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TEACHING READING IN ESP CONTEXT :
A COMPARISON OF STRUCTURAL METHOD
AND INTERACTIVE METHOD

U

(YÜKSEK LİSANS TEZİ)

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ESKİŞEHİR, 1989

To my family ...

ACKNOWLEDGEMENTS

I am especially indebted to Assoc.Prof.Gül Durmuşođlu, who was a great help to me in contributing to my thesis and for the care that she has made throughout my study.

I am especially grateful to Assoc.Prof.Zulâl Balpınar for the contribution to my thesis with her valuable comments.

I wish to thank Assoc.Prof.Ahmet Konrot for his assistance and valuable help.

I am also indebted to Prof.Necila Çömlekçi, Chairman of Statistic Department, Faculty of Science and Letters, who kindly helped me in the statistical analysis.

I am also thankful to Mr.Ekrem Ülsever, who always supported me throughout my study.

My special thanks go to Jill and Bob Blamires, who very kindly and patiently proofread my thesis.

May I also thank Akile Yıldırım, Ayşe Uğuzavcı and Müge Armatlı, for their friendly assistance with the statistical interpretation.

Finally, I would like to thank Filiz Duttibi and Saime Erdođan, who helped me for typing the thesis with the utmost care.

ABSTRACT

This study, which consists of five chapters, aims at comparing two reading methods in ESP context, i.e. Structural method and Interactive method in teaching reading in English as a foreign language. The study was administered to two groups whose levels are the same.

In the first chapter, the various purposes for teaching reading from different standpoints are emphasized. The brief outline of various language teaching to reading is summarized. At the end of the first chapter, the purpose of this study, and its scope is briefly explained.

The second chapter is concerned with approaches to foreign language teaching. How these approaches handle reading is reviewed. Moreover, the place and the importance of ESP in reading classes, and requirements of reading in ESP context are strongly indicated. Finally, language tests are mentioned for clarifying the testing of reading in ESP context. Test are reviewed as a measurement of achievement.

The third chapter deals with the research design, selection of subjects, data collection and data analysis. Limitations and methodological assumptions are also seen in this chapter.

The fourth chapter presents statistical analysis which derived from the data obtained from the tests.

In the fifth chapter, statistical interpretations are discussed and the conclusion is drawn by stating distinctive approaches to reading ESP. The methods compared in this study are diametrically different. It is concluded that the Interactive method is more effective in developing reading skill in ESP context.

SYMBOLS AND ABBREVIATIONS

h	Main group subjective
i	Sub-group subjective in a main group
α	Subjective of any observation in any sub-group
n_{hi}	Number of subjects in any sub-group
N_h	Number of observations in three sub-groups
Y_{hi}	Addition of terms of three sub-groups
Y_h	Addition of terms of main group (Addition of Y_{hi})
Y	Addition of terms of two main groups (Addition of Y_h)
y_{hi}	Value of each term (score received by each student)
Σ	Total
$<$	Smaller than
EFL	English as a Foreign Language
ESP	English for Specific Purposes
ELT	English Language Teaching

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CHAPTER I
INTRODUCTION

To define what reading is, the purpose of reading should be clarified. There is a variety of reasons for reading. Nuttall (1982: 3) states that "various reasons for reading influence that way we read." Undoubtedly, there are always big differences which distinguishes reading a telephone index to a newspaper, or from a detective novel to a textbook.

Nuttall (1982) advocates at least three different word groups before defining reading.

- (a) understand interpret meaning sense etc.
- (b) decode decipher identify etc.
- (c) articulate speak pronounce etc.

Each group brings a different definition and aim to reading. Before presenting the chosen aim of this study, it would be convenient to focus on the general concept of reading.

If the words in (b) were chosen to define what reading is and to explain what the aim of this kind of reading is, then language teachers would probably insist on the definition presented below:

"Reading is a process which decodes phonetic transcription of a text into meaningful speech sounds" (Gardner, 1978: 65).

If the words in (c) were chosen to give the definition of reading and to deal with this side of reading, the reading lesson might be seen as an opportunity to teach pronunciation, and encourage fluent and expressive speaking.

This study deals with the words in group (a) and others with similar meanings. Because the aim of the reading here is to develop students' ability to comprehend the subjects related to their specific field of study. Before going any further, it might be useful to look at the general concept of reading.

Lado (1961: 223) indicates that "reading in a foreign language consists of grasping meaning in that language through its written representation." According to Vallette (1967), "reading consists of two fundamental bases which build a particular language: structure and vocabulary." Reading is constructed on the grammatical structures and lexical items in which the students will gain general control of the language. To realize good reading, some essential points should be underlined. These are mainly:

- 1) Students must know the graphic symbols of writing correctly to comprehend the general meaning of the text.
- 2) Students should be able to guess the lexical items and to derive the meaning of the text from the context.
- 3) Students must be aware of syntactical patterns and morphological forms in informal writing.
- 4) Students should be able to grasp the writer's purpose and main idea, then draw an exact conclusion after reading the text.

5) Finally, they are to understand the writer's attitude toward the subject (Harris, 1969: 59).

Reading comprehension can not be regarded simply as a process through which a reader transfers meanings from speech to a phonetic transcription of a text. Language teachers want students to develop the skills needed to extract the content from the language that expresses it. These are the skills they need in order to become effective independent readers (Nuttall, 1982: 31).

Although reading comprehension is one of the basic skills to be acquired during a language course, it may be the least teachable of the four language skills. The teacher can not play an active role while students are practising reading comprehension. The first thing teachers must do to develop reading comprehension is to determine their own goals (Chastain: 1976: 314):

- (1) reading for pleasure;
- (2) reading for message;
- (3) reading for specific needs.

This study attempts to focus on reading for understanding and interpretation for specific needs and to present it in most the effective method.

ESP (English for Specific Purposes) is not a distinct discipline (Kennedy, 1980). It is an attempt to improve the situations where students have not enough experience in English and knowledge in their field. Broadly speaking, the purpose of ESP is to increase and develop the ability of tertiary students who need to acquire knowledge in their specialities or students who need the language for job-related activities (Harvey, 1984:24). All these generally indicate the purpose of ESP.

With the development of English language teaching during the last two decades, ESP has focused attention on the students communicative needs. These needs are usually explained by academic studies, occupational requirement, vocational training programmes or some professional studies (Mackay and Mountford, 1978).

ESP has good applications in the teaching of English to students for their occupation. All the skills are applicable in accordance with their own aims. The aim in reading skill-where possible- is to ensure that students have the ability to read occupational reading materials. On the other hand, reading skill cannot be developed in isolation from the other skills.

A variety of strategies have been developed in ESP in order to develop reading skills which are suitable for the vocational needs of different courses. Hajjaj (1986) views that there are many different programme models which change from place to place. It is possible to see the variations whose design is the result of the language needs itself and vocational oriented language.

Following the discussion on reading and reading in ESP in particular, there is a need to discuss the relationship between language teaching and language testing.

There was a common view that testing is separate from teaching and learning. It was considered to be waste of valuable time at the beginning of this century (Heaton: 1975).

There has been considerable research carried out on the teaching and testing in the recent years, and now it is claimed that testing and teaching are closely related to each other. In other words, the language test is a natural means of class improvement and serves both learners and teachers for measuring and evaluating

performance (Oller, 1979). Secondly, the test is a type of learning activity. It plays a great role in the development of language teaching. Thus, language testing reflects language teaching.

Listening, speaking, reading and writing are four main skills in testing language skills. Each skill has a number of different aspects which are closely interrelated in actual language use (Rivers, 1968). According to Heaton (1975), "each separate skill can be measured on its own although it is difficult to separate one skill from another." The importance of testing in language teaching will be further discussed in the following chapters.

1.1. APPROACHES TO TEACHING READING

There are various language teaching approaches that have been used during this century. The following approaches will be outlined briefly from the point of view of reading. The common features of each are stated by Celce-Murcia and McIntosh (1979: 3-4) as below:

1.1.1. Grammar - Translation Approach

It is typically used in teaching Greek and Latin, and generalized to modern languages.

- Much vocabulary is taught in the form of lists of isolated words.
- Instruction often focuses on the form and inflection of words.

- Reading of difficult classical texts is begun early.
- Little attention is paid to the context of texts.
- Little or no attention is given to pronunciation.

1.1.2. Direct Approach

It is a reaction to the extension of the Grammar-Translation approach to the teaching of modern languages.

-Lessons have a brief anecdote or dialogue in the target language.

-The preferred type of exercise is a series of questions in the target language based on the anecdote or dialogue, and answered in the target language.

-Advanced students read literature for comprehension and pleasure; literary texts are not analyzed grammatically.

1.1.3. Reading Approach

This approach is selected for practical reasons; for people who do not travel abroad, reading is the one usable skill.

-The objectives in priority order are (a) reading ability, (b) current and historical knowledge of the country where the target language is spoken.

-Only the grammar necessary for reading is taught.

-Minimal attention is paid to pronunciation.

-From the beginning, a great amount of reading is done, both in and out of the class.

-The acquisition of vocabulary is considered more important than grammatical skills.

1.1.4. Audio-Lingual Approach

It is a reaction to the Reading Approach, much is taken from the Direct Method, the rest from behaviourism.

-Language itself is speech, not writing. Reading texts reinforced the spoken language and provided cultural information that contextualized speech (Silberstein, 1987: 28).

-Skills are sequenced: listen, speak, read and write.

-The process of learning to read is fairly mechanical because language is a set of habits.

-There is a tendency to manipulate language and disregard content.

-Great importance is attached to pronunciation, with special attention being paid to intonation.

1.1.5. Cognitive Approach

It is the view of psycholinguists who advocate reading based on insights derived from contemporary linguistics and cognitive psychology (Silberstein: 1987: 30).

-There is emphasis on communication across the disciplines of linguistics and psychology.

-The importance of comprehension-especially listening comprehension-is emphasized.

-Readers must be active and decision-makers who contribute more information than the print on the page.

-The written language skills (reading and writing) and the spoken language skills (listening and speaking) are viewed as

being of equal importance. Clarke and Silberstein (1977) point out that "skill in reading depends upon the coordination of a number of special skills and strategies."

-There is contextualization of all teaching points through the use of visual aids, stories, or other appropriate means.

-Pronunciation is de-emphasized, since it is considered futile for most students to try to sound like native speakers.

1.1.6. Interactive Approach

"Initially, many assumed that only advanced readers could benefit from this approach to reading. Gradually, however, reading skills have appeared in beginning texts as well. It has become evident that successful reading at all levels entails the cognitive processes delineated above. In fact, contemporary "interactive approaches" to reading extend and elaborate psycholinguistic theory by focusing more precisely on the important role of cognition in an interaction of reader and text" (Silberstein: 1987: 31).

-Reading does not mean to decode phonetic transcriptions in a text. The writer, the reader and text each have a unique contribution to create meaning if communication is to take place. (Nuttall; 1982).

- "Reading skills" within a psycholinguistic framework provide opportunities to read a variety of passages for different purposes; skimming and scanning techniques are applicable to the Interactive method.

-Language skills - even in difficult syntax and unfamiliar vocabulary (guessing meaning from context) - are achieved all levels of students' with prior knowledge (Silberstein: 1987). In other words, pre-existing knowledge structure helps students to understand text easier and better. This theoretical thought brings "schema theory" whose function is to provide better understanding from the text. The lack of schema availability prevents comprehension even simplified text (Silberstein: 1987).

-Effective reading relies on two kinds of knowledge processing called "bottom-up" and "top-down". The process which is based on information from the text and matched with student's schemata is called "bottom-up". "Top-down process occurs when the student uses prior knowledge to predict about the data he will meet in a text (Silberstein: 1987).

-An interaction between thought and language determine students efficient reading. Students are gaining some information, ideas, attitudes and beliefs by means of linguistic knowledge and knowledge of the world for making linguistic predictions, developing their reading skills and getting information at a reasonable speed.

1.2. PROBLEM

The problem mainly stems from having no relevant and effective reading method at the Civil Aviation School. Having no relevant reading method affects ESP lessons from the teaching reading point of view.

At the Civil Aviation School, language teachers have difficulty in teaching vocational reading. The lack of reading material is the main problem of language teachers. This affects the choice of proper reading methodology.

The teachers at Turkey's only Civil Aviation School need to choose and apply reading methods. To suggest a vocational reading method against structural method will present an alternative to language teachers at the school.

1.3. PURPOSE

The aim of this study is two-fold. Firstly, the two teaching reading methods (i.e. structural vs. interactive) will be compared in ESP reading classes.

In this study, Structural method is taken as a combination of Grammar-Translation method, Direct method, and Audio-Lingual method. On the other hand, Interactive method is taught through communicative techniques. Their perspectives to reading are quite different. That is, they offer two diametrically different choices to teaching reading.

To compare the two reading methods, students' performance in two groups is evaluated by means of achievement tests. The teacher - made tests usually inform the teacher about the appropriateness of the method - or target. They give sufficient clues and quick remedies about the course. It is one of the reliable and applicable ways of evaluating what is taught and what is learnt in language teaching.

In the scope of this study, the following point will be discussed:

Is there a significant difference between two groups who were taught through Structural method and Interactive method?

In accordance with the above question, the following questions will be answered:

1) Is there a significant difference between Group A and Group B in Test-1?

2) Is there a significant difference between Group A and Group B in Test-2?

3) Is there a significant difference between Group A and Group B in Test-3?

4) Is there a significant difference between Group A and Group B in Test-4?

Secondly, this study aims at preparing sample ESP reading material for the students in Civil Aviation according to the outcome of the above study.

