or negatively (interference). Positive transfer facilitates learning because some items and patterns from the mother tongue apply to the foreign language as well (Crystal, 1992:393).

It is also possible to transfer vocabulary from the native language into the target language. It has been found out that transferred vocabulary knowledge, in general, extends L2 reading comprehension and promotes the acquisition of linguistic knowledge of L2, and also verbal processing skills; therefore, transfer facilitates the development of reading proficiency in L2 (Koda ,1989).

Word recognition: This is often described as a bottom-up strategy merely used by beginning, non-proficient, or L2 readers rather than proficient L1 readers who automatically recognise words and use more top-down processes. The development of automaticity particularly in word identification skills, is recently seen as an important component of fluent reading especially by cognitive psychologists. Automaticity is also thought as occurring "when the reader is unaware of the process, not consciously controlling the process, and using very little processing capacity" (Grabe, 1991).

Research on word recognition mainly focus on eye movement, recognition without explicit effects of context or with minimal effects, letter level differentiation exercises to promote automaticity, and also on perception of words with context provided. This study concentrates on the last situation which is recognition within context but with a special emphasis on word identification and classification into word families rather than automaticity, that is, the student is conscious and aware of the process of what is intended.

Content-based instruction: In content-area ESL, certain contents such as mathematics and science are used as a means of language learning. Usually two objectives are integrated in this field: content-area and language skills. This approach is mostly used in elementary or secondary school ESL contexts such as the FLES (Foreign Language in Elementary School) programmes (Mohan, 1986). There are several rationales behind this perspective. First, it associates both cognitive and linguistic development so that they can go together. Second, content provides a meaningful purpose to communicate via using language. A third rationale is that content increases motivation and interest and causes the reader to feel that it is worth learning since the language becomes a means to understand content. Fourth, it provides a base for specific genres and subject-area registers to enhance academic studies. Content area ESL has different names such as *subject-related ESL, ESL through subject matter teaching,* and *content-based ESL* (Snow, Met and Genesse, 1989).

In this study, Hudson's (1991:78) content comprehension approach, rather than content-based, instruction is intended. This approach emphasises the comprehension of content, and in Hudson's words, "importance is placed on the activity through which the content is comprehended rather than on specific language, rhetorical patterns, or reading skills."

ESP (English for Specific Purposes): This is a branch of English Language Teaching (ELT) in which the professional needs of the learner are the primary factors in determining the course content and kind of English to be taught. It is different from English for General Purposes where the aim is to "achieve a general level of proficiency" (Crystal, 1992:123). ESP has several branches such as English for Science and Technology (EST), English for Business and Economics (EBE), English for Social

Sciences (ESS), etc., each of which may also have sub-divisions as English for Academic Purposes (EAP) or English for Occupational/Vocational Purposes (EOP/EVP). These sub-branches may have more subject specific fields such as English for Medical Studies, English for Technicians, English for Economics, etc. The general concerns of ESP are that these courses are mainly for adults and at tertiary level, the learners' needs analysis is taken as the basis in course design, often a single skill which is mainly reading can be adopted in the whole programme or it is also possible to consider other communicative skills according to needs. The broader area of ESP is LSP (Language(s) for Special or Specific Purposes) which is for people "who need a language or a variety of language to meet a predictable range of communicative needs "(Crystal, 1992:217).

Idea units: Idea units in a text can be determined through what Clark (1982) says: "where good readers would pause in oral reading" (Elmas, 1992). Idea units might be defined as the smallest meaningful segments that contain a single propositional idea within a stretch of a sentence. In Heaton (1985), there is an example for a text 'chunked' by computer into idea units. (Figure courtesy of NJ Macdonald and LT Frase of Bell Telephone Laboratories.):

The original text:

A useful theory of design would combine general principles with specific task requirements. It would also be explicit about the means of doing this, that is, describe precisely how a particular design problem might be solved. Our current work on documentation problems contributes to a design theory of this type. The work is motivated by the following assumption. If we can take a text, create a multitude of rational design variations, evaluate them according to different text and reader skill assumptions and deliver up the best design option, then all of these activities together would constitute a workable theory of design.

Chunked text:

A useful theory of design
would combine general principles
with specific task requirements.

It would also be explicit about the means of doing this,
that is, describe precisely
how a particular design problem might be solved.
Our current work on documentation problems contributes
to a design theory of this type.
The work is motivated
by the following assumption.
If we can take a text,
create a multitude of rational design variations,
evaluate them according to different text
and reader skill assumptions
and deliver up the best design option,
then all of these activities together
would constitute a workable theory of design.

As can be seen in this example, content words such as *useful, design, theory, general, principles* have a direct function in chunking the text, rather than grammatical words such as *a, would, with*, etc. Idea units are useful means to score students' recalls and retellings, either in L1 or in L2, of reading passages (e.g. Elmas, 1992; Carrell, 1987).

In this study, checklists of idea units are used in evaluating and scoring numerically students' written retellings or merely translations of what has been understood from the text in L1.

Anadolu Üniversitesi
Merkez Kütüphane

APPENDICES

II LIFELINES: IMMUNIZATION

Immunization

For as little as $5, a child can be fully immunized against six of the most common and dangerous diseases of childhood. But at present, even though many countries have stepped up their vaccination coverage, fewer than 40% of the 100 million children born each year in the developing world are fully immunized against all or most of these diseases. As a result, almost 4 million children die and a similar number are mentally or physically disabled each year.

Many developing countries face serious supply problems with immunization services. Technological developments are helping to overcome some of these but management capacities need further strengthening.

Immunization is as much a question of demand as supply. Recent evaluations have shown that coverage rates could be doubled and in many cases trebled if parents took advantage of existing immunization services and if those bringing their children for the first vaccination were also to return for the second and third.

Demand for immunization can be increased in two principal ways. First, empowering parents with information about immunization can increase the distance which they are prepared to travel for immunization services. Second, making services available at more convenient times, closer to people's homes, can reduce the distance parents need to travel for immunization.

These strategies combined would enable immunization to bring about a reduction of up to one-third in the rate of death and disability among the developing world's children.

The Six Diseases

Each year almost 4 million children in the developing world die and an equivalent number are mentally or physically disabled through six vaccine-preventable diseases: diphtheria, pertussis (whooping cough), tetanus, measles, polio and tuberculosis. Fewer than 40% of infants in developing countries are fully immunized against all – or even most – of these diseases. Furthermore, only about 13% of mothers are fully vaccinated with tetanus toxoid, which also protects the new-born against neonatal tetanus – the main killer disease in the first month of life:

☐"Of every 1000 children born into the world, 5 will grow up crippled by poliomyelitis, 10 die of neonatal tetanus, 20 die of whooping-cough, and 30 or more die of measles or its complications. These diseases, along with diphtheria and tuberculosis, are the targets of the World Health Organization's Expanded Programme on Immunization (EPI), and between a quarter and a third of the world's children are now protected against them."

"Expanded immunisation", Lancet, editorial, 23 February 1985

MEASLES

☐"Without immunization, virtually 100% of the children in the developing world will contract measles between the ages of six months and three years – the youngest infants being protected by maternal antibodies. The age at which a child becomes infected varies with social and economic conditions: where there is overcrowding and poor housing, this may occur before one year of age; in better conditions the disease may not strike until some time in the second year or even later. Complications occur in about 30% of all cases, the most important of which may lead to pneumonia, blindness and deafness. These are more frequent and more severe in malnourished children who may have case-fatality rates of 10% or more. In the developing world, measles is also a significant cause of malnutrition and diarrhoea. Overall, it is estimated that some 3% of children in developing countries who acquire measles will die from it or from its complications."

R.H. Henderson, "Vaccine preventable diseases of children: the problem", in Protecting the world's children: vaccines and immunization, Rockefeller Foundation, 1984.

PERTUSSIS (WHOOPING COUGH)

"An acute bacterial infection affecting the respiratory tract, whooping cough is very contagious in the first week or two of infection. The spasmodic coughing or 'whooping' that characterizes the disease is readily recognized and lasts one to two months. Pertussis is most severe in children under five months of age and may lead to death through pneumonia or other conditions. In very young children, there is no characteristic whoop so the disease may be difficult to recognize."

Immunizations, World Federation of Public Health Associations, 1984.

TETANUS

☐"Tetanus is caused by a toxin of the tetanus bacillus and causes painful muscular contractions and generalized spasms which in severe cases may reach the larynx and respiratory system. The disease can occur at any age, but is particularly dangerous during the neonatal period. Neonatal tetanus results from the contamination of the umbilical stump by unsterile methods of cutting the cord or by application to the stump of matter such as cow dung or mud. The infected newborn will first be unable to suck and then be unable to swallow or breathe. Some 85% of untreated cases die in the first few weeks of life."

R.H. Henderson, "Vaccine preventable diseases of children: the problem", in Protecting the world's children: vaccines and immunization, Rockefeller Foundation, 1984.