CHAPTER II

REVIEW OF LITERATURE

2.1: THE PLACE OF READING IN APPROACHES TO FOREIGN LANGUAGE TEACHING

Language teaching is not a new subject matter. Language learning and teaching have been going on for ages. People studied languages without being conscious of the general facts of language before a remarkable number of studies were started. Language teaching has taken an important place in social sciences since the end of the 19th century. The contributions of psychology, sociology, anthropology and the emphasis of linguistics with various branches - psycholinguistics, sociolinguistics, anthropological linguistics, philosophical linguistics - have helped language teaching in taking its important place on a large scale.

In this chapter, the main six methods are taken into account. These six approaches are chosen because they are all currently used today. A brief overview is presented here only to show different treatments of reading skill in the different methods rather than historical development.

Within the framework of this study, Grammar - Translation method, Direct method, Reading method and Audio-Lingual method are grouped as "Structural method" and "Interactive method" is used for both Cognitive method and Interactive method itself. This does not mean that Grammar-Translation method, Direct method, Reading method and Audio-Lingual method are exactly the same or have the same features. The reason for choosing the title Structural method for all these methods-mentioned above is that they all seem to be global, and are quite mixed with each other when classroom applications of the methods for reading are taken into consideration. In all, practice shows common ways of teaching reading in the classroom. On the other hand the same can be said for Interactive method which is as a cover term for Interactive and Cognitive methods.

2.2. STRUCTURAL METHOD

2.2.1. The Grammar - Translation Method

The main purpose of this method is to help students read foreign language literature. Larsen and Freeman (1986) indicate that grammar rules and vocabulary are emphasized through reading. Students are taught grammatical structures deductively. That is, rules are given to students. They are memorized and applied to examples by students. Students are aware of grammar rules of the target language and their corresponding ones in their native language. New vocabulary is explained by the teacher.

Salimbene (1983) points out that this method aims at developing reading and writing skills rather than listening and speaking. Each student reads a few lines from text and is asked to translate it from target language into the native language. After reading a text, comprehension questions are answered in target language based on their comprehension of the text. Larsen-Freeman (1986) say that questions generally point out three things; questions for information, questions for understanding, questions for requiring student's own experience. Literary language provides students to find an opportunity to see some aspects of the culture of the foreign language. According to this method, it is believed that students develop their minds mentally by means of studying foreign language (Rivers, 1982). Teachers are the authority in class. The Grammar - Translation method is still used today in various ways (Larsen-Freeman, 1986).

2.2.2. The Direct Method

The purpose of teaching a foreign language in the Direct method is to communicate. In other words, the Direct method has appeared for the sake of communication. This method has started as a reaction to Grammar - Translation method (Finocchiaro, 1982 and Larsen-Freeman, 1986).

Meaning should be grasped directly in the target language without translating into the native language. Language is a means of communication which is associated with the speaking skill (Larsen-Freeman, 1986). The reading skill, however, will be gained through practice in speaking. Reading aloud provides to

correct students' pronunciation errors. Pronunciation is never de-emphasized. Questions and answers are a means of testing a reading lesson. Fill in the blank type exercises are used for evaluating without grammar rule or translation unlike the Grammar-Translation method. In most cases reading text is a model in developing the writing skill. The student - teacher relationship is more flexible in the Direct method than in the Grammar - Translation method. However, the communication still starts from the teacher and is carried on by the students. Teacher - centered classroom situation is still observed in this method.

2.2.3. The Reading Method

According to this method few students could speak any foreign language correctly and fluently after graduation from high school or even college. A committee of American and Canadian educators stated that the reading skill was undermined (Finocchiaro, 1982). This method claims that it is impossible to learn to understand or speak a foreign language in a limited time. What is stressed here is that, reading has a remarkable importance in language teaching. All kinds of stories - original, simplified and adapted - are used to explain grammatical structures instead of explaining grammar as a course. As Celce-Murcia and McIntosh (1979) inform that to know historical and current knowledge of the country where the target language is spoken is desirable in terms of reading. Pronunciation is not so important as vocabulary.

2.2.4. The Audio-Lingual Method

This method is an attempt to use language as a communication vehicle by speech, not writing. Listening and speaking are superior to reading and writing. Although the feature communication is shared with the Direct method, the ways of looking at language are quite different. According to this method, language is fairly mechanical due to a process of habit formation. For that reason pattern practice is repeated many times to enable students to have enough and sufficient time for learning. Students should learn to use target language automatically without hesitating or stopping. The teacher presents new vocabulary and structures by means of dialogues. Language through mimicry and memorization ("mim" - "mem") and through analogues so as to gain language skills as a habit. There are several ways to teach structure such as repetition, transformation, substitution, question-answer drills, etc. Pattern drills are based on analogies (Harsh, 1982 and Salimbene, 1983).

The way of learning target language should be the same as acquisition of native language. In this view, students do not memorize grammar rules. To acquire structural patterns is paralleled by vocabulary learning at the same time. By listening, students should be able to produce the same utterances. Pronunciation is as important as listening. Reading is an extension of the oral study they have done before (Larsen-Freeman, 1986).

2.3. INTERACTIVE METHOD

Although two methods - Cognitive method and Interactive method - will be dealt with separately below, in the application part of the study they will be considered as one Interactive method. As Silberstein (1987) points out that Interactive method has developed as an extension to the Cognitive method. Some principles which will be discussed below have been shared by both methods on a large scale.

2.3.1. The Cognitive Method

All the methods mentioned so far have had a structural basis which is primarily concerned with language as a unique model. The disciplines of linguistics and psychology work on communication together through language teaching in the Cognitive method. The Cognitive method has viewed language as a creative process, not as a habit formation. That is, according to Larsen-Freeman (1986), language is not a product of habit formation; it is considered as a procedure that learners use their own cognition, or process and discover rules of language while they are acquiring.

The principles in Cognitive method are that students are more active and responsible for their own learning. Errors are inevitable and a way of checking their "hypothesis" while they are learning. Learning is achieved with their own "inner criteria" for correctness.

Four skills are emphasized in their progress from the beginning of the course. As Wiriyachitra (1982) and Larsen-Freeman

(1986) point out that students are asked to build meaning themselves. Meaning is gained by perception, not by translation. Reading is seen as an active process. It is also a process in which vocabulary, syntax, culture can be seen. Reading strategies suggested in this method aim at developing students' comprehension: Skills and strategies for comprehending within a psycholinguistic framework provide opportunities to read a text for different purposes. Explaining reading strategies used in this method might be useful.

Students are asked to find facts located in the text by skimming. To glance rapidly through a text to obtain the general sense of it is desirable. Specific questions can be answered by glancing quickly through the text.

Scanning is used to glance rapidly through a text to find out a specific piece of information or to get initial impression of the text. This kind of reading strategy requires to scan for a single word, or a specific fact.

Intensive and extensive reading are two complementary and necessary components of reading. Each one reflects different classroom purpose and procedure. Brumfit (1977) renewed the terms as "reading for accuracy" and "reading for fluency". Intensive reading: or reading for accuracy comprises slow and careful reading in which every word, phrase and grammatical point is taken into account besides the meaning. It involves detailed understanding of text which is read silently.

Extensive reading, or reading for fluency, is a kind of reading which gets the general idea or gist of a passage but does not note details. It does not ignore meaning. It requires

interest and to train students to allocate it in reading. In classroom, some reading texts at intermediate and advanced level can be divided between intensive and extensive reading in accordance with general aims of the lesson and specific purposes of the text.

Teachers let students become more independent and self-confident. Student-centered classroom situation is observed. Teachers help students when they need help. Teacher is not a model.

2.3.2. The Interactive Method

This method aims at contribution of meaning by students, not teacher. According to Nuttall (1982), meaning is an interaction between a text and the reader. That is, students read in order to find out things that he has not already known. Teacher help students develop the skills which are necessary to make linguistic predictions and to comprehend meaning. Mc Donough (1981: 53) says that "reading is a highly complex process, and the language teacher has a large array of possible exercise types designed to encourage the development of strategies at each level and their integration."

Schema Theory is a theory which facilitates text comprehension with background-pre-existing-knowledge structures (Carrell and Eisterhold, 1983). This theory emphasizes the importance of background knowledge, stored hierarchically in the brain, which provides implicit information to students. Each student organizes his own schemata in accordance with the text based on prior knowledge. Prior knowledge is explained as student's own reading strategies dependent upon personal capacity, cultural

frame, and organization of reading materials. This method views that two kinds of knowledge processes are crucial in order to be an efficient reader; "bottom-up" and "top-down."

Bottom-up process (text-based processing) is based on information from the text which corresponds to the students schemata. Top-down process (knowledge-based processing) occurs when the students' prior knowledge enables him to predict what he will meet in the text. What is being recommended is that, effective reading should require bottom-up and top-down processes.

Teaching vocabulary is done by giving background knowledge in vocabulary practice during text study. Carrell (1985) indicates that teaching vocabulary should be offered in association with background information, related terms, preteaching vocabulary and background knowledge for sets of related passages (Silberstein, 1987).

Student-centered classroom situation is observed in this method. The teacher has different roles. Grabe (1986) provides a succinct description: "Briefly, the role of the teacher is to facilitate reading, raise consciousness, build confidence, ensure continuity, show involvement and demand performance."

2.3.2.1. Teaching Pre-techniques and Post-techniques in

Interactive Method

Interactive method presents the pre-reading techniques with various activities and post-reading evaluation with tests. The following explanations are main techniques and test types which are

used for pre-reading and post-reading.

Henry (1984) admonishes a strategy which can be done before concentrating on text.

Reader-Generated Questioning: After teacher writes the first sentence of a text, students are asked to write 10 questions about this sentence. It provides background information, motivation, and reading with curiosity.

Spack(1985) brings a strategy into teaching reading.

Write-Before-You-Read Technique: Students are asked to write their own experience about their opinion or event based on the topic they will read. They write for 10 or 15 minutes without attention to grammar. It is an another attempt to give background knowledge to student (Williamson, 1988).

This method is ~~not~~ against the reading strategies-skimming, scanning and extensive reading- As Williamson (1988 :7) points out that "findings reveal that the traditional question - answer limits student's comprehension by having them comprehend only what the questions ask for." Beside those reading strategies mentioned above, strategies based on anticipation exercise are presented. Anticipation exercises, consisting of word - finding and skimming can encourage students to get meaning in an effective way (McDonough, 1981).

Krashen (1985) suggests improving reading comprehension with several strategies.

1- Silent Reading Approach: Students read whatever they want in class and teacher does the same giving certain time (5-15 minutes).

- 2- Reading for pleasure: While students are reading for pleasure they gain improvements in comprehension and vocabulary.
- 3- Reading by teacher: It would be better if the teacher reads to students during class study. Students would get language and its structure better if text is read by the teacher.

After reading the text, the following interspersed questions generally involve predicting with relevant questions in text and referring back to the activities. Scrambled questions require students to order events, check meaning and practise vocabulary in context.

Another important point to be emphasized is that tests are also an extension of classroom activities as post-reading techniques. Reading comprehension tests especially multiple-choice tests, cloze tests and true-false items are ways of checking comprehension. The reason why they were chosen is that they are considered (Heaton, 1975) objective tests which are more reliable in evaluation. To correct them does not consume much time unlike traditional questions such as questions-and-answers. Students may not give exact answers and time is wasted by giving detailed answers in the traditional way of checking meaning. Henry (1984) supports this fact by indicating "testing comprehension with objective tests are more reliable than traditional questions". Silberstein (1987: 32) points out that "these reading activities encourage readers to consciously interact with and interrogate a text in order to create meaning."

2.4. LANGUAGE TEACHING AND ESP

English for Specific Purposes (ESP) has appeared with the development of English language teaching since 1960's. The field has developed rapidly and taken place in the language teaching world. ESP has become a current concept since relations gradually have brought a tremendous need to use English internationally in the conduct of science, technology and commerce. Kirkman (1984: 2) cites that ESP began to evaluate in the mid 60's in response to an awareness that certain types of learners had specialized needs that were not being sufficiently and efficiently met by wide-spectrum EFL course."

According to McDonough (1984: 4), ESP is not totally different from other areas of language teaching". The activities in ESP lessons performed in EFL class could be divided into groups in accordance with the aim of course.

EAP (English for Academic Purposes)

EVP (English for Vocational Purposes)

This study takes EVP into account for subjects who need language for job-related activities, in other words EVP studies provide a framework for focusing on students' vocational needs which is necessary during their education and their jobs. The term ESP is used in this study to indicate EVP in order not to concentrate on differences between EVP and EAP.

2.4.1. Reading Skill in ESP Course

ESP studies share the same skills to develop in reading, writing, listening and speaking related to a specific subject area. There is a great importance of reading in ESP. Firstly, it exposes students to read occupational periodicals, extracts from science magazines, reports, and other authentic sources. Students need to sharpen their reading skill for their specific fields. Secondly, students find an opportunity to master their occupational background knowledge and new information during ESP course. Thirdly, as Smith and Coffey (1982) say that these studies motivate students to take an active interest in their studies, that their knowledge of English can be quickly reactivated and redirected toward successful performance of their task.

In ESP, reading skill aims at getting available information for a specific field. The primary aim is to develop students' skill in a specific task through reading. Reading in ESP can be done by choosing reading strategies, speed reading, learning vocabulary in context and reading to find information based on the top-down process.

McDonough (1984: 64) says that one of the suggested methods to reading in ESP explores strategies involved in the reading process in some detail in which the University of Malaya ESP Project was based.

The approach in ESP study was launched in 1980 by the University of Malaya in collaboration with the Malaysia Ministry of Education and British Council, supporting interaction activities that provide opportunities for appropriate language use (Hysia,

1986 and Hajjaj, 1986). Hysia indicates that these activities had been designed for the students in law, business, commerce and public administration. The approach and methodology in this project have been suggested for more communicative ESP teaching.

Reading activities developed in this project placed particular emphasis on teaching students to activate and use background knowledge. One strategy based on pre-reading activities, provided students with the necessary background knowledge and trained them in accessing related information.

Hajjaj (1986) summarizes the reading strategies used in the Malaya Project in ESP for continuous information they are mainly:

1- Extensive reading is more necessary to ESP students.

Supporting activities for reading skills associated with extensive reading are mentioned below.

- a. Skimming develops students' understanding to get the main idea. Mackay and Mountford (1978) point out that the purpose in skimming is to draw the students' attention to the main points of merit in a given article, paper or book.
- b. Scanning allows students to scan large chunks of text quickly to find out specific information.
- c. Speed reading utilizes reading to get more comprehension of information in a short time. Silent reading gains students more comprehension in the shortest possible time. So, reading in ESP is associated with speed reading and silent reading.

(Broughton, Brumfit, Flavel and Pincas 1980, Hajjaj, 1986)

- d. Anticipation activities occur to build on ideas about content of text before reading. It generally incorporates skimming.
 - e. Guesswork activity means guessing the new vocabulary items through context.
 - f. Arrangement and organization activities expose students to practise content of text in order to understand the relationship of events or ideas to each other.
2. Intensive reading occurs if reading is based on highly technical texts. It is not desirable in EVP, but EAP, whose target is academic advancement into a specific branch, includes intensive reading while teaching various aspects of academic reading (Sekara, 1987).

As can be seen, there is a strong correspondence between the Interactive method and ESP Project suggested by the Malaya University.

2.5. TESTING IN LANGUAGE TEACHING

Testing and teaching are closely related to each other. Generally, they take two main tasks into consideration; what is taught and what is tested. In this way, testing is a way of providing feedback to review students' knowledge. It is an effective way for feedback and correcting errors that have been made during language learning. Students find opportunity to review their knowledge at the same time. In essence, it is an effective means of promoting learning.

2.5.1. Types of Language Tests

It is obvious that several kinds of language tests are required to have effective measurement on a particular course, depending on the lesson's aim, teacher's intention or general purpose of the course. Foreign language tests are generally divided into five groups; achievement or attainment, proficiency, prognostic or aptitude, diagnostic and placement tests.

2.5.1.1. Achievement or Attainment Tests

Achievement tests are used to measure what a student has learned through a course or syllabus. They are related to a classroom programme. Language teachers can measure how much of a syllabus has been learnt by means of these kinds of tests. They are helpful to make meaningful decisions about the method or syllabus design (Clark, 1972).

2.5.1.2. Proficiency Tests

These types of tests do not depend on a particular course because they are concerned with future performance rather than past learning. The aim of proficiency tests is to find out students' control on language. They take into account whether students have enough English in order to follow a particular course (Harrison, 1983).

2.5.1.3. Prognostic or Aptitude Tests

Prognostic, or aptitude tests are constructed to assess general ability to learn a foreign language before they begin. As Heaton (1975: 164) implies that "language learning aptitude is a complex matter, consisting of such factors as intelligence, age, motivation, memory, phonological sensitivity to grammatical patterning". It seems clear that these types of tests depend on many factors.

2.5.1.4. Diagnostic Tests

Diagnostic Tests are characterized with some degree of achievement and proficiency tests. They help language teachers identify specific areas of problems. Allen and Davies (1977) interpret diagnostic test as a key of language teachers to see specific weaknesses and strengths within the skills. They seek answers to find out what the students know, unlike achievement and proficiency tests they search for how much students have learned or know. The purpose of this type of test is to bring remedial actions to teaching by means of test results.

2.5.1.5. Placement Tests

A combination of achievement, proficiency and diagnostic tests generally create placement tests, whose purpose is to place a student at a certain level. They are widely used at courses where groups of incoming people with different experience and background.

2.5.2. Criteria of Language Tests

Formal language tests involve at least three qualities; Validity, reliability and practicality. Finocchiaro and Sako (1982: 24) use the word "formal" to distinguish these tests or examinations from brief, informal, daily or weekly teacher made tests.

2.5.2.1. Validity

A test is valid when it measures what it is intended to measure. In other words, testers should know what a test precisely measures. The test chosen by language teachers should really test one of the language skills which it is intended to measure. Allen and Davies (1977) indicate that validity in a language test generally relies on the content of the test.

2.5.2.2. Reliability

Reliability is a crucial criterion of a formal test in which a student has more or less the same result following a re-test with no language practice taking place between situations. That is, language tests should be a reliable measuring instrument.

2.5.2.3. Practicality

Practicality normally indicates time constraints administration, scoring and interpretation of tests in practical

consideration. Harrison (1983) admonishes that tests should be as economical as possible in time from the point of view of preparation, sitting and marking and in cost.

2.5.3. Teacher-Made Test Versus Standardized Tests

Standardized tests can be defined as tests which have been experimentally evaluated as valid and reliable. It is a systematic measurement of students' performance under certain conditions. Clark (1972) points out that the word "standardized" refers to the fact that tests are designed for administration in a carefully planned manner. Harris (1969: 1) says that "formal and large-scale standardized tests which are prepared by professional testing services to assist institutions in the selection, placement, and evaluation of students."

He adds that "classroom tests are generally prepared, administered, and scored by one teacher. These tests can be directly on course studies." In most cases, teacher-made tests are prepared for improving teacher's own classroom performance. They are natural means of class improvement and they serve to evaluate performance. They might be necessary because they are more consistent with the target of the lesson. Teacher-made tests are usually remedies to diagnose students' and syllabus' achievement or failure, and help them. According to Davies (1968), teachers have always made such tests for their own classroom, adopting from standardized tests. It is obvious that teachers can create their own classroom standardized tests if tests are reviewed by other language teachers. This does not mean that

teacher-made tests are far from being valid and reliable.

2.5.4. Testing Reading Comprehension

Reading comprehension is generally tested by giving a passage to students in a foreign language and asking them to select the best choice among alternatives based on text in a limited time. Lado (1964) says that "it is not simply a matter of having students to read and checking comprehension." It requires a reading process based on interaction between students and text.

All kinds of tests - achievement, proficiency, prognostic, diagnostic and placement tests - are used to measure students' comprehension. Multiple choice tests, cloze tests and true-false items are generally used in achieving reading tests. All these tests are called objective tests which are more reliable in evaluation. The term objective refers to scoring of tests where there is only one correct answer, or can be scored mechanically. They are marked objectively while traditional examinations refer to a subjective way of questioning and scoring. Objective tests consist of short questions and items with only one response. The advantages of objective tests indicate these facilities given below (Heaton, 1975):

1. They are quite comprehensive - that is, it can be made to cover a large part of the area.
2. The scoring is completely objective. There is only one correct response to each item.
3. The grading time is greatly reduced as compared to grading of traditional exams.

4. They are statistically determined.
5. They can be used over and over again without appreciable leakage of information.

In the light of information on objective tests, an explanation on the types of objective tests used for reading comprehension will be given below:

2.5.4.1. Multiple-Choice Tests

Multiple-choice tests offer a useful way of testing reading comprehension. Students need time to read through a reading comprehension test since they read the text carefully before beginning to choose the items. The construction of test items should rely on general comprehension in order to grasp the meaning from context. In other words, the choice of correct answer must show students' comprehension rather than their knowledge or intelligence.

2.5.4.2. Cloze Tests

Cloze test, which is a process of extracting words from a passage and finding out a means of selecting the most suitable ones, has been widely used recently. Indeed, cloze tests bring prediction into reading skill. Bastidas (1984) says that according to recent approaches, "making a prediction is an essential part of comprehension study and test." To get meaning from text depends on looking at text as a whole and requires to look ahead or refer back in reading the text. Teachers should give instruction to students to read quickly through text in order

to become familiar with general meaning before completing each blank by selecting.

2.5.4.3. True-False Items

True-false tests are widely used for measuring the reading skill through a comprehensible text. Student are asked to read a series of statements and mark them as true (T) or false (F). Valette (1967) emphasizes that statements must not turn into questions in logical thinking. As Heaton (1975) indicates that the probability of chance is much more than in a multiple-choice tests. Students have a 50% chance of choosing correct answer for each statement. Statements, however, should be based on understanding and interpreting of text.

2.5.5. Testing Reading in ESP Context

Testing ESP generally involves students' vocational needs based on their reading material to develop comprehension in a specific field. McDonough (1984: 119) indicates that reading comprehension tests in ESP studies are basically concerned with tests developed to obtain information, to check the meaning and predict and interpret a text. Tests might concentrate on terminology to check particular word knowledge of ESP students. Finocchiaro and Sako (1983: 189) explain that "specialized vocabulary through reading should be tested in context with emphasis on a student's knowledge of the language."

Mackay (1980) indicates that ESP tests based on reading material should be designed to determine students' skill in reading.

In meeting the classroom goals, the ESP test should also give a reliable measurement of the effectiveness of the method.

CHAPTER III

THE METHOD

3.1. RESEARCH DESIGN

This research consists of a comparative study. Before applying two different methods, a placement test was administered to both groups to determine their levels.

The main purpose of this study is to find out if there is a significant difference between the two groups taught the same texts through two different ELT methods. The students who participated in this study had different areas of specialization. Namely, the students in Group A studied ground handling, cargo, catering and air traffic control, while the students in Group B studied aircraft-engine and air-frame. In order to insure a common frame of reference for all, the four reading texts used in this study were chosen from "Aviation History" and Aviation Technology."

All of the four texts were studied at the same time in both groups. The classroom activities and techniques used (to be explained later) differed according to the methods used. A test was designed to measure student achievement after the completion

of each text study. Each test consisted of three parts-multiple choice, cloze and true-false. Thus, Test-1 (Appendix C) followed Text-1, which was studied in accordance with the Interactive method in one group (Appendix A), and the same text which was studied in accordance with the Structural method in the other group (Appendix B), in a short time Test 2, 3 and 4 (Appendix C) followed Texts 2, 3 and 4, which were studied in accordance with Interactive method (Appendix A), and the same texts which were studied in accordance with the Structural method (Appendix B) respectively.

This arrangement was designed to avoid bias against a group or a method. Each group faces texts based on two reading methods equally. It might be helpful to clarify classroom designs of two groups for two methods with a table.

To clarify the design followed for this study a table has been drawn (Table 3.1), to show the distribution of texts and tests.

Table 3.1

Classroom Designs of Two Groups For Two Methods

	A	B	STUDY	TIME
1	Interactive M.	Structural M.	Text/Test 1	30 minutes
2	Structural M.	Interactive M.	Text/Test 2	30 minutes
3	Interactive M.	Structural M.	Text/Test 3	25 minutes
4	Structural M.	Interactive M.	Text/Test 4	30 minutes

The application of two methods to both groups took two weeks. Each text study was done in two class hours (90 min. total) involving test administration. So, each group was exposed to two different methods once a week.

3.2. SELECTION OF SUBJECTS

This study was carried out with 40 students, 20 students in each group, who are attending their first year in the Civil Aviation School, Anadolu University following their one year Intensive English (Preparatory School) Program.

The number of students in each group was 20 and the average age of students was 21. Both of the student groups had been classified according to their departments at the beginning of the academic year. One of the groups, Group A consisted of students whose departments are Aircraft Ground Handling, Cargo, Catering and Air Traffic Control. The other Group, Group B consisted of students whose departments are Aircraft-engine and Air-frame.

Although their departments were different, both of the groups had some common courses, namely, Mathematics, Physics, Aviation History and Principles of Air Traffic. All the courses that they took were taught in English. At the same time, they also had an ESP Course on Aviation.

When the groups were attending preparatory school, both groups studied 24 hours of English per week. The program they followed consisted of Spoken (14 class hours), Reading (4 class

hours), Writing (3 class hours), and Grammar (3 class hours).

In the second term, the reading course was more of an "Introduction to vocational English". That was the first introduction the students had to Aviation English. First, simple passages about what the definition and the importance of aviation in the world, etc. were given to students. Then some extracts taken from magazines, or journals were introduced. All these studies were steps to ensure students' "background knowledge" for their first year in the Civil Aviation School (Henry, 1984).

3.3. DATA COLLECTION

The study was carried out for 4 class hours a week in the first term of the academic year 1988-1989. In the first term, both groups enrolled in main subject courses. Their common lessons were, Mathematics (4 class hours), Physics (4 class hours), Aviation History (3 class hours), Principles of Air Traffic (2 class hours), and Aviation English (4 class hours).

3.4. CLASSROOM TECHNIQUES USED FOR

BOTH METHODS

3.4.1. Structural Method

Structural method was done in a traditional way. The course was based on reading the texts outloud by the teacher. There was neither anticipation exercises nor reader - generated

questions. The teacher started reading the text directly without asking questions about it. Generally, intensive reading was done. The teacher read the text slowly and carefully. Every word, phrase and grammatical point was explained. Extensive reading was completely ignored. After the teacher had read the text out loud, voluntary students began to read the text in the same manner with the help of the teacher. These students were called on to read a few lines or a paragraph from the text. Pronunciation errors were immediately corrected by the teacher. Getting a correct answer from the students was considered important. After reading the text, vocabulary was reviewed. The teacher explained all unknown words by giving synonyms or antonyms and miming or explaining. Some abstract or highly technical words were explained in the native language although it was not desirable. The students practised vocabulary orally with "pattern drills" conducted by the teacher. The questions - and - answers period was followed. Questions based on understanding of the text were answered orally. The teacher wrote assignment questions on the blackboard. The students were asked to answer them in complete sentences. Answers were checked for correct grammatical structure. Finally, students were asked to summarize their task.