POLIOMYELITIS

Polio is a viral disease spread by contact with objects, food, or water contaminated with excreta. In a small minority of cases, polio leads to varying degrees of paralysis and, sometimes, death. The older the child at the time of infection, the more likely the infection will lead to severe consequences. The use of polio vaccines in the last twenty years in developed countries has markedly reduced the incidence of polio; however, its relative infrequency has led to laxity and occasional outbreaks among the unimmunized.

Summarized from: Immunizations, World Federation of Public Health Associations, 1984.

TUBERCULOSIS (TB)

☐"Tuberculosis is most commonly a disease of adolescents and adults. The total number of tuberculosis deaths in children under the age of five years is not known with precision, but it is thought to be some 30,000 annually. Two-thirds of these deaths are attributable to TB meningitis, to which young children are particularly susceptible. Although the protective effect of immunization against TB in older persons is presently an unresolved question, its efficacy in young children has not been put in doubt."

R.H. Henderson, "Vaccine preventable diseases of children: the problem", in Protecting the world's children: vaccines and immunization, Rockefeller Foundation, 1984.

DIPHTHERIA

"A major child killer of the past in temperate countries, the mortality and morbidity of diphtheria are the least well documented of the six diseases in developing countries today. Although typically manifested as an acute infection of the throat, diphtheria can affect the heart or brain of infants and young children."

Immunizations, World Federation of Public Health Associations, 1984.

The Vaccines

Vaccines differ according to schedules, number of doses, and the length of time and temperature at which they must be kept to retain their potency (see table 5):

SCHEDULES

"Immunization scheduling is affected by two biomedical factors: the age at which the infant can develop active antibodies and the number of vaccine doses which must be given. It is also greatly affected by the capabilities of the health delivery system.

"... The most critical time in the life of an infant occurs after the loss of maternal antibodies and before the acquisition of natural immunity. If an immunization is given too soon, the infant will still have passive immunity and will not develop antibodies. If the immunization is delayed, the infant is vulnerable and may fall victim to disease.

"The productivity or coverage capability of a mobile team or an outreach unit of a health center depends upon how soon the unit must return to its starting point to begin a second, third, or fourth cycle of immunizations to follow up immunization of children and mothers reached during the previous rounds.

"In a fixed facility where immunizations are given on a frequent and regular basis, a short immunization cycle is possible. Ideally, children should be immunized as soon as they attain the minimum ages (see table 5) and should receive successive doses at the intervals shown. However, delays will be inevitable if immunizations cannot be made available on at least a monthly basis, and planners will need to use schedules which best meet their own circumstances.

"Immunization of women of childbearing age is an effective measure in controlling neonatal tetanus. In areas where most pregnant women seek prenatal care early enough to be given two doses of tetanus toxoid, these should be spaced at least four weeks apart, with the second dose at least two weeks before delivery. A third dose should be given at the next pregnancy, and any children born during the following five years will be protected."

Immunizations, World Federation of Public Health Associations, 1984.

Table 5: Vaccines – number and timing of doses, administration method, and stability

Vaccine	Number of doses	Timing of doses	Route of administration	Stability at 37°C (freeze dried)
Measles	1	From 9 months where measles remains a problem for infants; from 12–15 months elsewhere.	Subcutaneous injection	Approximately 1 week
BCG	1	From birth.	Intradermal injection	Approximately 1 week
DPT	3	From 6 weeks of age, at intervals of 4 weeks. Two doses may suffice if a high potency vaccine is given at 4–6 month intervals. An additional dose is frequently given during the second year of life.	Intramuscular injection	Approximately 1 week
Oral polio	3	From 6 weeks of age, at intervals of 4 weeks. An additional dose is frequently given during the second year of life. The impact of immunization at birth needs further evaluation.	Oral	Approximately 1 day
Inactivated polio	2	From 3 months of age, at intervals of 4–6 months. The effects of a single dose, an earlier starting age and shorter intervals between doses are being evaluated.	Subcutaneous injection. May be combined with DPT	Approximately 1 week
Tetanus toxoid	2	For use in prevention of neonatal tetanus, first dose at first contact with susceptible woman, second dose 4 weeks later. In previously immunized women, 1 additional dose during pregnancy is sufficient.	Intramuscular injection	Approximately 2 months

Note: Freeze dried measles vaccines which remain stable for 3–4 weeks at 37°C are now available but are not yet in widespread use.

Source: World Health Organization, 1984

ANSWER THESE QUESTIONS ACCORDING TO THE TEXT

A- Choose the best answer:

(1) Which of the following is not a complication of measles?

(a) pneumonia (b) blindness (c) diarrhoea (d) paralysis

(2) Pertussis is an infection which affects

(a) the digestive tract (b) the urinary tract

(c) the respiratory tract (d) the brain

B- Complete these sentences:

(1) Tetanus is particularly serious during the _____ period.

(2) Tuberculosis is most commonly a disease of _____ and _____.

(3) Diphtheria is mostly seen in _____ countries.

(4) Polio is a viral disease caused by contamination with _____.

C- Match the following:

(1) Measles	(a) oral
(2) BCG	(b) subcutaneous
(3) DPT	(c) intradermal
(4) Polio	(d) intramuscular

D- Answer these questions:

(1) How many children in the developing countries are fully immunised against the six common diseases ? _____

(2) How many children die each year from these diseases? _____

(3) When is the most critical time for immunity? _____

F- Find the synonyms of these words:

(1) neonatal:

(2) vaccination:

(3) very young child:

(4) frequence:

APPENDIX B: Word classification grid

Classify the words in the text as following:

technical	*subtechnical*	*I don't know*
.....	.....	.....
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CLINICAL DO'S & DON'TS

HOW TO INSTILL NOSE DROPS

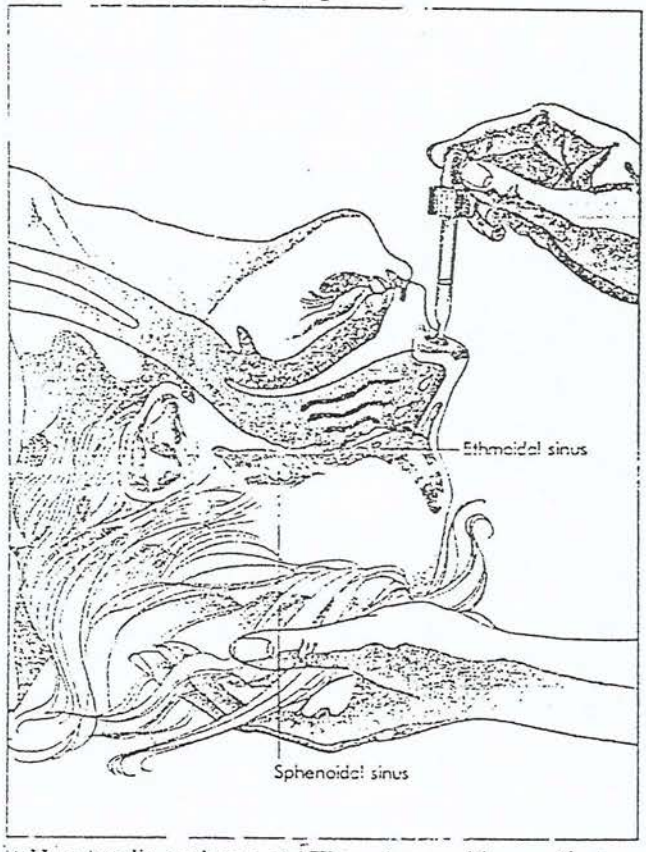
Effectively administer nasal medications to patients with nasal congestion or inflammation.

DON'T

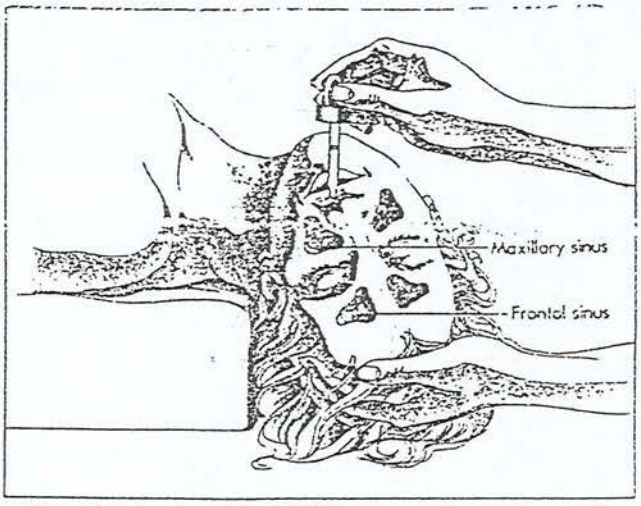
- Don't touch the dropper to the nostril's mucous membranes; otherwise, the dropper would become contaminated or the patient could sneeze.
- Don't let the patient blow her nose for several minutes after you administer the drops. If she does, she may expel the medication.
- Don't squirt any medication remaining in the dropper back into the bottle.