After following these steps with Group B, the first reading comprehension test based on the text they studied in class, was administered to them. Group B students were asked to choose the best answer from the test within 30 minutes.

The exercises in "Structural Method" were basically built upon:

1. Comprehension questions on the text: Generally these exercises were done orally or written in the class. Students were asked to answer the questions based on the reading text. Complete answers were desirable to decide on the grammar-knowledge of the performers. For that reason, students' answers were limited to the extend of their vocabulary (e.g: Answer these questions in more than 50 words). Three types of exercises were seen. Questions were asked individually round the class. The three types of questions are as follows:

-Yes/No Tag Answers: The students pay attention to the "first" word in these questions.

-Negative and Affirmative Statements: The students make negative and affirmative statements by asking double questions joined by "or".

-General Questions: The students have natural answers to general questions with who, when, where, why, how, etc.

2. Fill in the blanks exercises: This exercise type was designed to check grammar or vocabulary. This type of exercise has no or little grammatical and semantic clues. Meaningful sentences were required by completing blanks with structural components. Understanding the language and knowing how to use its structures were emphasized more than vocabulary.

3. Construction exercises: Students were asked to construct meaningful sentences from given components. Meaningful sentences were constructed by putting words into the correct order. Although the sentences were taken from the text, the aim was to check the grammatical knowledge. The students were familiar with the topic.

So, the ability to reconstruct the components consisted largely of knowing the use of verbs, prepositions, pronouns, articles and the use of position of adverbs. To complete the rest of a sentence aimed at refreshing students' memory in association to the text.

4. Summary: Summarization provides a clear indication of how much the student has understood the text. This part was sometimes done by doing question and answer exercises by students. It aimed at focusing on the text.

5. Vocabulary: It generally practised orally in the class. Explaining words by giving synonyms and antonyms are done habitually. Sometimes crucial vocabulary was asked to the students.

3.4.2. Interactive Method

Interactive Method aimed at focusing on the reading passages itself. The teacher started with something the students have already known, or proposed a statement related to the task that they had at hand. To provide attention and motivation and also prior - knowledge, were upper most priorities. Study papers attached to their reading text were handed over to the students. Each paragraph of each text was given numbers to concentrate on specified parts according to instruction in the text. Activities were mainly divided into two parts; activities before reading and activities after reading. Students concentrated on paragraphs with given numbers in pre-reading activities. Silent and speed reading were exercised. The students were made aware of skimming and scanning techniques. Texts and exercises were read in the shortest possible time. Students' conscious attention was focused

on the content, not on the language form. Exercises were done in groups of three. The students read their answers to the other members of the class. Answers were generally based on exact information. The students practised reading by doing different exercises. Some of them were constructed on their future lives or jobs. Errors were not corrected immediately. The teacher used the correct form a little later without indicating student's error. Vocabulary was taught either predicting or giving examples from everyday life situations. The teacher gave students an opportunity to express themselves by expressing their ideas and opinions on a specific field. All the students were asked and involved in the classroom activities. Teacher-made tests on activities seemed to create effective learning.

"Interactive Method" consists largely of exercises as follows:

1. The exercises before reading the text presupposes the content of the text. They are used to provide a stimulating basis for discussion and study.

2. "Write-before-you-read" and "reader-generated questions" aim at providing background knowledge. Needless to say, if students have background knowledge, their comprehension will be better. The "write-before-you-read" technique requires that the students write their own knowledge - or idea within 10 or 15 minutes. The activity shows different points which are related to the students' own experience.

The "reader-generated" questions are done by giving the first sentence of the text and asking students to write 10 questions about the sentence.

3. Skimming and scanning are used to develop a general understanding of the purpose of the task. The ability to answer questions that are specifically answered in the text and the ability to select the appropriate information referring to the paragraphs. The goal is to scan large chunks of text quickly and to understand the main ideas. Choosing different reading strategies such as arranging the events according to the text, matching the events with the rest of them, filling cloze tests by giving clues - grammatical and semantic clues - and checking the meaning are actually practised in the class. Learning vocabulary and using it in context are chosen to get meaning. Students guess meaning of new words using context clues. Special and technical meaning may require dictionary definitions. The teacher lists lexical items containing two or more alternative definitions. The students select the appropriate meaning from the list. Word-by-word reading or structure study are avoided. Students are forced to work out their own interpretation of the text as a whole. Reading lesson focuses on meaning, "using language to accomplish a purpose in an interaction with other students, or with the author of a text." (Bhatia, 1986: 26)

3.5. THE DESIGN OF THE TESTS

In order to measure achievement of suggested reading method through the students performance, four different comprehension tests were given. Each test consisted of three different items: multiple - choice, cloze and true - false items. As was mentioned before, these tests were derived from the

texts that had been studied in the class. But the questions were not constructed the same in the two different groups. It was pointed out that the tests generally referred to specific information in the text. Often, the students were required to select and provide information which they found out in context on their own.

Each type of test involved 10 questions. So, each comprehension test paper - with multiple - choice, cloze and true - false items - involved 30 questions. Each paper was scored out of 30. Thus, each single question had 1 point. 30 points was the highest score in each paper. The time for the completion of each test was 30, 30, 25, 30 minutes respectively.

The scores of Test-1, Test-2, Test-3, and Test-4 for both groups are shown in Table 1, Table 2, Table 3 and Table 4 in Appendix D.

In order to achieve the goal of this study, statistical techniques were applied. To determine the meaningful difference between the scores of the two groups in analyzing the components of each score in each test for each student, analysis of variance was applied. The analysis of variance covered the total score in each test, total scores between and within sub-groups. The results of the two groups' scores were compared at the 0.05 confidence level.

Iversen and Norpoth (1986: 6) state that the applications of analysis of variance are used in education that might be concerned with the effects of education on achievement tests. They are used to find out how much impact one variable has on the another.

3.6. LIMITATIONS

In this study:

- 1- The methods to teaching reading were classified into two main methods; Structural method and Interactive method.
- 2- The contents of reading texts were limited to Aviation History and Aviation Technology.
- 3- The activities and tests used in this study were developed by the researcher.
- 4- The tests were developed as achievement tests.
- 5- Multiple-choice tests, cloze tests and true-false items were the only question types used in the tests.

3.7. METHODOLOGICAL ASSUMPTIONS

It is assumed that

- 1- All the students were exposed to English language under the same conditions before the study.

CHAPTER IV

ANALYSIS OF RESULTS

The general purpose of this study is to find out whether there will be a meaningful difference between the two groups' achievement on texts which were taught through two different reading methods.

To achieve this goal, four separate texts were studied by both groups. At the completion of each text, four separate tests were administered to the groups to find out whether there is a meaningful difference between methods by means of students' scores. The aim of the tests administered to the groups after the teaching period was to find out the most effective reading method in ESP context.

The following null hypotheses were formulated and tested by using analysis of variance.

The first null hypothesis in this study can be formulated as below:

H_0 = There will be no significant difference between Test-1 scores obtained from the two groups of students who were taught through the Structural method and the Interactive method.

The analysis of variance of the two groups' data in Test-1 is shown in Table 4.1. (Table 1 in Appendix D).

Table 4.1

Analysis of Variance Table for the Data in Test-1

Variation source	Degrees of freedom	Sum of squares	Mean square	F-ratio
Between groups	$H-1=1$	$B_2-C=237,016$	$S_H^2 = \frac{237,016}{1} = 237,016$	$\frac{S_H^2}{S_W^2} = 104,87$
Between sub-groups	$K-H=4$	$B_1-B_2=127,834$	$S_B^2 = \frac{127,834}{4} = 31,958$	
Within sub-groups	$N-K=114$	$A-B_1=258,75$	$S_W^2 = \frac{258,75}{114} = 2,26$	
Total	$N-1=119$	$A-C=659,6$		$F_{0,05; 1; 114}=3,928$

These results show that F-ratio was equal to 3,928.

The value was derived from the F-ratio list-with interpolation-in Appendix E.

$F_{0,05;114}=3,928 < F=104,87$ at the level of 0,05 significance. As indicated by this result there was a significant difference between the groups. Thus, the first null hypothesis was rejected at the level of 0,05 significance.

The second null hypothesis can be formulated as below:

H_0 = There will be no significant difference between Test-2 scores obtained from the two groups of students who were taught through the Structural method and Interactive method.

The analysis of variance of two groups' data in Test-2 is shown in Table 4.2 (Table 2 in Appendix D).

Table 4.2

Analysis of Variance Table for the Data in Test-2

Variation source	Degrees of freedom	Sum of squares	Mean square	F-ratio
Between groups	$H-1=1$	$B_2-C=177,633$	$S_H^2 = \frac{177,633}{1} = 177,633$	$\frac{S_H^2}{S_w^2} = 65,54$
Between sub-groups	$K-H=4$	$B_1-B_2=127,834$	$S_B^2 = \frac{113,334}{4} = 28,333$	
Within sub-groups	$N-K=114$	$A-B_1=309$	$S_w^2 = \frac{309}{114} = 2,71$	
Total	$N-1=119$	$A-C=597,957$		$F_{0,05;1;114}=3,928$

As can be observed from Table 4.2 $F_{0,05; 1,114} = 3,928 <$
 $F=65,54$ at the level of 0.05 significance. Since the value of
 F-ratio (3,928) proves that there was a significant difference
 between the two groups the second null hypothesis was
 rejected at the level of 0.05 significance.

The third null hypothesis can be formulated as below:

H_0 = There will be no significant difference between Test-3
 scores obtained from the two groups of students who were
 taught through the Structural method and the Interactive
 method.

The analysis of variance of two groups' data in Test-3
 is shown in Table 4.3 (Table 3 in Appendix D).

Table 4.3

Analysis of Variance Table for the Data in Test-3

Variation source	Degrees of freedom	Sum of squares	Mean square	F-ratio
Between groups	$H-1=1$	$B_2-C=200,208$	$S_H^2 = \frac{200,208}{1} = 200,208$	$\frac{S_H^2}{S_w^2} = 81,05$
Between sub-groups	$K-H=4$	$B_1-B_2=66,667$	$S_B^2 = \frac{66,667}{4} = 16,667$	
Within sub-groups	$N-K=114$	$A-B_1=281,65$	$S_w^2 = \frac{281,65}{114} = 2,47$	
Total	$N-1=119$	$A-C=548,525$		$F_{0,05; 1,114}=3,928$

As can be seen from Table 4.3, F-ratio was equal to 3,928.
 $F_{0,005;1,114}=3,928 < F=81,05$ at the level of 0,05 significance.
 So, there was a significant difference between the two groups. Thus,
 the third null hypothesis was rejected at the level of 0,05
 significance.

The fourth question was investigated by testing the
 following null hypothesis:

H_0 = There will be no significant difference between Test-4
 scores obtained from the two groups of students who
 were taught through the Structural method and the
 Interactive method.

The analysis of variance of two groups' data in Test-4
 is shown in Table 4.4. (Table 4 in Appendix D).

Table 4.4

Analysis of Variance Table for the Data in Test-4

Variation source	Degrees of freedom	Sum of squares	Mean square	F-ratio
Between groups	$H-1=1$	$B_2-C=249,408$	$S_H^2 = \frac{249,408}{1} = 249,408$	$\frac{S_H^2}{S_W^2} = 156,86$
Between sub-groups	$K-H=4$	$B_1-B_2=69,534$	$S_B^2 = \frac{69,534}{4} = 17,383$	
Within sub-groups	$N-K=114$	$A-B_1=181,65$	$S_W^2 = \frac{181,65}{114} = 1,59$	
Total	$N-1=119$	$A-C=548,525$		$F_{0,05;1,114}=3,928$

As indicated by the results above $F_{0,05;1,114}=3,928 <$
 $F_{156,86}$ at the level of 0,05 significance. Thus, the fourth null
hypothesis set before was rejected. That is, there was a
significant difference between the two groups.

Thus, it is clear from the findings above that there is
a significant difference between the students' scores (Appendix
D, Table 1, Table 2, Table 3, Table 4). The formulas, explanations
and F-ratio table which were used in analysis of variance are in
Appendix E.

CHAPTER V
DISCUSSION AND SUGGESTIONS

5.1. DISCUSSION

The analysis of statistical results of the test scores in the two groups indicated a significant difference between the Structural method and the Interactive method in teaching reading in ESP context. Thus, we rejected the null hypothesis, stating that the difference in methods would equal to zero. Analysis of variance offered analysis to this hypothesis by determining whether or not the variance was equal to zero. The result of the analysis showed that the difference between two reading methods was not equal to zero and there was a variance between the two. This difference is more prominent when the sum of terms of the main groups and of the sub-groups in two groups compared. The sums of terms of main groups and sub-groups of Test-1, Test-2, Test-3 and Test-4 were given in Appendix D Table 1, Table 2, Table 3 and Table 4. Accordingly, the scores of the Interactive method were significantly higher than the scores of the Structural method. Thus, if the students learning English as a foreign language are taught reading through Interactive method, they

will read the text in ESP context more effectively because the Interactive method focuses students' attention on meaning by showing several ways to comprehend the gist of the task. The important aspect of reading through Interactive method is that reading strategies expose students to develop their reading skill. The students who are trained through this method understand the context better and provide feedback related to activities which have been done in class and succeed in achievement tests. In interactive activities the main means of developing students' performance are effectiveness and interactiveness. Whereas the Structural method concentrates more on structure practice. As explained before, the students who were taught through Structural method did not succeed as much as students who were taught through Interactive method.

We can conclude that reading should be an interactive process which requires several sub-skills for getting meaning. Meaning in reading should be constructed by readers and the author of the text. Writers put their ideas on paper in order to share ideas with readers.

The aim of reading in ESP context is to get specific information that authors imply. Therefore, reading is for focusing on meaning and information. It is not necessary to understand every word or analyze every sentence in order to share meaning and information with the author. Students involve their previous language experience in reading anyway.

In English teaching, the purpose of Interactive method provides students strategies which have been specially designed for effective reading: skimming, scanning, predicting, arranging, and providing background information for further studies and

evaluation. If these strategies are applied to ESP lessons, reading in ESP will become more effective in the light of Interactive method. English as a means of communication and job-related activities in students' studies inevitably influence their reading process.

The Structural method, which focuses on form, is teacher-centered and works on sentence level. It limits students' contribution and ignores the studies with larger units of information. The objectives of reading remain the same whether the student reads English for "general purposes" and English for "specific purposes".

Another important aspect to be emphasized is that language teaching and language testing are interrelated subjects. They are inseparable and urgent components in language learning. Teachers who teach through Interactive method may get more sufficient results from achievement tests.

In the light of this study, it is possible to re-emphasize the relationship, between teaching reading and testing. A possible diagram which shows the relationships between language teaching components, emphasized in this study, is shown in Figure 5.1.

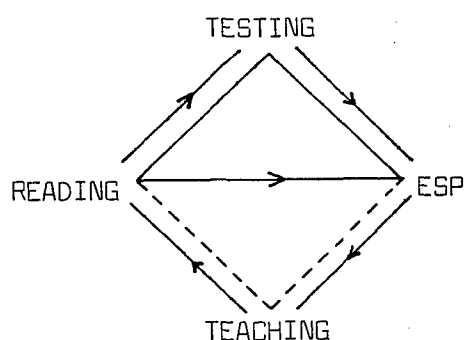


Figure 5.1. The relationship of four main components emphasized in this study.

It is an established fact that Civil Aviation students benefit from ESP reading material prepared by using interactive teaching strategies. Thus, to fulfil the second aim of this study, sample ESP materials for Civil Aviation prepared within the guideline described in this study (c.f. Chapter III) is presented for use and for future applications by English instructors working in this field (Appendix F).

5.2. SUGGESTIONS FOR FURTHER STUDIES

-A reading syllabus in ESP classes can be designed in the light of interactive reading strategies.

-A teacher who lacks textbooks for reading ESP can develop reading strategies based on Interactive method from different articles, papers and magazine news.

-Sample ESP reading materials prepared in the light of the Interactive method for Civil Aviation School students may be helpful to language teachers.

-A similar study can be conducted for reading general English. This may provide more effective reading material to language teachers.

-The techniques used in this study can be further developed and/or new techniques can be used to improve the effectiveness of the Interactive method.

-Further test types can be incorporated in the achievement tests so that the most effective, reliable and objective question types can be determined.

-Teacher variances can also be tested to find out if a difference in the teacher effects the student performance.

-The same techniques and methods can be applied to different groups of students to find out if a variation in the student body effects the impact of the methods.

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APPENDICES

APPENDIX A

EXERCISE 1

THE WRIGHT BROTHERS(1)

In 1903 two brothers named Wilbur and Orville Wright (1)
sent a letter to government officials in Washington, D.C.,
announcing a revolutionary invention. They wrote, "The
series of experiments upon which we have been engaged for
the past five years, has ended in the production of a
flying machine..." At the time, however, such an achievement
was considered impossible, and their letter and invention
were ignored.

Nevertheless, the Wright brothers has indeed (2)
accomplished the "impossible," and they had not done it by
accident. It was successfully done through years of study,
experiment, and hard work.

The Wright brothers were raised in Ohio, the sons of (3)
a bishop in the Church of the United Brethren in Christ.
Wilbur had been born in 1867; and he and his brother Orville,
younger by four years, enjoyed a similarity in spirit and
interests which made them a natural team.

Ever since childhood the brothers had displayed a (4)
talent for building things. Their father had encouraged
them, urging them to earn money to meet the cost of any
project they started. Both brothers were especially
interested in mechanical things. This interest, together
with their pioneering spirit and gift for original thinking,
eventually produced the "impossible" machine-the airplane.

As two poorly educated young men, the Wright brothers (5)
were the first to discover the secret of air travel that
had escaped the genius of the world's greatest scholars for
thousands of years. Their earliest contact with the dream
of flight came as children when their father brought them

only that man could glide through the air. The more important question remained unanswered: could man fly through the air?

For three more years the Wrights worked to improve their glider, paying particular attention to its controls and to the shape of the wings, they made important improvements in flight control. Orville then designed an engine which they built and mounted on the glider to produce flying power. They also experimented with various designs for the all-important propellers. (9)

Samuel P. Langley of the Smithsonian Institution in Washington, D.C., had been working on the construction of a man-carrying airplane which he called the Aerodrome. In 1903 he suffered two disastrous failures when he attempted to catapult his plane into the air from a boat on the Potomac River near Washington, D.C. His second unsuccessful attempt had taken place on December 6, 1903. (10)

TEXT NO.1

I. READER GENERATED QUESTIONS. Read the first paragraph of the text and make ten questions about it.

"In 1903 two brothers named Wilbur and Orville Wright sent a letter to government officials in Washington, D.C. announcing a revolutionary invention."

II. ANTICIPATION EXERCISES. Before you read the text, skim the following paragraphs and answer the questions below.

Paragraph 1

What happened when the Wrights offered the machine to the U.S. Government?

Paragraph 5

What was their earliest contact with aviation?

Paragraph 8 - 9

What was the feature of the glider that they did in 1900?

What did they study on for producing flying power?

Paragraph 10

What did Samuel P. Langley design?

III. READ THE TEXT

IV. SCANNING FOR FACTS. Find the following information in the text. Give the number (s) of the paragraph (s) which give (s) the correct topics.

Topic	Paragraph (s)
a) Two men achieved "impossible". It was not a chance.	_____
b) They became interested in flying objects and read previous studies.	_____
c) There were two schools of thoughts about aviation.	_____
d) They tested other main types of propellers too.	_____

V. RELATING EVENTS. Arrange the following sentences related to the text.

- () A. Before starting their formal studies, they had opened a bicycle shop.
- () B. They observed different kinds of airborne objects.
- () C. They tested movable parts of the wings.
- () D. The Wrights offered "Flyer No. One" to the United States Government but the Government was not interested.
- () E. Their earliest study was on gliders.

VI. CHECKING THE MEANING. Guess the meaning for the following words or phrases from the context. Explain each word with your own words.

glider : _____

"impossible" machine : _____

lack of formal technical education : _____

conquest of the air : _____

enterprise : _____

APPENDIX A (CONTINUED)

TEXT NO: 2

THE WRIGHT BROTHERS(2)

The Wright brothers, both now over 30 years old, (1)
were not discouraged by these mishaps. Their experiments
had taught them the basic principles of flight that
trained scientific minds had failed to find. So once again
the brothers returned to the sand hills at Kitty Hawk this
time in the middle of winter. The date was December 17,1903.

Their flying machine, made of pieces of wood and (2)
cloth, looked too fragile to fly. With Orville at the
controls, the pioneer plane moved down a track, was
catapulted into the air, and flew for twelve seconds.
It was the first controlled sustained flight of an
airplane.

Though they had conquered the air, the Wrights (3)
still had to conquer the public's disbelief-the refusal
of people to agree that a successful flight had been made.
So the brothers returned to Ohio and continued with their
experiments, improving their airplane and testing it near
their home in Dayton. They sent letter after letter to
government officials, but the news of their invention was
either ignored or caused only little interest.

By the end of 1904, they could keep the airplane up (4)
for five minutes and fly complete circles. On October
5, 1905, in Dayton, Ohio, they flew 24 miles in 38 minutes-
as far and as long as the gasoline supply would allow.
Certain that they had the Flyer perfected, the Wright
brothers were granted a patent for their invention in
1906. They formed the Wright Company to manufacture aircraft
and they began at that time to seek a market.

By 1908 the Wrights had gained worldwide fame. While (5)
Wilbur was in France dazzling European audiences with
flying demonstrations, Orville was conducting a series of
flights before United States government officials at
Fort Myer, Virginia. As a result of these demonstrations,
the United States purchased its first military aircraft,
a Wright machine, for a cost of \$25,000, and licenses were
granted to firms abroad for the manufacture of the Wright
brothers' aircraft.

Wilbur and Orville never lost their modesty when (6)
honors were showered upon them. They paid little attention
to the medals and ribbons which they received from scientific
societies, and again and again, they refused to make public
speeches. Their unwillingness to speak out in public was
emphasized by Wilbur when he commented. " I know of only
one bird, the parrot, that talks, and the parrot cannot
fly very high."

For Wilbur there were to be only a few short years (7)
of success. In May 1912, at the age of 45, he died of
typhoid fever. His death marked the end of one of the
greatest inventive partnerships in history.

Though Orville continued to work in aviation for (8)
several years more, his heart was no longer in it. He flew
a plane for the last time in 1918. He retired from his
company and lived quietly at his home in Dayton.

Also contributing to Orville's withdrawal from (9)
public life was his unhappiness with legal disputes with
fellow aviation pioneer Glenn Hammond Curtiss arising over
the patent rights which the Wright Company held on aircraft
design. He also felt the United States government slighted
his and Wilbur's achievements when, in 1914, the Smithsonian
Museum placed on display Samuel Langley's Aerodrome, which
had been built but not flown in 1903, with the notice that
it was the first heavier-than-air-machine "capable" of
flight. When later invited by the Smithsonian to place the
Kitty Hawk Flyer on display Orville declined, and instead
sent it to the Science Museum at South Kensington, England.

In 1943, at the request of President Franklin D. Roosevelt, Orville asked that the plane be returned to be put on permanent exhibit at the Smithsonian. Orville, however, never saw the display. On January 30, 1948, he died at the age of 77. The following December 17, exactly 45 years after the first flight, the Flyer was placed on permanent exhibition. (10)

TEXT NO.2

- I. WRITE BEFORE YOU READ. Write a short paragraph whatever you understand from the lines below (20-25 words).

Wilbur says that "I know of only one bird, the parrot, that talks, and the parrot cannot fly very high". And he refuses to make public speeches.

- II. ANTICIPATION EXERCISES. Before reading the whole text, skim the questions below. Then discuss your answers in the class.

Paragraph 2

- Did the plane rise up on December 17, 1903?
- Was it the first successful manned glider flight?

Paragraph 4

- Did they have a company to manufacture airplanes?

Paragraph 6

- Why did the Wrights refuse to make public speeches ?

Paragraph 9 - 10

- What did Glenn Hammond Curtiss do ?
- Why did Orville send the flying machine to Science Museum at South Kensington, England?

- III. READ THE TEXT

IV. SCANNING FOR FACTS. Find the following information in the reading selection. Give the number of paragraph which gives the facts.

Topic	Paragraph (s)
The cause of Wilbur's death	_____
The first military aircraft	_____
Ribbons and medals from scientific societies	_____
Exhibition of Samuel Langley's plane	_____
Basic principles of flight	_____

V. CLOZE EXERCISE. Complete the following paragraph choosing the best alternative.

During the night 1 16, 1903, a strong cold 2 blew from the north. The 3, facing a 27 4 wind, started very slowly. 5 was able to stay with it after a forty foot 6. The machine would 7 suddenly from the 8. The 9 lasted only 12 10.

- | | | | |
|---------------|---------------|-------------|------------|
| 1)a)November | b)January | c)September | d)December |
| 2)a)weather | b)wind | c)storm | d)drizzles |
| 3)a)people | b)inhabitants | c)settlers | d)machine |
| 4)a)kilometre | b)seconds | c)mile | d)metre |
| 5)a)Wilbur | b)Orville | c)They | d)Plane |
| 6)a)run | b)fly | c)crawl | d)stand |
| 7)a)crash | b)stop | c)rise | d)work |
| 8)a)sky | b)ground | c)air | d)world |
| 9)a)freight | b)observation | c)gasoline | d)flight |
| 10)a)hours | b)minutes | c)seconds | d)days |

Prepared by Ömür EMENER

APPENDIX A (CONTINUED)

TEXT NO: 3

SAMUEL P. LANGLEY

Samuel P. Langley was a respected physicist, as well as an early pioneer in aviation. He was born August 22, 1834, in Roxbury, Massachusetts, near Boston. He became interested in experimental science early in his life, building a telescope as a boy with his brother and making astronomical observations. His formal education ended with his graduation from the Boston High School in 1851. (1)

He worked in an architectural office in Boston and at Harvard College, and in 1864 and 1865 he visited observatories and research centers in Europe with his brother. In 1866 he became an assistant professor of mathematics at the United States Naval Academy, where he had charge of a small observatory. The next year he became professor of physics and astronomy at the Western University of Pennsylvania. In 1889 he was elected secretary of the Smithsonian Institution, the national museum and center for research in Washington, D.C. He held this position until his death. (2)

Langley began studies on heavier-than-air flight in Pennsylvania; and he continued these studies at the Smithsonian Institution. After studying the source of power in bird flight, he constructed steam-powered models which flew successfully and attracted considerable attention. The Smithsonian awarded him \$50,000 for the construction of a full-size passenger-carrying machine, or aerodrome, as Langley called it. A quarter-size model, equipped with a water-cooled gasoline engine was flown successfully, but the full-size machine, catapulted from (3)

houseboat on the Potomac River October 8, 1903, and again on December 8, failed both times. Discouraged by newspaper criticism, public misunderstanding, and lack of funds for further experiments, Langley discontinued his work in aeronautics.