DO

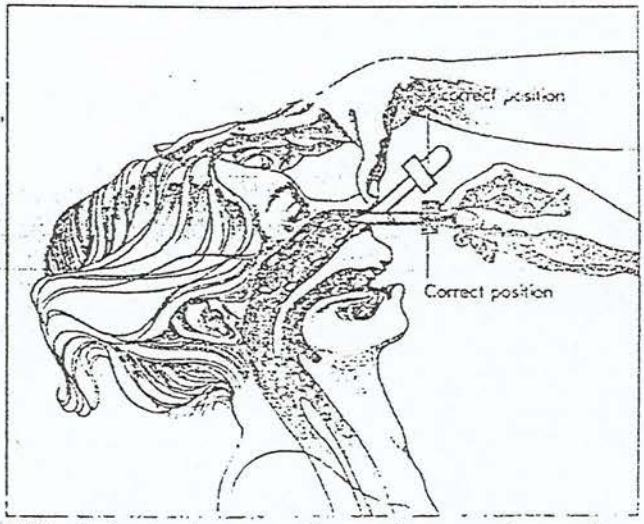
- Before instilling the drops, ask the patient to blow her nose to clear her nasal passages.



1. Help her lie on her back. Then, place a pillow under her shoulders so that her head falls over the edge of the pillow. If you want the drops to reach the ethmoidal and sphenoidal sinuses, place her head in a midline position.



▲ Turn her head to the side if you want them to reach the maxillary and frontal sinuses.



2. To administer drops to relieve ordinary nasal congestion, place her in a semireclining position with her head tilted toward the affected side. Press your thumb against the tip of her nose to elevate the nares; ask her to breathe through her mouth. Holding the dropper just above the nostril, direct the tip toward the midline of the nose. Don't point it toward the base of the nasal cavity—the drops might run down the eustachian tube.
- Insert the dropper about ⅜ inch into the nostril and instill the prescribed number of drops.
- Tell the patient to remain still for several minutes with her head tilted back, so the solution will reach the entire nasal surface and won't leak out of the nostrils. Keep an emesis basin handy, and tell her to expectorate any medication that runs into the oropharynx and mouth.
- Wipe excess medication from her nostrils and face with a tissue.

Edwina A. McConnell, RN, PhD, author of Clinical Do's and Don'ts, is an independent nurse-consultant in Madison, Wis.

BOB NEUMANN

A. Select the correct answer which is most accurate according to the information given in the passage.

1- Nasal drops are commonly used for
a) viral infections
b) nasal bleeding
c) inflammation
d) fungal infections

2- To make the patient's head fall fully back what do you do ?
a) You ask her to tilt her head back.
b) You ask her to lie down on her side.
c) You just ask her to lie down and tilt her head back.
d) You ask her to lie on her back supporting her shoulders with a pillow.

3- Choose the correct sentence.
a) After administering the drop, ask the patient to blow her nose.
b) Don't touch the dropper to the patient's nose.
c) Put back the rest of the medicine into the bottle.
d) Push the dropper about 6/8 inch into the nose.

4- Which of the following steps comes first ?
a) The patient lies down.
b) The nurse gives the correct position.
c) The patient blows her nose.
d) The nurse applies the instillation.

5- Which is the correct position of instilling the drops to the frontal sinuses ?
a) Patient lying, head back and turned towards a side.
b) Patient sitting, head back and tilted towards the instillation side.
c) Patient lying, head back, in a straight position.
d) Patient sitting, head back, breathing through her mouth.

6- For which of the following places or conditions do you ask the patient not to lie down ?
a) sphenoidal sinuses
b) maxillary sinuses
c) nasal congestion
d) ethmoidal sinuses

B- Answer the following questions.

1- What is the text about in general ?

2- Which patients usually need nose drops ?

3- Why is it important not to touch the dropper to the nostrils mucous membranes ?

4- What do you first ask to the patient before administering the drops ?

5- After instillation what do you tell the patient not to do ?

6- Why must the patient wait for a short time before standing up ?

7- Why is it necessary to keep an emesis basin nearby ?

8- What do you do the medication left in the dropper ?

C. In Turkish, write everything you understand from the text.

APPENDIX D: Idea Units in Text 1

CLINICAL DO'S AND DON'TS

1. HOW TO INSTIL NOSE DROPS
2. Effectively administer nasal medications
3. to patients with nasal congestion
4. or inflammation.
5. DON'T
6. Don't touch the dropper to the nostril's mucous membranes
7. otherwise the dropper would become contaminated
8. or the patient could sneeze.
9. Don't let the patient blow her nose
10. for several minutes
11. after you administer the drops.
12. If she does, she may expel the medication.
13. Don't squirt any medication remaining in the dropper
14. back into the bottle.
15. DO
16. Before instilling the drops,
17. ask the patient to blow her nose
18. to clear her nasal passages.
19. Help her lie on her back.
20. Then place a pillow under her shoulders
21. so that her head falls
22. over the edge of the pillow.
23. If you want the drops to reach
24. the ethmoidal
25. or sphenoidal sinuses
26. place her in a midline position.
27. Turn her head to the side
28. if you want them to reach the maxillary
29. and frontal sinuses.

30. To administer drops to relieve ordinary nasal congestion,
31. place her in a semireclining position
32. with her head tilted towards the affected side.
33. Press your thumb
34. against the tip of her nose
35. to elevate the nares;
36. ask her to breathe
37. through her mouth.
38. Holding the dropper just above the nostril
39. direct the tip
40. toward the midline of the nose.
41. Don't point it toward the base
42. of the nasal cavity-
43. the drops might run down the Eustachian tube.
44. Insert the dropper
45. about ¾ inch
46. into the nostril
47. and instil the prescribed number of drops.
48. Tell the patient to remain still for several minutes,
49. with her head tilted back.

NUMBER OF UNITS: 49

HYDATID DISEASE

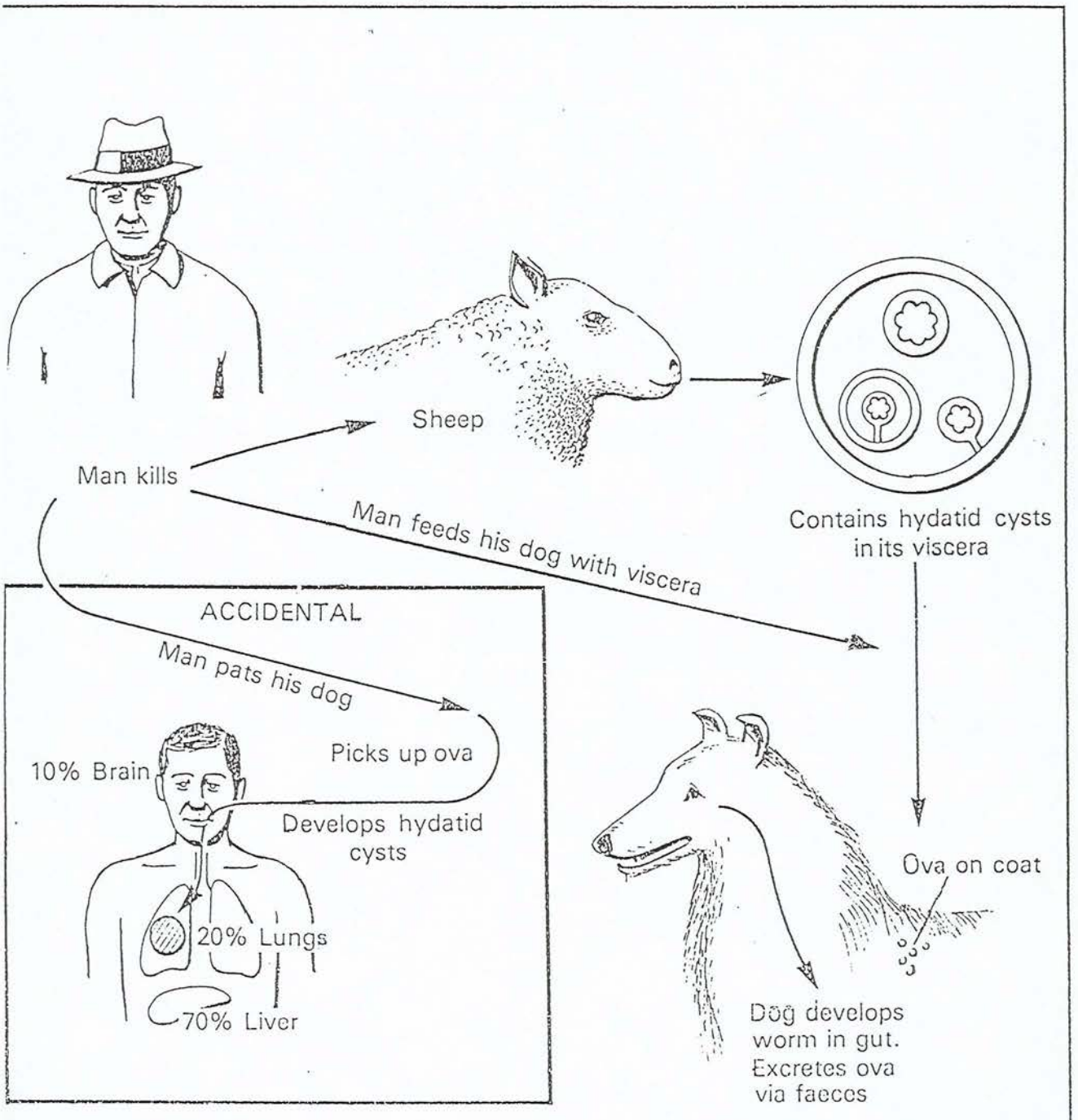
A vicious cycle

by Neville Bailey, MD, MSc, DPH, MFCM

ydatidosis or echinococcosis results from the development f the cystic intermediate stage of the tapeworm Echinococ- is granulosus in an animal's vital organs. In the intestine of a g, such as a sheep dog, as many as 1,000 mature tapeworms n be recovered.

Each worm is capable of producing 500 viable eggs a month – grazing animals have no difficulty consuming food contaminated in this way. Man may also take in infective eggs and develop hydatid disease.

This disease is prevalent in some sheep farming areas and is not easy to diagnose, except by laboratory tests. It is preventable if the correct measures are enforced.



Nursing Mirror, May 13, 1981

ow hydatids can be spread accidentally.

HYDATIDOSIS is a disease of certain wild, domesticated or farm animals. It is also known as echinococcosis, and results from the development within an animal's vital organs of the cystic intermediate stage of the tapeworm *Echinococcus granulosus,* the adult or mature form of which is found as a symptomless infestation in the intestine of dogs, foxes and certain other carnivorous animals. Although the mature tapeworm in the intestine of a dog does not grow to more than one inch long, as many as 1,000 mature tapeworms have been found in one dog. It is not unusual to find half this number of adult worms in dogs in certain sheep-farming areas of the United Kingdom with up to half of the dogs examined at any one time harbouring this tapeworm. As each individual tapeworm in an infested dog produces up to 500 viable eggs each month, the number of tapeworm eggs excreted in the faeces of an untreated dog can be astronomical! It is therefore hardly surprising that grazing animals have little difficulty in consuming food contaminated with *Echinococcus* eggs.

Echinococcus eggs hatch as soon as they are swallowed. They then release larval forms which burrow through the wall of the intestine to enter the portal venous circulation where they are transported to the liver. Most of the larvae stay in the capillary network within the liver and develop into cysts. But some larvae manage to pass through the liver and enter the pulmonary circulation where they may cause cysts in the lungs, or into the general arterial circulation. From there they can settle in any organ of the body, including the brain.

Once they have settled out of the circulation the larvae develop into fluid-filled cysts which may, over a number of years, grow to the size of a large grapefruit causing obvious symptoms because of pressure on neighbouring organs. At this stage a cyst contains large numbers of infective scolices which can develop into further adult tapeworms if ingested by a dog or other carnivorous animal, thus completing the parasite's life-cycle. Most adult sheep reared on some farms, and a large proportion of adult cattle in infected areas, may have hydatid cysts.

Man's susceptibility

Unfortunately, man is also susceptible to the development of hydatid cysts if infective eggs are ingested, and people of all ages may have hydatid disease. As it is not a notifiable disease the true incidence of the disease in man is not known. But it is a cause of deep concern and considerable morbidity to people living in some sheep-rearing areas.

Within Britain, the human disease is particularly prevalent in the sheep-farming areas of central Wales, the highlands and islands of Scotland and in parts of Ireland.

A survey into the incidence of human hydatidosis was carried out in an isolated valley in the heartland of Wales in 1976. Of the 147 people examined, three had had the disease diagnosed and treated during the previous two years. More recently, five members of a family of eight living on one farm in an adjoining valley, have been found to have hydatid disease.

Difficult diagnosis

Hydatid disease is not easy to diagnose as symptoms may vary widely, depending on which organs the cysts are in. Doctors in areas where the disease is most commonly found usually try to exclude the presence of hydatid cysts whenever a firm diagnosis of an alternative condition cannot be made. Fortunately, a number of laboratory tests are now available which, if positive, suggest the presence of hydatid cysts. A small serum sample has to be sent to the Central Public Health Laboratory at Colindale in north London. A simple skin test, the Casoni test, is also available as a screening procedure. But the antigen needed for this test is no longer available in this country and can only be imported from West Germany under special licence.

Whenever a presumptive diagnosis of hydatid disease has been made, detailed further investigations are needed to identify the organ or organs in which cysts may be located. They include X-ray and ultrasound examinations of the lungs and abdomen.

No medical treatment

At present there is no satisfactory medical treatment for human hydatid disease; all patients need major surgery. Operations may be needed on several organs as multiple cysts are often discovered. For example, one child recently had as many as 15 cysts removed from sites in both lungs and in the liver.

The human disease may be prevented if strict hygiene is observed. But this is far from easy where young children are concerned — or with people whose work brings them into close contact with infected dogs. Farming communities, however, can adopt some measures which can dramatically reduce the incidence of the disease in domestic and farm animals, thus reducing the likelihood of man acquiring the disease. These include:

- burying all dead sheep and other farm animals, or using a registered knacker;
- feeding only cooked meat and offal to all dogs;
- regular worming of all dogs with an anthelminthic active against all stages of *Echinococcus granulosus*.

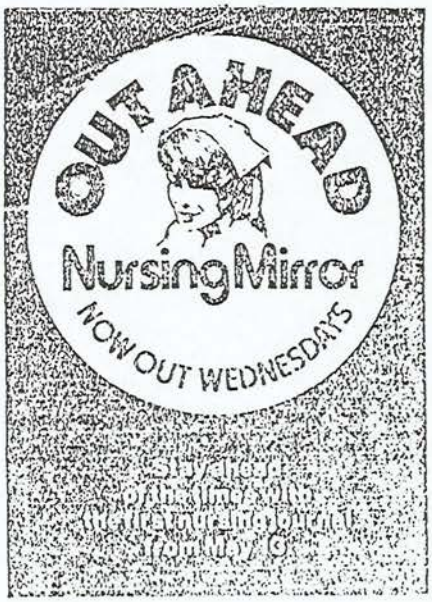
Experience in other countries has shown it is possible, with Government action and public support, effectively to control the presence of *Echinococcus* tapeworm and cysts in domestic and farm animals and enormously reduce the likelihood of human infection.

While public awareness and persuasion can achieve much, no really effective centrally organised campaign has ever been mounted in the United Kingdom. I hope it may be possible to persuade the Welsh Office to mount a hydatidosis eradication campaign in central Wales as a pilot for an exercise that could later be extended throughout the country. I find it difficult to believe that a society which has successfully eradicated bovine tuberculosis as a cause of human infection, and which is well on the way to eradicating brucellosis, will experience any real difficulty in eliminating hydatid disease from the British Isles □

Acknowledgment

To Mr G. C. Lennox, area pharmaceutical officer, West Glamorgan Health Authority.

The author is area medical officer, Powys Health Authority.



A. Choose the correct answers.

1. Hydatidosis is not a disease of
   a) dogs b) foxes c) cats d) sheep

2. How many tapeworms can be produced by a single worm ?
   a) 1000 b) 500 c) 3000 d) 800

3. Which of the following organs is mostly affected by hydatidosis ?
   a) the liver b) the brain c) the lungs d) the stomach

4. Hydatidosis can not be diagnosed by
   a) ultrasound b) X-ray c) PPD skin test d) investigating the serum sample

5. The common treatment of this disease is
   a) using anthelmintic medicine
   b) symptomatic treatment
   c) surgery
   d) applying hygienic rules

6 .Which of the following comes first ?
   a) the larvae settle in the liver
   b) the larvae enter the portal circulation through the intestines
   c) the larvae develop into cysts
   d) the larvae are carried to the lungs by the pulmonary circulation

B. Answer the following questions .

1. Write the names of the animals which are mostly affected by hydatid disease.

2. What organs are primarily infected by this parasite ?

3. Which age groups of human beings may become infected by Echinococcus granulosus ?

4. Which test is used to diagnose this disease ?

5. What are the other ways to confirm this diagnosis ?

6. How is hydatid disease treated ?

7. Does this disease cause any symptoms ? If it does , when do the symptoms start ?

8. How many eggs does a worm produce normally at a time ?

9. What precautions can be taken to prevent people from becoming infected ?

10. How many worms can be found in an infected animal ?

C. In Turkish, write everything you understand from the text.

APPENDIX F: Idea Units in Text 2

(PICTURE AND COVER PAGE)

HYDATID DISEASE

A VICIOUS CYCLE

1. Hydatidosis or echinococcosis
2. results from the development
3. of the cystic intermediate stage
4. of the tapeworm Echinococcosus granulosus
5. in an animal's vital organs.
6. In the intestine of a dog,
7. such as a sheep dog.
8. as many as 1,000 mature tapeworms can be recovered.
9. Each worm is capable of producing
10. 500 viable eggs
11. a month
12. -grazing animals
13. have no difficulty consuming food
14. contaminated in this way.
15. Man may also take in infective eggs and develop hydatid disease.
16. This disease is prevalent in some sheep farming areas
17. and is not easy to diagnose.
18. except by laboratory tests.
19. It is prevented
20. if the correct measures are enforced. (picture)
21. Man kills - sheep-
22. Contains hydatid cysts in its viscera
23. Man feeds his dog with viscera
24. Ova on coat
25. Dog develops worm in gut.
26. Excretes ova via faeces
27. ACCIDENTAL