TEXT NO.3

I. A. ANTICIPATION EXERCISE. Before you read the text, skim the following paragraphs and give the answers.

Paragraph 1

- What did he study first when he was young?

Paragraph 2

- Where did he become professor of physics and astronomy?
- Where had he charged of a small observatory?

Paragraph 3

- Did he go on his studies after 1903? Why?
- Why did Samuel Langley discontinued?

B. CATCHING THE WORDS. Which of the words below are used in paragraphs 2 and 3 ?

gastronomy	portion
education	microscope
speed	world
elected	small
central	naval

II. READ THE TEXT

III. CONTEXT CLUE. In which paragraphs are the words or phrases below used?

physics and astronomy ()
 astronomical observations ()
 aerodrome ()
 pioneer ()
 national museum ()

IV. CLOZE EXERCISE. Complete the following paragraph without referring back to the text. When you finish, check your answers against the original paragraph. If you get at least 40 % correct, your score is good.

Samuel P.Langley was a respected _____, as well as an early pioneer in _____. He was born August 22, 1834, in Roxbury, _____, near Boston. He became interested in _____ science early in his life, _____ a telescope as a boy with his _____ and making astronomical _____. He is _____ education ended with his _____ from the _____ High School.

V. VOCABULARY PRACTISE. Guess the meaning of the words and explain them with your own words.

aeronautics : _____
 water-cooled gasoline engine : _____
 lack of funds : _____
 catapult (from) : _____
 full-size machine : _____

Prepared by Ömür EMENER

APPENDIX A (CONTINUED)

TEXT NO: 4

AVIATION TECHNOLOGY

Another aspect of technological advance is the commercial aircraft itself. A major breakthrough in civil aviation occurred in the 1950s with the introduction of large jet-powered aircraft, which soon replaced most of the post-World War II aircraft on most of the air routes around the world. In October of 1955 Pan American World Airways ordered forty-five jet transports—twenty-five DC-8s from Douglas and twenty Boeing 707s. The first round of jet orders was sparked by this move, and the jet race was on. The Boeing 707 and Douglas DC-8, along with the BAC VC-10, became the transcontinental or intercontinental carriers. Each was capable of carrying one hundred to one hundred eighty passengers for distances of four thousand to five thousand miles, non-stop, at speeds of five hundred to five hundred fifty m.p.h. The early 1960s brought smaller jet aircraft with two or three engines, such as the Boeing 727 and 737, Douglas DC-9, and BAC-111, for intercity service. These planes could economically handle fifty to one hundred passengers at about the same speeds. (1)

In the 1970s the world saw the advent of the jumbo jets—the Boeing 747, Lockheed L-1011, and the McDonnell Douglas DC-10. These large airplanes are designed to carry between three hundred fifty and four hundred ninety passengers. While the passengers on these planes enjoy a spacious—if not luxurious—ride above the weather, their pilots enjoy the ease, comfort, and safety of a sophisticated, computerized, fully instrumented cockpit. But the advances do not stop there. (2)

A supersonic transport capable of flying faster than (3) the speed of sound was flight-tested in early 1970. The British-French Concorde and Soviet TU-144, both capable of Mach 2 (a maximum speed of about one thousand two hundred m.p.h.), are presently the world's only two supersonic transports (SSTs). (Development of the American SST was discontinued because of environmental and political questions.) The Soviet Union's trouble-plagued supersonic airliner--some six years behind schedule--began regular passenger service in November 1977 on a 2500-mile run between Moscow and Alma Ata, the capital of Soviet Kazakhstan. The Air France/British Airways Concorde has regular trans-Atlantic service from Paris and London to New York and Washington, D.C. It takes the plane less than four hours to make the trip--barely enough time for the passengers to finish the splendid meal they are served.

Throughout the years of development of instrument (4) flying, numerous changes have taken place in aircraft, radio aids, instrumentation, and procedures. Slow flying, poorly instrumented aircraft have gradually given way to high performance jet aircraft with precision devices. New instrument flying procedures have been put into effect, and more efficient air traffic control service methods are being used. Flying by instruments, at one time considered impossible, is now a requirement for all commercial pilots and an integral part of air traffic control.

Another significant development in modern aviation (5) is the emergence of women as pilots and air traffic controllers. With very few exceptions, commercial pilots and air traffic controllers have traditionally been men. This is rapidly changing. In the late 1970s about a dozen women are pilots for major commercial airlines in the United States. In most cases they are second officers or flight engineers. It is simply a matter of time until they will advance to the rank of first officer and then to the captain's seat. It is already commonplace to hear a woman's voice from air traffic control. The entrance of women into these occupations is significant, both for society and for the industry.

TEXT NO.4

I. CLASS SURVEY. Answer following paragraphs before reading the text, although you have not enough knowledge.

1- What is aviation technology ?

2- What kinds of aircraft have you already known?

3- What kinds of planes are used on most international flights?

4- "Another aspect of technological advance is the commercial aircraft itself". What do you understand?

II. ANTICIPATION EXERCISES. Before you read the text, skim the following paragraphs and answer the questions.

Paragraph 1

- What are the principal features of DC-9 and BAC-111 ?
- Which jet aircraft became the first inter continental carriers?

Paragraph 2

- Which airplanes are called jumbo jets?

Paragraph 3

- Which airplane took about three-and-a-half hours from Paris to Washington D.C ?

Paragraph 4

- What is a requirement for all pilots and air traffic controlers?

III. READ THE TEXT

IV. SCANNING FOR FACTS. Find the following information in the text and give the number of the paragraphs.

Topic	Paragraph (s)
The Soviet Union's supersonic airliner	_____
Instrument flying	_____
Second officers or flight engineers	_____
Supersonic transport	_____
Post-world War II aircraft	_____
forty-five jet transports	_____
Intercity service	_____

V. CLOZE TEST. Complete the following paragraph choosing the best alternative.

Many planes are 1 by manufacturing company and 2 number in a kind of code that identifies the size, 3 of the plane, passenger 4 and 5 information. The largest of all 6 aircraft operating today is the 7. It is often 8 to by passengers as a "9" jet. The operating range is 6,000 10 and the operating 11 is 25,000 to 45,000 feet. It provides greater 12 for its passengers.

- | | | | |
|------------------|--------------|-----------------|-------------|
| 1-a)described | b)identified | c)formulazed | d)operated |
| 2-a)model | b)code | c)data | d)shape |
| 3-a)colour | b)type | c)pilots | d)crew |
| 4-a)wishes | b)orders | c)capacity | d)rules |
| 5-a)wrong | b)useless | c)secret | d)other |
| 6-a)jet | b)model | c)fast | d)jumbo |
| 7-a)Boeing 747 | b)Dakota DC3 | c)non-scheduled | d)BAC 10 |
| 8-a)called | b)referred | c)described | d)explained |
| 9-a)unbeliavable | b)miracle | c)jumbo | d)super |
| 10-a)kilometres | b)metres | c)miles | d)decimiles |
| 11-a)weight | b)lenght | c)altitudes | d)height |
| 12-a)trouble | b)hesitation | c)question | d)comfort |

Prepared by Ömür EMENER

APPENDIX B

TEXT NO: 1

THE WRIGHT BROTHERS(1)

In 1903 two brothers named Wilbur and Orville Wright sent a letter to government officials in Washington, D.C., announcing a revolutionary invention. They wrote, "The series of experiments upon which we have been engaged for the past five years, has ended in the production of a flying machine..." At the time, however, such an achievement was considered impossible, and their letter and invention were ignored.

Nevertheless, the Wright brothers has indeed accomplished the "impossible," and they had not done it by accident. It was successfully done through years of study, experiment, and hard work.

The Wright brothers were raised in Ohio, the sons of a bishop in the Church of the United Brethren in Christ. Wilbur had been born in 1867; and he and his brother Orville, younger by four years, enjoyed a similarity in spirit and interests which made them a natural team.

Ever since childhood the brothers had displayed a talent for building things. Their father had encouraged them, urging them to earn money to meet the cost of any project they started. Both brothers were especially interested in mechanical things. This interest, together with their pioneering spirit and gift for original thinking, eventually produced the "impossible" machine—the airplane.

As two poorly educated young men, the Wright brothers were the first to discover the secret of air travel that had escaped the genius of the world's greatest scholars for thousands of years. Their earliest contact with the dream of flight came as children when their father brought them

only that man could glide through the air. The more important question remained unanswered: could man fly through the air?

For three more years the Wrights worked to improve their glider, paying particular attention to its controls and to the shape of the wings, they made important improvements in flight control. Orville then designed an engine which they built and mounted on the glider to produce flying power. They also experimented with various designs for the all-important propellers.

Samuel P. Langley of the Smithsonian Institution in Washington, D.C., had been working on the construction of a man-carrying airplane which he called the Aerodrome. In 1903 he suffered two disastrous failures when he attempted to catapult his plane into the air from a boat on the Potomac River near Washington, D.C. His second unsuccessful attempt had taken place on December 6, 1903.

I. COMPREHENSION QUESTIONS. Answer the following questions in more than 70 words.

- 1- Where did the Wright brothers spend their childhood?

- 2- What happened when the Wrights sent a letter to U.S. Government?

- 3- How did they start their earliest contact when they were children?

- 4- Which studies did they deal with?

- 5- Why did they open a bicycle shop?

- 6- Were they able to build a motorless glider?

- 7- Where did they choose to test it? Why?

- 8- Did they endeavour to improve their glider?

- 9- Who built the engine, Orville or Wilbur?

- 10- What did Samuel P. Langley attempt?

II. FILL IN THE BLANKS. Find out appropriate word in gaps.

They lived _____ Dayton, Ohio, where they made and _____ bicycles. They had _____ all their evenings and weekends building _____. They had _____ how to stay _____ in the air for long periods _____ their gliders. The Wright _____ had also _____ and designed a special _____. It was _____ "Flyer No. One."

III. A. CONSTRUCTION EXERCISES. Make meaningful sentences.

- 1- hadn't/the/before/bicycles/Wrights/made/ 17th December 1903/
only

- 2- a/come/year/Wrights/Kitty Hawk/to/month/each/the/had/for/month

3- machine/in/a/nobody/such/flown/before/had/

4- few/of/the/very/brothers/knew/people/Wrights

5- gliders/to/had/Kitty Hawk/tested/they/had/and taken/them

B. Put each adverb in its right place

1-(absolutely) The Wrights brothers were certain that the machine had not fallen down.

2-(formally) They announced a revolutionary invention and sent a letter to government.

3-(gradually) The inhabitants of Kitty Hawk became used to this kinds of experiment.

4-(fairly) The plan they did was carried out successfully.

5-(shortly) Before the first engine powered flight they began to sell bicycles.

IV. SENTENCE STRUCTURE. Rewrite these two sentences as one sentence.

Then rewrite three different sentences referring to the text.
The people laughed. Perhaps these people were right.

Prepared by Ömür EMENER

APPENDIX B (CONTINUED)

TEXT NO: 2

THE WRIGHT BROTHERS(2)

The Wright brothers, both now over 30 years old, were not discouraged by these mishaps. Their experiments had taught them the basic principles of flight that trained scientific minds had failed to find. So once again the brothers returned to the sand hills at Kitty Hawk this time in the middle of winter. The date was December 17, 1903.

Their flying machine, made of pieces of wood and cloth, looked too fragile to fly. With Orville at the controls, the pioneer plane moved down a track, was catapulted into the air, and flew for twelve seconds. It was the first controlled sustained flight of an airplane.

Though they had conquered the air, the Wrights still had to conquer the public's disbelief—the refusal of people to agree that a successful flight had been made. So the brothers returned to Ohio and continued with their experiments, improving their airplane and testing it near their home in Dayton. They sent letter after letter to government officials, but the news of their invention was either ignored or caused only little interest.

By the end of 1904, they could keep the airplane up for five minutes and fly complete circles. On October 5, 1905, in Dayton, Ohio, they flew 24 miles in 38 minutes—as far and as long as the gasoline supply would allow. Certain that they had the Flyer perfected, the Wright brothers were granted a patent for their invention in 1906. They formed the Wright Company to manufacture aircraft and they began at that time to seek a market.

By 1908 the Wrights had gained worldwide fame. While Wilbur was in France dazzling European audiences with flying demonstrations, Orville was conducting a series of flights before United States government officials at Fort Myer, Virginia. As a result of these demonstrations, the United States purchased its first military aircraft, a Wright machine, for a cost of \$25,000, and licenses were granted to firms abroad for the manufacture of the Wright brothers' aircraft.

Wilbur and Orville never lost their modesty when honors were showered upon them. They paid little attention to the medals and ribbons which they received from scientific societies, and again and again, they refused to make public speeches. Their unwillingness to speak out in public was emphasized by Wilbur when he commented. "I know of only one bird, the parrot, that talks, and the parrot cannot fly very high."

For Wilbur there were to be only a few short years of success. In May 1912, at the age of 45, he died of typhoid fever. His death marked the end of one of the greatest inventive partnerships in history.

Though Orville continued to work in aviation for several years more, his heart was no longer in it. He flew a plane for the last time in 1918. He retired from his company and lived quietly at his home in Dayton.