28. Man paths his dog
29. Picks up ova
30. %10 brain
31. Develops hydatid cysts
32. % 20 lungs
33. % 70 liver

(TEXT)

1. Hydatidosis is a disease of certain wild
2. domesticated or
3. farm animals.
4. It is also known as echinococcosis.
5. and results from the development within an animal's vital organs (unit 2 in picture)
6. of the cystic intermediate stage, (u. 3 i. p.)
7. of the tapeworm echinococcus granulosus, (u. 4 i. p.)
8. the adult or mature form
9. which is found as symptomless infestation
10. in the intestines of
11. dogs, (u. 6.)
12. foxes,
13. and certain other carnivorous animals.
14. Although the mature tapeworm in the intestine of a dog
15. does not grow more than
16. one inch long,
17. as many as 1,000 mature tapeworms have been found in one dog. (u.8)
18. It is not unusual to find half this number of adult tapeworms in dogs
19. in certain sheep-farming areas
20. of the United Kingdom
21. with up to half of the dogs examined
22. at one time harbouring this tapeworm.
23. As each individual tapeworm in an infected dog (u. 9)
24. produces up to 500 viable eggs (u.10)

25. each month, (u. 11)
26. the number of tapeworm eggs excreted in faeces (u. 26)
27. of an untreated dog
28. can be astronomical!
29. It is therefore hardly surprising that grazing animals (u. 12)
30. have little difficulty in consuming food (u. 13)
31. contaminated with Echinococcus eggs. (u. 14)
32. Echinococcus eggs hatch
33. as soon as they are swallowed.
34. They then release larval forms
35. which burrow
36. through the wall of the intestine
37. to enter the portal venous circulation
38. where they are transported to the liver.
39. Most of the larvae stay in the capillary network
40. within the liver
41. and enter the pulmonary circulation .
42. where they may cause cysts in the lungs.,
43. or into the general arterial circulation.
44. From there they can settle in any organ of the body,
45. including the brain.
46. Once they have settled out of the circulation
47. the larvae develop into fluid filled cysts
48. which may, over a number of years,
49. grow to the size of a large grapefruit
50. causing obvious symptoms
51. Because of pressure on neighbouring organs.
52. At this stage a cyst contains a large number of infective scolices
52. which can develop into further adult tapeworms
54. if ingested by a dog or other carnivorous animals,
55. thus competing the parasite's life-cycle.
56. Most adult sheep reared on some farms,

57. and large proportion of adult cattle
58. in infected areas may have hydatid cysts.
59. MAN'S SUSCEPTIBILITY
60. Unfortunately, man is also susceptible to the development of hydatid cysts (u. 15)
61. if infective cysts are ingested,
62. and people of all ages may have hydatid disease.
63. As it is not a notifiable disease
64. the true incidence of the disease in man is not known.
65. But it is a cause of deep concern
66. and considerable morbidity of people living in sheep-rearing areas.
67. Within Britain
68. the human disease is particularly prevalent in sheep-farming areas (u. 16)
69. of central Wales,
70. the highlands of Scotland
71. and in parts of Ireland.
72. A survey into the incidence of human hydatidosis was carried out
73. in an isolated valley
74. in the heartland of Wales
75. in 1976.
77. Of the 147 people examined
77. three had the disease diagnosed and treated
78. during the previous two years.
79. More recently, five members of a family
80. of eight
81. living on one farm
82. in an adjoining valley
83. have been found to have hydatid disease.
84. DIFFICULT
85. DIAGNOSIS (u. 17.)
86. Hydatid disease is not easy to diagnose
87. as symptoms vary widely,
88. depending on which organs the cysts are in.

89. Doctors in areas
90. where the disease is most commonly found
91. usually try to exclude the presence of hydatid cysts
92. whenever a firm diagnosis of an alternative condition cannot be made.
93. Fortunately, a number of laboratory tests are now available (u. 18)
94. which, if positive,
95. suggest the presence of hydatid cysts.
96. A small serum sample has to be sent
97. to the central Public Health Laboratory
98. at Colindale in north London.
99. A simple skin test,
100. the Casoni test,
101. is also available as a screening procedure.
102. But the antigen needed for this test
103. is no longer available in this country
104. and can only be imported from West Germany
105. under special licence.
106. Whenever a presumptive diagnosis of hydatid disease has been made,
107. detailed further investigations are needed
108. to identify the organ or organs
109. in which the cysts may be located.
110. They include x-ray
111. and ultrasound examinations
112. of the lungs and abdomen.
113. NO
114. MEDICAL TREATMENT
115. At present there is no satisfactory medical treatment for human hydatid disease;
116. all patients need major surgery.
117. Operations may be needed on several organs
118. as multiple cysts are often discovered.
119. For example, one child recently
120. had as many as 15 cysts removed

121. from sites in both lungs
122. and in the liver.
123. The human disease may be prevented (u. 19)
124. if strict hygiene is observed. (u. 20)
125. But this is far from easy
126. where young children are concerned-
127. or with people whose work brings them into close contact
128. with infected dogs.
129. Farming communities, however,
130. can adopt some measures
131. which can dramatically reduce
132. the incidence of the disease
133. in domesticated
134. and farm animals,
135. thus reducing the likelihood of man acquiring the disease.
136. These include: - burying all dead sheep
137. and other farm animals,
138. or using a registered knacker;
139. - feeding only cooked meat
140. and offal to all dogs;
141. - regular worming
142. of all dogs
143. with an anthelmintic active
144. against all stages of Echinococcosus granulosus.

NUMBER OF UNITS: 158

MENINGITIS

The meninges consist of 3 sheaths covering the brain and spinal cord: the pia, arachnoid and dura mater. Meningitis (inflammation of the meninges) is the most common and important disease affecting the meninges. The infection may be blood-borne or from local spread.

Symptoms and signs

The commonest features are headache, neck stiffness and clouding of consciousness.

1. *Onset.* This is in most cases quick (hours or days) with the exception of the tuberculous type. The patient is severely ill, with fever.

2. *Headache.* This is constant and persistent. It comes on early and is associated with vomiting.

3. *Altered consciousness.* The patient is drowsy and irritable, and often delirious. He resents being touched or disturbed.

4. *Neck rigidity.* There is a marked stiffness of the neck. The patient lies in a characteristic attitude, curled up in bed and turned away from the light, as photophobia (dislike of light) is present.

5. *Convulsions or fits.* These are common, especially in infants.

6. *Kernig's sign.* This is the resistance met with on attempting to straighten the flexed (bended) knee, as this movement stretches the inflamed meninges causing pain.

Types of meningitis

1. *Pyogenic meningitis.* Meningococcal meningitis is by far the most common form in the adult, and often occurs in epidemics. *Haemophilus influenzae* and *E. coli* are sometimes responsible in childhood: the onset and course may be particularly rapid in children. In streptococcal and staphylococcal meningitis there may be evidence of infection in the ear (otitis media), mastoid or other sinuses (sinusitis): the meningitis may develop as a result of local spread of infection to the meninges.

2. *Tuberculous meningitis.* Here the onset may be gradual (over weeks) before the characteristic picture of meningitis occurs. After the meningococcal form, it is the commonest type met with. The accumulation of purulent exudate over the base of the brain may affect the emerging cranial nerves.

3. *Viral meningitis.* This is usually less severe, and may occur in epidemics.

Diagnosis of meningitis

To confirm the diagnosis, a 'lumbar puncture' will be done. Here a needle with a stilette is inserted, *under the strictest aseptic technique*, between the third and fourth or fourth and fifth lumbar vertebrae, passing the dura mater and into the subarachnoid space. On withdrawing the stilette the cerebrospinal fluid (CSF) flows through the needle. Normal CSF comes out drop by drop at a certain pressure (which can be measured by a special manometer) and, most importantly, is always crystal clear.

In meningitis, the CSF is cloudy and spurts out under high pressure, and in pyogenic meningitis it may be frankly purulent. By examining the fluid in the laboratory and culturing the organism, the exact type of meningitis can be ascertained: this procedure is particularly important to diagnose an early case of tuberculous meningitis.

Treatment

Nursing. Patients with meningitis are severely ill, thus requiring the most skilled nursing. They may resent all disturbance, so that great patience on the part of the nurse is needed to make sure that the patient gets sufficient fluids: an intravenous infusion may be necessary. The patient is best nursed in a subdued light on account of the photophobia. Quietness is essential as noise is badly tolerated.

Special treatment

Pyogenic meningitis. The introduction of antibiotic drugs has completely changed the outlook in pyogenic meningitis. Before these drugs were used, the majority of cases of meningitis died. Now the vast majority recover. Depending on the severity and type of infection, it is usual to give sulphonamides and penicillin (up to 2 million units every 2 to 4 hours). Chloramphenicol may be given in addition, especially in children. Penicillin (10,000 to 20,000 units) is sometimes given by the intrathecal route, i.e. by a lumbar puncture.

Tuberculous meningitis. Chemotherapy has also changed the course of this disease. Streptomycin, para-aminosalicylic acid (PAS) and isoniazid are given until the sensitivity of the organism is known, after which the two most effective agents are continued for at least 6 months. In serious cases, drugs may be given intrathecally. Pyridoxine is given to prevent the neurotoxic effects of isoniazid, and anticonvulsants may be necessary, especially in children.

Toohey's Medicine for Nurses, Arnold Blomm,Stephen Bloom,

London: Longman Group Limited, 1986

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3. *Altered consciousness.* The patient is drowsy and irritable, and often delirious. He resents being touched or disturbed.

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5. *Convulsions or fits.* These are common, especially in infants.

6. *Kernig's sign.* This is the resistance met with on attempting to straighten the flexed (bended) knee, as this movement stretches the inflamed meninges causing pain.

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2. *Tuberculous meningitis.* Here the onset may be gradual (over weeks) before the characteristic picture of meningitis occurs. After the meningococcal form, it is the commonest type met with. The accumulation of purulent exudate over the base of the brain may affect the emerging cranial nerves.

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To confirm the diagnosis, a 'lumbar puncture' will be done. Here a needle with a stilette is inserted, *under the strictest aseptic technique*, between the third and fourth or fourth and fifth lumbar vertebrae, passing the dura mater and into the subarachnoid space. On withdrawing the stilette the cerebrospinal fluid (CSF) flows through the needle. Normal CSF comes out drop by drop at a certain pressure (which can be measured by a special manometer) and, most importantly, is always crystal clear.

In meningitis, the CSF is cloudy and spurts out under high pressure, and in pyogenic meningitis it may be frankly purulent. By examining the fluid in the laboratory and culturing the organism, the exact type of meningitis can be ascertained: this procedure is particularly important to diagnose an early case of tuberculous meningitis.

Treatment

Nursing. Patients with meningitis are severely ill, thus requiring the most skilled nursing. They may resent all disturbance, so that great patience on the part of the nurse is needed to make sure that the patient gets sufficient fluids: an intravenous infusion may be necessary. The patient is best nursed in a subdued light on account of the photophobia. Quietness is essential as noise is badly tolerated.

Special treatment

Pyogenic meningitis. The introduction of antibiotic drugs has completely changed the outlook in pyogenic meningitis. Before these drugs were used, the majority of cases of meningitis died. Now the vast majority recover. Depending on the severity and type of infection, it is usual to give sulphonamides and penicillin (up to 2 million units every 2 to 4 hours). Chloramphenicol may be given in addition, especially in children. Penicillin (10,000 to 20,000 units) is sometimes given by the intrathecal route, i.e. by a lumbar puncture.

Tuberculous meningitis. Chemotherapy has also changed the course of this disease. Streptomycin, para-aminosalicylic acid (PAS) and isoniazid are given until the sensitivity of the organism is known, after which the two most effective agents are continued for at least 9 months. In serious cases, drugs may be given intrathecally. Pyridoxine is given to prevent the neurotoxic effects of isoniazid, and anticonvulsants may be necessary, especially in children.

Toohey's Medicine for Nurses, Arnold Blomm,Stephen Bloom,

London: Longman Group Limited, 1986

A. Choose the best answer.

1. Which of the following is not a sign or symptom of meningitis ?
   a) Hypothermia
   b) Neck stiffness
   c) Vomiting
   d) Photophobia

2. Which one of the following bacteria types is the underlying cause of pyogenic meningitis ?
   a) streptococcus type
   b) E. Coli
   c) staphylococcus type
   d) Shigella

3. The cerebrospinal fluid (CSF) is taken from the
   a) arachnoid matter
   b) dura matter
   c) subarachnoid matter
   d) pia matter

4. A lumbar puncture is usually performed
   a) between the first and second lumbar vertebrae
   b) between the tenth and eleventh thoracic vertebrae
   c) between the third and fourth lumbar vertebrae
   d) between the eleventh and fifth thoracic vertebrae

5. Which type of meningitis is found more frequently ?
   a) tuberculous meningitis
   b) viral meningitis
   c) pyogenic meningitis
   d) all of them

6. The least dangerous type of meningitis is usually
   a) viral meningitis
   b) meningococcal meningitis
   c) tuberculous meningitis
   d) pyogenic meningitis

7. Which of the following is not a standard procedure in the treatment of meningitis ?
   a) more fluid intake
   b) more light in the room
   c) a quiet room
   d) chemotherapy

8. The antibiotic used for the treatment of tuberculous meningitis is
   a) penicillin
   b) sulphonamide
   c) streptomycin
   d) chloramphenicol

B. Answer the following questions .

1. What is meningitis ?

2. What are the types of meningitis ?

3 . What are the three most common signs and symptoms of meningitis ?

4. What are the other specific signs and symptoms of this disease ?

5. How is meningitis diagnosed ?

6. Describe briefly the technique of lumbar puncture.

7. What are the differences between the cerebrospinal fluids (CSF) of an infected patient and a normal person ?

8. How is the general treatment procedure of this disease ?

9. Write the antibiotic drugs used for the treatment of pyogenic meningitis.

C. In Turkish, write everything you understand from the text.

APPENDIX H: Idea Units in Text 3

MENINGITIS

1. The meninges consist of 3 sheaths
2. covering the brain
3. and the spinal cord:
4. the pia,
5. arachnoid and
6. dura matter.
7. Meningitis (inflammation of meninges)
8. is the most common disease affecting the meninges.
9. The infection may blood borne
10. or from local spread.
11. SYMPTOMS AND SIGNS
12. the commonest features are headache, neck stiffness
13. and clouding of consciousness.
14. (1) Onset.
15. This is in most cases quick
16. (hours or days)
17. with the exception of tuberculous type.
18. The patient is severely ill
19. with fever.
20. (2) Headache.
21. This is constant
22. and persistent.
23. It comes on early
24. and is associated with vomiting.
25. (3) Altered consciousness.
26. The patient is drowsy
27. and irritable
28. and often delirious.
29. He resents being touched

30. or disturbed.
31. (4) Neck rigidity.
32. There is a marked stiffness of the neck.
33. The patient lies in a characteristic attitude, curled up in bed
34. and turned away from light, as photophobia (dislike of light) is present.
35 (5) Convulsions and fits.
36. These are common, especially in infants.
37. (6) Kerning's sign.
38. This is the resistance met with
39. on attempting to straighten the flexed (bended) knee
40. as this movement stretches the inflamed meninges
41. causing pain.
42. Types of meningitis
43. Pyogenic meningitis.
44. Meningococcal meningitis
45. is by far the most common form
46. in the adult
47. and often occurs in epidemics.
48. Haemophilus influenza
49. and E. Coli
50. are sometimes responsible
51. in childhood:
52. the onset and course may be particularly rapid in children.
53. In streptococcal
54. and staphylococcal meningitis
55. there may be evidence of infection in the ear (otitis media)
56. mastoid or other sinuses (sinusitis):
57. the meningitis may develop as a result of local spread of infection to the meninges.
58. (2) Tuberculos meningitis.
59. Here the onset may be gradual
60. (over weeks)
61. before the characteristic picture of meningitis occurs.

62. After the meningococcal form,
63. it is the commonest type met with.
64. The accumulation of purulent exudate
65. over the brain
66. may affect the emerging cranial nerves.
67. (3) Viral meningitis.
68. This is usually less severe
69. and may occur in epidemics.
70. DIAGNOSIS OF MENINGITIS
71. To confirm the diagnosis, a lumbar puncture will be done.
72. Here a needle with a stilette is inserted,
73. under the strictest aseptic technique
74. between the third and fourth
75. or fourth and fifth lumbar vertebrae,
76. passing the dura matter
77. and into the arachnoid space.
78. On withdrawing the stilette
79. the cerebrospinal fluid (CSF)
80. comes drop by drop
81. at a certain pressure
82. (which can be measured by a special manometer)
83. and most importantly, it is always crystal clear.
84. In meningitis, the CSF is cloudy
85. and in pyogenic meningitis
86. it may be frankly purulent.
87. By examining the fluid in laboratory
89. and culturing the organism,
90. the exact type of meningitis can be ascertained:
91. this procedure is particularly important to diagnose an early case of tuberculous meningitis.
92. TREATMENT
93. Nursing.

94. Patients with meningitis are severely ill,

95. thus requiring the most skilled nursing.

96. They may resent all disturbance,

97. so that great patience on part of nurse is needed

98. to make sure that the patient gets sufficient fluid:

99. an intravenous infusion may be necessary.

100. The patient is best nursed in a subdued light on account of photophobia.

101. Quietness is essential

102. as noise is badly tolerated.

103. Special treatment.

104. Pyogenic meningitis.

105. The introduction of antibiotics has completely changed the outlook of pyogenic meningitis.

106. Before these drugs were used,

107. the majority of cases of meningitis died.

108. Now the vast majority recover.

109. Depending on the severity

110. and type of injection,

111. it is usual to give sulphonamides

112. and penicillin

113. (up to 2 million units

114. every 2 to 4 hours).

115. Chloramphenicol may be given in addition

116. especially in children.