Also contributing to Orville's withdrawal from public life was his unhappiness with legal disputes with fellow aviation pioneer Glenn Hammond Curtiss arising over the patent rights which the Wright Company held on aircraft design. He also felt the United States government slighted his and Wilbur's achievements when, in 1914, the Smithsonian Museum placed on display Samuel Langley's Aerodrome, which had been built but not flown in 1903, with the notice that it was the first heavier-than-air-machine "capable" of flight. When later invited by the Smithsonian to place the Kitty Hawk Flyer on display Orville declined, and instead sent it to the Science Museum at South Kensington, England.

In 1943, at the request of President Franklin D. Roosevelt, Orville asked that the plane be returned to be put on permanent exhibit at the Smithsonian. Orville, however, never saw the display. On January 30, 1948, he died at the age of 77. The following December 17, exactly 45 years after the first flight, the Flyer was placed on permanent exhibition.

I. COMPREHENSION QUESTIONS. Answer the following questions in more than 65 words.

1- What was their machine made of ?

2- How long did their machine stay up?

3- Who went to France to demonstrate the flight again?

4- Did they become famous before 1908's?

5- What did Orville do in Virginia?

6- Was their Flyer exhibited permanently ?

7- Did Orville die in 1918?

8- What happened after Orville's withdrawal?

9- Where was Aerodrome exhibited?

10- Where did Orville send their machine? Why ?

II. FILL IN THE BLANKS. Find out appropriate word in gaps.

In 1904 the Wrights _____ a second machine. They _____ it "Flyer No,Two." They _____ some reporters to a _____ near Dayton to watch them _____. Unfortunately there _____ some mechanical _____ with the plane and it did not _____ at all that day. The _____ went away. They were _____ and did not come back. The Wrights went _____ with their work. In 1905 they built an even _____ machine. They _____ able to _____ in the air, Farmers and travellers _____ the roads _____ Dayton saw them _____. But when these _____ told newspapermen _____ it, they _____ to believe _____.

III. CONSTRUCTION EXERCISES. Make meaningful sentences from words below.

1- was/"Flyer No, Three"/in/the/not/goverment/buying/interested

2- from/to/aeroplane/Wrights/money/did/the/want/not/an/build/government.

3- already/it/the/they/Wrights/did/had/not/understand/done

4- their/to/the/took/pieces/1905/two/plane/brothers/in

5- huge/case/parts/were/into/wooden/the/put/a

IV. FINDING DIFFERENCES. What is the difference between the following?

- a) A propeller and a glider
- b) An inventor and a discoverer
- c) To raise and to rise
- d) To disappoint and to surprise
- e) To purchase and to manufacture
- f) A display and an exhibition

Prepared by Ömür EMENER

APPENDIX B (CONTINUED)

TEXT NO: 3

SAMUEL P. LANGLEY

Samuel P. Langley was a respected physicist, as well as an early pioneer in aviation. He was born August 22, 1834, in Roxbury, Massachusetts, near Boston. He became interested in experimental science early in his life, building a telescope as a boy with his brother and making astronomical observations. His formal education ended with his graduation from the Boston High School in 1851.

He worked in an architectural office in Boston and at Harvard College, and in 1864 and 1865 he visited observatories and research centers in Europe with his brother. In 1866 he became an assistant professor of mathematics at the United States Naval Academy, where he had charge of a small observatory. The next year he became professor of physics and astronomy at the Western University of Pennsylvania. In 1889 he was elected secretary of the Smithsonian Institution, the national museum and center for research in Washington, D.C. He held this position until his death.

Langley began studies on heavier-than-air flight in Pennsylvania; and he continued these studies at the Smithsonian Institution. After studying the source of power in bird flight, he constructed steam-powered models which flew successfully and attracted considerable attention. The Smithsonian awarded him \$50,000 for the construction of a full-size passenger-carrying machine, or aerodrome, as Langley called it. A quarter-size model, equipped with a water-cooled gasoline engine was flown successfully, but the full-size machine, catapulted from

houseboat on the Potomac River October 8, 1903, and again on December 8, failed both times. Discouraged by newspaper criticism, public misunderstanding, and lack of funds for further experiments, Langley discontinued his work in aeronautics.

I. COMPREHENSION QUESTIONS. Answer the following questions more than 25 words.

1- When was Samuel Langley born?

2- What was he interested in ?

3- Was he an architect in Boston?

4- How many times did Samuel Langley fail ?

5- Did the public encourage Samuel Langley, or not?

II. CONSTRUCTION EXERCISES. Put the words in correct order and make meaningful sentence.

1- aviation/first/Curtiss'/in/work/was/with/Army Dirigible

2- brothers/their/the/felt/patent/Wright/Curtiss/violated/had

3- boats/the/he/a/navy/for/built/flying/also/series/of

4- on/the motorcycle/speed/established/he/miles/record/of/137

5- features/had/wing/Curtiss'/became/standard/on innovations/design/on/aircraft

III. SENTENCE STRUCTURE. Use a pronoun instead of underlying words. Be careful to put it in its right place.

- 1- The Wrights handed on their inventions to those who came after them.
- 2- Samuel Langley carried out his plan but he did not achieve it.
- 3- Settlers in Kitty Hawk had watched the experiments.

IV. SUMMARY, Make a summary without looking at the text. Remember it as possible as you can and write it (40 - 50 words)

Prepared by Ömür EMENER

APPENDIX B (CONTINUED)

TEXT NO: 4

AVIATION TECHNOLOGY

Another aspect of technological advance is the commercial aircraft itself. A major breakthrough in civil aviation occurred in the 1950s with the introduction of large jet-powered aircraft, which soon replaced most of the post-World War II aircraft on most of the air routes around the world. In October of 1955 Pan American World Airways ordered forty-five jet transports--twenty-five DC-8s from Douglas and twenty Boeing 707s. The first round of jet orders was sparked by this move, and the jet race was on. The Boeing 707 and Douglas DC-8, along with the BAC VC-10, became the transcontinental or intercontinental carriers. Each was capable of carrying one hundred to one hundred eighty passengers for distances of four thousand to five thousand miles, non-stop, at speeds of five hundred to five hundred fifty m.p.h. The early 1960s brought smaller jet aircraft with two or three engines, such as the Boeing 727 and 737, Douglas DC-9, and BAC-111, for intercity service. These planes could economically handle fifty to one hundred passengers at about the same speeds.

In the 1970s the world saw the advent of the jumbo jets--the Boeing 747, Lockheed L-1011, and the McDonnell Douglas DC-10. These large airplanes are designed to carry between three hundred fifty and four hundred ninety passengers. While the passengers on these planes enjoy a spacious--if not luxurious--ride above the weather, their pilots enjoy the ease, comfort, and safety of a sophisticated, computerized, fully instrumented cockpit. But the advances do not stop there.

A supersonic transport capable of flying faster than the speed of sound was flight-tested in early 1970. The British-French Concorde and Soviet TU-144, both capable of Mach 2 (a maximum speed of about one thousand two hundred m.p.h.), are presently the world's only two supersonic transports (SSTs). (Development of the American SST was discontinued because of environmental and political questions.) The Soviet Union's trouble-plagued supersonic airliner--some six years behind schedule--began regular passenger service in November 1977 on a 2500-mile run between Moscow and Alma Ata, the capital of Soviet Kazakhstan. The Air France/British Airways Concorde has regular trans-Atlantic service from Paris and London to New York and Washington, D.C. It takes the plane less than four hours to make the trip--barely enough time for the passengers to finish the splendid meal they are served.

Throughout the years of development of instrument flying, numerous changes have taken place in aircraft, radio aids, instrumentation, and procedures. Slow flying, poorly instrumented aircraft have gradually given way to high performance jet aircraft with precision devices. New instrument flying procedures have been put into effect, and more efficient air traffic control service methods are being used. Flying by instruments, at one time considered impossible, is now a requirement for all commercial pilots and an integral part of air traffic control.

Another significant development in modern aviation is the emergence of women as pilots and air traffic controllers. With very few exceptions, commercial pilots and air traffic controllers have traditionally been men. This is rapidly changing. In the late 1970s about a dozen women are pilots for major commercial airlines in the United States. In most cases they are second officers or flight engineers. It is simply a matter of time until they will advance to the rank of first officer and then to the captain's seat. It is already commonplace to hear a woman's voice from air traffic control. The entrance of women into these occupations is significant, both for society and for the industry.

I. COMPREHENSION QUESTIONS. Answer the following questions in more than 30 words.

1- What is one of the facilities of technological development?

2- When did Pan American World Airways start jet transports?

3- Was Douglas DC-8 an international carriers?

4- What types of jumbo jets were seen in 1970?

5- When were supersonic jets tested?

6- What is air traffic control service?

II. FILL IN THE BLANK. Complete the gaps with suitable words.

Many planes are _____ by manufacturing company and _____ number in a kind of code that identifies the size, _____ of plane, passenger _____, and information. The largest of all _____ aircraft operating today is the _____. It is often _____ to by passengers as a "_____ "jet. The operating range is 6,000 _____ and the operating _____ is 25,000 to 45,000 feet. It provides greater _____ and for its passengers.

III. MAKING SENTENCES. Use these in sentences' referring to the text.

(incomparably fast)

1- _____
(unbelievably comfortable)

2- _____
(impossibly beautiful)

3- _____
(unimaginably advanced)

4- _____

IV. STRUCTURE. Complete the following to make sentences.

1- Douglas DC-8 _____

2- The first computerized service _____

3- The increasing number of air travelers _____

4- The international airlines _____

5- Pan American World Airways _____

Name : APPENDIX C
Surname : TEST NO: 1
Department :

Date:

Read the text carefully

THE WRIGHT BROTHERS(1)

In 1903 two brothers named Wilbur and Orville Wright (1) sent a letter to government officials in Washington, D.C., announcing a revolutionary invention. They wrote, "The series of experiments upon which we have been engaged for the past five years, has ended in the production of a flying machine..." At the time, however, such an achievement was considered impossible, and their letter and invention were ignored.

Nevertheless, the Wright brothers has indeed (2) accomplished the "impossible," and they had not done it by accident. It was successfully done through years of study, experiment, and hard work.

The Wright brothers were raised in Ohio, the sons of (3) a bishop in the Church of the United Brethren in Christ. Wilbur had been born in 1867; and he and his brother Orville, younger by four years, enjoyed a similarity in spirit and interests which made them a natural team.

Ever since childhood the brothers had displayed a (4) talent for building things. Their father had encouraged them, urging them to earn money to meet the cost of any project they started. Both brothers were especially interested in mechanical things. This interest, together with their pioneering spirit and gift for original thinking, eventually produced the "impossible" machine—the airplane.

As two poorly educated young men, the Wright brothers (5) were the first to discover the secret of air travel that had escaped the genius of the world's greatest scholars for thousands of years. Their earliest contact with the dream of flight came as children when their father brought them

a toy helicopter. It was basically a flying top, powered by twisted rubberbands, a crude forerunner of the familiar flying machine that is so useful today. The boys studied the toy, took it apart, and finally discarded it. But the memory of its flying principles stayed with them and sparked their imagination. They began to explore other airborne objects. They watched birds and studied the lifting and drifting of the birds' wings soaring against the sky. They experimented with kites and set up their own kite-making business for neighborhood children.

As the brothers grew older, they continued their studies, reading the history of man's early attempts to fly and reports of recent experiments with gliders being conducted by Otto Lilienthal in Germany and by the Americans, Octave Chanute and Samuel P. Langley. Such studies helped to overcome their lack of formal technical education; but from the start of their experiments, they found that they needed money to pay for their research. (6)

To earn this money, the brothers in 1892 opened a bicycle shop in Dayton, Ohio. It was a successful enterprise and they were soon marketing a bicycle of their own design, the Van Cleeve. But their main interest remained in the study of flight. They learned that there were two schools of thought in regard to the possible conquest of the air. First, there were those who believed in gliders that flew like kites. Then, there were those who had experimented with motor machines that imitated birds, even to copying the flapping of their wings. (7)

The Wrights decided to start their experiments with motorless gliders. They built a crude craft and journeyed to the eastern shore of the United States. They wanted an unpopulated area with soft sand and, more important, steady winds. They wrote to the United States Weather Bureau for advice and were directed to the sand dune region near Kitty Hawk, North Carolina. There, late in 1900, the brothers completed their first glider flight with a man aboard. Wilbur was the pilot, proving (8)

only that man could glide through the air. The more important question remained unanswered: could man fly through the air?

For three more years the Wrights worked to improve their glider, paying particular attention to its controls and to the shape of the wings, they made important improvements in flight control. Orville then designed an engine which they built and mounted on the glider to produce flying power. They also experimented with various designs for the all-important propellers. (9)

Samuel P. Langley of the Smithsonian Institution in Washington, D.C., had been working on the construction of a man-carrying airplane which he called the Aerodrome. In 1903 he suffered two disastrous failures when he attempted to catapult his plane into the air from a boat on the Potomac River near Washington, D.C. His second unsuccessful attempt had taken place on December 6, 1903. (10)

A. Choose the most appropriate answer referring to paragraphs in the text.

1. Paragraph 1 presents:

- a. Names of some early pioneers in flight
- b. The profession of the Wright brothers' father
- c. The ignorance of their letter by the government.
- d. The enterprise of government officials in Washington D.C.