117. Penicillin

118. (10.000

119. to 20.000 units)

120. is sometimes given by the intratechal route, i.e. by a lumbar puncture.

121. Tuberculous meningitis.

122. Chemotherapy has also changed the course of this disease.

123. Streptomycin,

124. para-aminosalicylic acid (PAS)

125. and isoniazid are given
126. until the sensitivity of the organism is known
127. after which the most effective agents are continued
128. for at least 6 months.
129. In some more serious cases,
130. drugs may be given intratechally.
131. Pyridoxine is given
132. to prevent the toxic effects of isoniazid,
133. and anticonvulsants may be necessary,
134. especially in children.

NUMBER OF UNITS: 134

APPENDIX I: Text 4/ Test 4

DIPHTHERIA

Causes. Infection with the diphtheria bacillus, of which there are several strains, the gravis strain being the most severe.

Spread. Mainly by droplet infection. Indirect spread (e.g. from sucking infected pencils) also often occurs.

Incubation period. Short--two to four days.

Incidence. Children are chiefly affected, although diphtheria may also be seen in adults, especially during epidemics. Winter is the most usual season for diphtheria.

Pathology. The illness takes the form of a typical local lesion with a severe general toxaemia.

The local lesion is a membranous exudate which usually occurs in the throat, causing faucial diphtheria. Less often it is situated either in the nose (causing nasal diphtheria) or in the larynx (causing laryngeal diphtheria). Combined lesions may occur, in rarer cases, skin diphtheria may be present.

Although the organisms remain in the membrane, they produce a very powerful toxin which causes a general toxaemia. The toxin particularly attacks the heart muscle (myocardium), causing an acute myocarditis, and the nervous system, causing various forms of paralysis.

Diphtheria can affect primarily the fauces, the nose or the larynx.

Symptoms and signs

1. The onset may be insidious without obvious fever. But the pulse is rapid and there may be marked exhaustion and general malaise.

2. Examination of the throat reveals that the tonsils are covered by a greyish-white membrane. This membrane may extend over the soft palate and cannot be wiped off with a swab. The breath has a musty smell.

3. The tonsillar glands in the neck are enlarged, giving the neck a swollen appearance.

4. In nasal diphtheria, the membrane is confined to the nose, causing a blood-stained nasal discharge.

5. When the membrane involves the larynx, breathing becomes obstructed and the trachea may have to be opened surgically (tracheostomy) to allow the child to breathe.

6. Myocarditis may be caused by the toxins produced by the diphtheria bacilli. The pulse becomes very rapid, the blood pressure falls and death can follow.

7. Paralysis of the nerves and muscles may also be caused by the toxins, leading to difficulty in breathing and swallowing.

Diagnosis. A throat swab is taken and sent to the laboratory for culture. This will reveal the presence of the diphtheria bacillus.

Treatment

Once the diagnosis of diphtheria is suspected, it is best to give treatment straight away without waiting for the result of the throat swab. This is because the diphtheria toxin can spread so rapidly. Diphtheria antitoxin is injected intramuscularly, usually in a dose of 24,000 units. In cases more severe or collapsed, a bigger dose may be given intravenously. In addition, penicillin should be administered to overcome the spread of the bacilli.

Prevention

Epidemics of diphtheria used to be a feature of town life and special fever hospitals were built to accommodate these and similar cases. Thanks to the success of the immunisation programme, the disease has almost been eradicated. Inoculation against diphtheria is combined with vaccines against whooping cough and tetanus (triple vaccine) and given to babies at approximately 3 months, at 5 months and again 10 months. Booster doses may be given at 5, at 11 and at 18 years.

Toohey's Medicine for Nurses. Arnold Blomm,'

Stephen Bloom, London: Longman Group Limited, 1986

A.Choose the correct answer.

1.Which of the following is not the way of transmission of diphtheria to other people?
   a) using objects (e.g. handkerchiefs) of an infected person
   b) blood transfusion
   c) sneezing directly in the air
   d) moisture ejected in the air from a person's throat, nose or mouth
2. The incubation period is typically
   a) 1-12 days
   b) 5-7 days
   c) 2-4 days
   d) 1-7 days
3. Diphtheria is often a disease of
   a) warm seasons
   b) hot seasons
   c) cold seasons
   d) all seasons
4. The most common type of diphtheria is
   a) faucial (throat) diphtheria
   b) skin diphtheria
   c) laryngeal diphtheria
   d) nasal diphtheria
5. Diphtheria may not cause
   a) myocarditis
   b) paralysis
   c) death
   d) anemia
6. Which of the following does not usually help confirm diagnosis ?
   a) grayish-white membrane in the throat
   b) investigation of blood serum
   c) laboratory culture
   d) pulse measurement
7. Which of the following is not a sign or symptom of this disease ?
   a) slow pulse
   b) large tonsils
   c) difficulty in breathing (dyspnea)
   d) blood in nasal discharge
8. The treatment of diphtheria does not include
   a) penicillin injection
   b) tonsillectomy
   c) injection of diphtheria antitoxin
   d) tracheotomy
9. Prevention against diphtheria includes
   a) immunization
   b) hygiene
   c) isolation of the patient
   d) all of them

B. Answer the following.

1. What is the cause of diphtheria ?

2. Which type of diphtheria is most dangerous?

3. How does a healthy person become infected ?

4. What is the epidemiology of diphtheria ?

5. What is the most common type of this disease ?

6. What are the signs and symptoms found in the throat ?

7. How is diphtheria diagnosed ?

8. What medicines are used for treatment ?

9. What can be done to prevent epidemics ?

10. Which parts of the body may become infected by diphtheria ?

C. In Turkish, write everything you understand from the text.

APPENDIX J: Idea Units in Text 4

DIPHTHERIA

1. Causes
2. Infection with diphtheria bacillus
3. of which there are several strains,
4. the gravis strain being the most severe.
5. Spread. Mainly by droplet infection.
6. Indirect spread
7. (e.g. by sucking infected pencils)
8. also often occurs.
9. Incubation period.
10. Short- two to four days.
11. Incidence.
12. Children are chiefly affected,
13. although diphtheria may also be seen in adults
14. especially during epidemics.
15. Winter is the most usual season for diphtheria.
16. Pathology.
17. The illness takes the form of a typical local lesion
18. with a severe general toxaemia.
19. The local lesion is a membranous exudate
20. which usually occurs in the throat
21. causing faucial diphtheria.
22. Less often it is situated either in the nose (causing nasal diphtheria)
23. or in the larynx (causing laryngeal diphtheria).
24. Combined lesions may occur
25. in rarer cases
26. skin diphtheria may be present.
27. Although the organisms remain in the membrane
28. they produce a very powerful toxin
29. which causes general toxaemia.

30. The toxin particularly attacks the heart muscle (myocardium)
31. causing an acute myocarditis,
32. and the nervous system,
33. causing various forms of paralysis.
34. Diphtheria can affect primarily the fauces
35. the nose
36. or the larynx.
37. Symptoms and Signs.
38. (1) The onset may be insidious
39. without obvious fever.
40. But the pulse is rapid
41. and there is marked exhaustion
42. and general malaise.
43. (2) Examination of the throat reveals that
44. the tonsils are covered with greyish white membrane.
45. This membrane may extend over the soft palate
46. and cannot be wiped off with a swab.
47. The breathe has a musty smell.
48. (3) The tonsillar glands in the neck are enlarged,
49. giving the neck a swollen appearance.
50. (4) In nasal diphtheria,
51. the membrane is confined to the nose
52. causing a blood-stained nasal discharge.
53. (5) When the membrane involves the larynx,
54. breathing becomes obstructed
55. and the trachea may have to be opened surgically (tracheostomy)
56. to allow the child to breathe.
57. (6) Myocarditis
58. may bc caused by the toxins produced by the diphtheria bacilli.
59. The pulse becomes very rapid,
60. the blood pressure falls
61. and death can follow.

62. (7) Paralysis of the nerves
63. and muscles
64. may also be caused by the toxins,
65. leading to difficulty in breathing
66. and swallowing.
67. Diagnosis.
68. A throat swab is taken
69. and sent to the laboratory for culture.
70. This will reveal the presence of diphtheria bacillus.
71. Treatment.
72. Once the diagnosis of diphtheria is suspected
73. it is best to give treatment straight away
74. without waiting for the results of the throat swab.
75. This is because the diphtheria bacilli can spread so rapidly.
76. Diphtheria antitoxin
77. is injected intramuscularly
78. in a dose of 24,000 units.
79. In cases more severe
80. or collapsed
81. a bigger dose may be given
82. intravenously.
83. In addition, penicillin should be administered
84. to overcome the spread of the bacilli.
85. Prevention.
86. Epidemics of diphtheria used to be a feature of town life
87. and special fever hospitals were built
88. to accommodate these and similar cases.
89. Thanks to the immunisation programme,
90. the disease has almost been eradicated.
91. Inoculation against diphtheria
92. is combined with vaccines
93. against whooping cough

94. and tetanus
95. (triple vaccine)
96. and given to babies
97. at approximately 3 months,
98. at 5 months,
99. and again at 10 months.
100. Booster doses may be given
101. at 5,
102. at 11,
103. and at 18 years.

NUMBER OF UNITS: 103

APPENDIX K: The Scores of the Subjects in Test 1

No. of Ss.	Group 1 (control)			Group 2 (experimental)		
	m. c.	o.e.	i.u.	m. c.	o.e.	i.u.
1	4	4	13	4	3	17
2	4	3	10	3	1	11
3	-	-	-	1	3	3
4	3	4	12	4	2	12
5	5	4	21	-	-	-
6	5	7	34	2	5	16
7	3	3	8	5	5	19
8	5	5	13	4	6	5
9	6	4	16	-	-	-
10	3	0	19	4	3	14
11	3	2	14	2	4	12
12	6	2	8	3	5	18
13	3	4	8	3	6	24
14	4	2	14	4	2	10
15	5	5	7	4	2	11
16	5	2	11	6	5	9
17	4	4	6	5	5	11
18	5	2	17	1	4	12
19	4	3	13	4	4	12
20	6	1	5	5	3	7
21	5	2	8	4	3	10
22	5	0	9	6	5	13
23	3	4	13	3	3	16
24	5	4	17	4	2	4
25	4	5	11	5	5	8
26	5	3	8	3	5	13
27	5	5	25	4	2	4
28	5	4	25	4	6	4
29	3	5	3	4	2	5

m.c= multiple choice questions, o.e.= open ended questions, i.u.= idea units

APPENDIX L: The Scores of the Subjects in Test 2

No. of Ss.	Group 1 (control)			Group 2 (experimental)		
	m. c.	o.e.	i.u.	m. c.	o.e.	i.u.
1	6	6.5	18	4	4	58
2	3	3.16	23	4	4.66	21
3	4	3.83	23	4	2.83	22
4	6	3.25	33	3	3.83	21
5	4	5.33	34	4	3.5	20
6	6	8.5	44	3	3.33	35
7	2	2.0	14	4	5.49	28
8	-	-	-	5	3.16	22
9	5	7.25	33	4	6.5	39
10	3	2.49	24	-	-	-
11	6	6.5	26	5	6.16	37
12	4	5.83	21	5	5.5	43
13	6	6.5	12	1	5.33	39
14	4	3.83	19	4	4.16	16
15	6	6.5	13	6	6.16	25
16	3	1.5	25	5	4.33	20
17	5	2.5	23	6	3.5	24
18	4	3.26	25	4	4.33	27
19	1	1.5	24	2	6	28
20	3	3.83	37	4	6	24
21	4	4.16	15	5	4.99	26
22	4	2.5	21	5	3	21
23	4	6	18	4	4.49	54
24	4	1.83	21	4	4.32	30
25	2	5.07	25	1	3.5	26
26	2	4.16	34	2	3.5	26
27	6	4	38	4	4.16	32
28	5	5	22	4	3.66	28
29	2	4.82	20	5	6.16	25

APPENDIX M: The Scores of the Subjects in Test 3

No. of Ss.	Group 1 (control)			Group 2 (experimental)		
	m. c.	o.e.	i.u.	m. c.	o.e.	i.u.
1	7	5.93	32	5	7.83	66
2	3	6.57	36	5	3.72	39
3	6	7.9	57	4	5.57	23
4	4	4.9	54	5	3.82	44
5	6	7.9	70	5	6.23	35
6	7	8.73	78	4	5.91	57
7	5	5.23	16	5	7.9	41
8	3	3.97	27	6	5.12	37
9	4	6.64	59	6	6.24	65
10	4	5.56	49	5	7.59	40
11	4	5.96	39	4	7	35
12	4	5.89	26	4	8.1	57
13	2	7.76	24	5	5.37	40
14	4	4.92	32	6	5.73	38
15	4	2.24	27	3	5.26	21
16	2	5.56	23	-	-	-
17	3	5.1	21	6	7.28	36
18	2	6.57	32	5	7.24	51
19	3	5.26	34	4	7.07	45
20	5	5.49	39	4	5.6	55
21	7	7.1	40	4	8.37	68
22	3	4.24	59	6	4.92	26
23	3	4.63	28	4	7.83	60
24	2	6.29	33	5	5.73	42
25	3	3.93	33	5	5.54	35
26	4	6.9	46	5	5.54	38
27	6	6.17	75	4	6.56	35
28	3	5.29	38	5	4.57	28
29	-	-	-	4	2.9	21

APPENDIX N: The Scores of the Subjects in Test 4

No. of Ss.	Group 1 (control)			Group 2 (experimental)		
	m. c.	o.e.	i.u.	m. c.	o.e.	i.u.
1	7	2	33	6	5.58	48
2	5	4.41	6	9	4.74	44
3	4	4.75	25	9	3.58	39
4	2	2.25	22	6	4.49	42
5	5	5.83	38	9	3.74	40
6	7	9.0	65	9	5.58	53
7	-	4.24	12	6	5.5	25
8	6	3.24	33	5	2.875	10
9	6	6.58	46	7	6.785	60
10	6	4.5	34	7	3.83	37
11	4	1.25	25	7	5.58	34
12	7	5.49	9	7	4.74	39
13	7	4.49	14	5	4.25	51
14	0	4.58	8	7	4.24	35
15	5	4.49	17	7	7.08	25
16	7	1	23	5	5.455	40
17	6	4.75	15	6	3.41	36
18	-	-	-	6	6.74	44
19	6	4.08	33	3	3.99	44
20	5	2	15	5	5.74	51
21	4	5.66	29	5	3	32
22	6	5.24	23	7	3.08	39
23	6	5.74	17	-	-	-
24	7	6.58	23	5	5.08	33
25	6	3.83	45	5	5.58	37
26	7	4.25	35	7	5.25	28
27	7	2.25	63	7	6.24	24
28	8	5.41	35	4	0	0
29	8	2.83	25	5	3.49	15

APPENDIX O: Statistical Tables

The Results of the t-Test for Pilot Study

	n	$\bar{x}$	sd	se	d.f.	t	p
G1		12.46	1.37	0.26	54	-0.25	p>0.05
G2		12.55	1.31	0.25			

The Results of the t-Test for Multiple Choice Questions in Test 1

	n	$\bar{x}$	sd	se	d.f.	t	p
G1 (control)		4.39	0.99	0.19	53	2.14	p<0.05
G2 (experimental)		3.74	1.26	0.24			

The Results of the t-Test for Multiple Choice Questions in Test 2

	n	$\bar{x}$	sd	se	d.f.	t	p
G1 (experimental)		4.07	1.49	0.28	54	0.29	p>0.05
G2 (control)		3.96	1.26	0.24			

The Results of the t-Test for Multiple Choice Questions in Test 3

	n	$\bar{x}$	sd	se	d.f.	t	p
G1 (control)		4.04	1.55	0.29	54	- 2.17	p<0.05
G2 (experimental)		4.75	0.80	0.15			

The Results of the t-Test for Multiple Choice Questions in Test 4

	n	$\bar{x}$	sd	se	d.f.	t	p
G1 (experimental)		6.29	1.54	0.29	53	0.82	p>0.05
G2 (control)		5.96	1.37	0.26			

The Results of the t-Test for Open Ended Questions in Test 1

	n	$\bar{x}$	sd	se	d.f.	t	p
G1 (control)		3.32	1.61	0.30	53	-1.00	p>0.05
G2 (experimental)		3.74	1.48	0.29			

The Results of the t-Test for Open Ended Questions in Test 2

	n	$\bar{x}$	sd	se	d.f.	t	p
G1 (experimental)		4.34	1.87	0.35	54	-0.44	p>0.05
G2 (control)		4.52	1.12	0.24			

The Results of the t-Test for Open Ended Questions in Test 3

	n	$\bar{x}$	sd	se	d.f.	t	p
G1 (control)		5.81	1.40	0.26	54	- 0.75	p>0.05
G2 (experimental)		6.09	1.41	0.27			

The Results of the t-Test for Open Ended Questions in Test 4

n	$\bar{x}$	sd	se	d.f.	t	p
G1 (experimental)	4.31	1.79	0.34	54	-0.72	p>0.05
G2 (control)	4.63	1.49	0.28			

The Results of the t-Test for Idea Units in Test 1

n	$\bar{x}$	sd	se	d.f.	t	p
G1 (control)	13.14	6.88	1.30	53	1.23	p>0.05
G2 (experimental)	11.11	5.20	1.00			

The Results of the t-Test for Idea Units in Test 2

n	$\bar{x}$	sd	se	d.f.	t	p
G1 (experimental)	24.46	7.98	1.51	54	-1.95	p>0.05
G2 (control)	29.18	10.02	1.89			

The Results of the t-Test for Idea Units in Test 3

n	$\bar{x}$	sd	se	d.f.	t	p
G1 (control)	40.25	16.55	3.13	54	- 0.45	p>0.05
G2 (experimental)	42.07	13.36	2.52			

The Results of the t-Test for Idea Units in Test 4

n	$\bar{x}$	sd	se	d.f.	t	p
G1 (experimental)	27.43	14.81	2.80	54	-2.26	$p<0.05$
G2 (control)	35.89	13.11	2.48			