2. Paragraph 2: It was successfully done through years of study, experiment, and hard work.

It refers to:

- a. accident
- b. revolution
- c. research
- d. invention

3. Paragraph 3 provides:
 - a. The reason why Orville was the first man to fly.
 - b. The name of their bicycle shop.
 - c. The main difference between Orville's and Wilbur's personalities.
 - d. The profession of their father.
4. The earliest contact with the dream of flight made real because:
 - a. they were the first builders of aeroplane.
 - b. their father gave them a toy helicopter.
 - c. the flying machine was so complicated that they could apart them hardly.
 - d. the situation helped to study lifting and drifting of the birds' wings.
5. Paragraph 5: The boys studied the toy, took it apart, then _____ it.
 - a. picked to pieces
 - b. broke
 - c. improved
 - d. carried
6. Paragraph 5: They began to explore other _____ objects.
 - a. technical
 - b. physical
 - c. flying
 - d. trembling
7. In which paragraph is their bicycle shop introduced?
 - a. Paragraph 3
 - b. Paragraph 5
 - c. Paragraph 7
 - d. Paragraph 6
8. In which paragraph is the reason for Kitty Hawk, North Carolina, being chosen as the site for the Wright brother's test flights given?
 - a. Paragraph 5
 - b. Paragraph 8
 - c. Paragraph 4
 - d. Paragraph 9
9. Paragraph 10: Samuel P. Langley had failed when he attempted to _____ his plane into the air.
 - a. repair
 - b. launch
 - c. repel
 - d. forebode

10. Aerodrome means

- a. the name of Wright brothers' airplane.
- b. the name of place where Samuel P. Langley attempted to fly.
- c. the name of the boat where sailed on the Potomac River.
- d. the name of Samuel P. Langley's airplane.

B. Choose the best word to fill in the gaps in this passage.

In 1903, the Wrights worked to 11 their glider, paying particular attention to its control and to the 12 of the wings. They made important improvements in flight 13. Orville 14 an engine which they built and mounted on the glider to produce flying power. They also 15 with various designs for the all-important propellers.

The strange new aircraft 16 took shape. They worked in the yard of their little bicycle 17. At the same time, the scientific world was coming to the conclusion that 18 in heavier-than-air machines seemed impossible. There had been many failures of powered flight experiments, and 19 were saying that such flights just could not be 20.

- | | | | |
|----------------|---------------|----------------|------------------|
| 11. a. improve | b. decline | c. incorporate | d. magnify |
| 12. a. model | b. colour | c. length | d. shape |
| 13. a. deck | b. control | c. record | d. race |
| 14. a. cracked | b. designed | c. moved | d. gained |
| 15. a. flew | b. taught | c. journeyed | d. experimented |
| 16. a. fairly | b. scraggly | c. gradually | d. quadrennially |
| 17. a. store | b. fair | c. shop | d. exhibition |
| 18. a. flight | b. plane | c. engine | d. propeller |
| 19. a. gaffer | b. flier | c. inventors | d. scientists |
| 20. a. stopped | b. progressed | c. done | d. searched |

C. Write whether the following statements are true or false. If it is true, mark "a", if it is false mark "b".

- () 21. Many people said a heavier-than-air flying machine was possible.
- () 22. The brothers were the first to discover the secret of air travel.
- () 23. In paragraph 7, explains that the brothers opened a bicycle shop in Dayton, but they were primarily interested in flight experiments.
- () 24. They decided to start their studies with motorless gliders.
- () 25. In paragraph 6, such studies helped to overcome their lack of formal technical education means that they found the money they needed from earliest studies and technical schools.
- () 26. Samuel P. Langley achieved the first "aerodrome on December 6, 1903.
- () 27. The word unpopulated area means the place where there are very few people.
- () 28. They lived in Dayton, Ohio, where they made and sold bicycles.
- () 29. Before the first controlled and sustained flight, they had learned how to stay up in the air for long periods in their gliders.
- () 30. In paragraph 8, they built a crude craft and means they studied on a draft plane with their brother.

Prepared by Ömür EMENER

Name : APPENDIX C (CONTINUED) Date:
Surname : TEST NO: 2
Department :

Read the text carefully

THE WRIGHT BROTHERS(2)

The Wright brothers, both now over 30 years old, (1)
were not discouraged by these mishaps. Their experiments
had taught them the basic principles of flight that
trained scientific minds had failed to find. So once again
the brothers returned to the sand hills at Kitty Hawk this
time in the middle of winter. The date was December 17,1903.

Their flying machine, made of pieces of wood and (2)
cloth, looked too fragile to fly. With Orville at the
controls, the pioneer plane moved down a track, was
catapulted into the air, and flew for twelve seconds.
It was the first controlled sustained flight of an
airplane.

Though they had conquered the air, the Wrights (3)
still had to conquer the public's disbelief-the refusal
of people to agree that a successful flight had been made.
So the brothers returned to Ohio and continued with their
experiments, improving their airplane and testing it near
their home in Dayton. They sent letter after letter to
government officials, but the news of their invention was
either ignored or caused only little interest.

By the end of 1904, they could keep the airplane up (4)
for five minutes and fly complete circles. On October
5, 1905, in Dayton, Ohio, they flew 24 miles in 38 minutes-
as far and as long as the gasoline supply would allow.
Certain that they had the Flyer perfected, the Wright
brothers were granted a patent for their invention in
1906. They formed the Wright Company to manufacture aircraft
and they began at that time to seek a market.

By 1908 the Wrights had gained worldwide fame. While (5)
Wilbur was in France dazzling European audiences with
flying demonstrations, Orville was conducting a series of
flights before United States government officials at
Fort Myer, Virginia. As a result of these demonstrations,
the United States purchased its first military aircraft,
a Wright machine, for a cost of \$25,000, and licenses were
granted to firms abroad for the manufacture of the Wright
brothers' aircraft.

Wilbur and Orville never lost their modesty when (6)
honors were showered upon them. They paid little attention
to the medals and ribbons which they received from scientific
societies, and again and again, they refused to make public
speeches. Their unwillingness to speak out in public was
emphasized by Wilbur when he commented. " I know of only
one bird, the parrot, that talks, and the parrot cannot
fly very high."

For Wilbur there were to be only a few short years (7)
of success. In May 1912, at the age of 45, he died of
typhoid fever. His death marked the end of one of the
greatest inventive partnerships in history.

Though Orville continued to work in aviation for (8)
several years more, his heart was no longer in it. He flew
a plane for the last time in 1918. He retired from his
company and lived quietly at his home in Dayton.

Also contributing to Orville's withdrawal from (9)
public life was his unhappiness with legal disputes with
fellow aviation pioneer Glenn Hammond Curtiss arising over
the patent rights which the Wright Company held on aircraft
design. He also felt the United States government slighted
his and Wilbur's achievements when, in 1914, the Smithsonian
Museum placed on display Samuel Langley's Aerodrome, which
had been built but not flown in 1903, with the notice that
it was the first heavier-than-air-machine "capable" of
flight. When later invited by the Smithsonian to place the
Kitty Hawk Flyer on display Orville declined, and instead
sent it to the Science Museum at South Kensington, England.

In 1943, at the request of President Franklin D. Roosevelt, Orville asked that the plane be returned to be put on permanent exhibit at the Smithsonian. Orville, however, never saw the display. On January 30, 1948, he died at the age of 77. The following December 17, exactly 45 years after the first flight, the Flyer was placed on permanent exhibition. (10)

A. Choose the most correct answer referring to paragraphs in the text.

1. Paragraph 4 explains primarily

- a. the reason of Samuel Langley's mistake
- b. the first controlled and sustained flight of an airplane.
- c. the first successful manned glider flights round the world.
- d. the first flight in a balloon, travelling 5 miles over Kitty Hawk.

2. Orville and Wilbur Wright make the first engine _____, heavier-than-air flight at Kitty Hawk, North Carolina.

- a. gabled
- b. propelled
- c. powered
- d. modelled

3. The _____ of the air had been tried by many scientists and inventors before the Wright brothers. But only they achieved it.

- a. invention
- b. experiment
- c. innovation
- d. conquest

4. In which paragraph is expressing the distance of the first flight?

- a. Paragraph 5
- b. Paragraph 7
- c. Paragraph 4
- d. Paragraph 9

5. Wilbur died when he was 45 years old, but Orville _____ until the age of 77.

- a. died
- b. decided
- c. flew
- d. lived

6. The price which the United States government paid for its first aircraft is introduced in:

- a. Paragraph 5
- b. Paragraph 6
- c. Paragraph 9
- d. Paragraph 10

7. The date of Orville's last flight was in _____.

- a. 1912
- b. 1914
- c. 1943
- d. 1918

8. Orville was unhappy with the legal _____ arising over patent rights.

- a. disagreement
- b. union
- c. warfare
- d. combat

9. Orville retired from aviation and _____ from public life after 1918.

- a. escaped
- b. withdrew
- c. returned
- d. saved

10. In 1943:

- a. President Franklin Roosevelt offered to put the plane on permanent exhibition.
- b. Orville had complained about putting the plane on permanent exhibition before he died.
- c. President Franklin Roosevelt and Orville participated the opening ceremony of the permanent exhibition.
- d. Orville died at the age of 77 without seeing the permanent exhibition.

B. Choose the best word to fill in the gaps in the paragraphs:

Kitty Hawk is in the state of 11 Carolina, in the U.S.A., on the Atlantic 12. On the morning of 17 December 1903, it was very cold. A 13 wind 14 in from the sea. Two brothers 15 a strange 16 across the sand. A few fishermen 17 them. The brothers were Orville and Wilbur Wright.

The Wrights hoped that it would fly through the 18 under its own 19. The machine on the sand at Kitty Hawk was not a 20.

- | | | | |
|----------------|----------------|---------------|---------------|
| 11. a. North | b. East | c. West | d. South |
| 12. a. coast | b. region | c. part | d. border |
| 13. a. blowing | b. frightening | c. drizzling | d. freezing |
| 14. a. went | b. crossed | c. leaned | d. blew |
| 15. a. caught | b. designed | c. suffocated | d. pushed |
| 16. a. animal | b. machine | c. bird | d. kite |
| 17. a. killed | b. watched | c. followed | d. declained |
| 18. a. ocean | b. soil | c. air | d. earth |
| 19. a. power | b. pressure | c. gravity | d. waterpower |
| 20. a. motor | b. machine | c. engine | d. propeller |

C. Write whether the following statements are true or false. If it is true, mark "a", if it is false mark "b".

- () 21. The Wright Brothers determined to fly the plane before Christmas, December 17, 1903.
- () 22. The machine on the sand that morning was special because it was the Wrights' first glider.
- () 23. Before 17th December 1903, the Wrights had only made bicycles.
- () 24. In paragraph 9, the date of Orville's last flight is given.
- () 25. Orville rejected Smithsonian Museum's proposal to display their machine because of the government's mistake and sent it to the Science Museum in England.
- () 26. The principles of human flight was discovered by the Wright Brothers.
- () 27. The name of the Wright Brother's plane is called Flyer.
- () 28. They founded the Wright Company to manufacture aircraft in 1903.
- () 29. Their invention was ignored by the government till 1908.
- () 30. Observers from the U.S. government watched their first flight.

Name : APPENDIX C (CONTINUED) Date:
Surname : TEST NO: 3
Department :

Read the text carefully

SAMUEL P. LANGLEY

Samuel P. Langley was a respected physicist, as well as an early pioneer in aviation. He was born August 22, 1834, in Roxbury, Massachusetts, near Boston. He became interested in experimental science early in his life, building a telescope as a boy with his brother and making astronomical observations. His formal education ended with his graduation from the Boston High School in 1851. (1)

He worked in an architectural office in Boston and at Harvard College, and in 1864 and 1865 he visited observatories and research centers in Europe with his brother. In 1866 he became an assistant professor of mathematics at the United States Naval Academy, where he had charge of a small observatory. The next year he became professor of physics and astronomy at the Western University of Pennsylvania. In 1889 he was elected secretary of the Smithsonian Institution, the national museum and center for research in Washington, D.C. He held this position until his death. (2)

Langley began studies on heavier-than-air flight in Pennsylvania; and he continued these studies at the Smithsonian Institution. After studying the source of power in bird flight, he constructed steam-powered models which flew successfully and attracted considerable attention. The Smithsonian awarded him \$50,000 for the construction of a full-size passenger-carrying machine, or aerodrome, as Langley called it. A quarter-size model, equipped with a water-cooled gasoline engine was flown successfully, but the full-size machine, catapulted from (3)

houseboat on the Potomac River October 8, 1903, and again on December 8, failed both times. Discouraged by newspaper criticism, public misunderstanding, and lack of funds for further experiments, Langley discontinued his work in aeronautics.

A. Choose the correct answer.

1. Langley's formal education ended with graduation from _____.
 - a. elementary school
 - b. middle school
 - c. high school
 - d. university
2. He worked as a professor of _____.
 - a. mathematics, physics, and astronomy.
 - b. chemistry, physics, and aeronautics.
 - c. engineering, science, and medicine.
 - d. architecture, astrology, and philosophy.
3. Langley's aerodrome was _____.
 - a. gasoline-powered
 - b. helium-powered
 - c. steam-powered
 - d. electrically powered
4. Langley received \$50,000 for the construction of a passenger-carrying aerodrome from the _____.
 - a. Smithsonian Institution
 - b. United States government
 - c. Western University of Pennsylvania
 - d. United States Naval Academy.
5. Langley's passenger-carrying aerodrome was _____.
 - a. praised
 - b. airborne
 - c. failure
 - d. sunk
6. Today Langley's contribution to aviation is _____.
 - a. condemned
 - b. forgotten
 - c. recognized
 - d. dismissed

7. Samuel Langley built a _____ to make observations when he was a boy.

- a. binoculars b. airodrome c. balloon d. telescope

8. In the last sentence of Paragraph 3, the scientist

- a. was encouraged by newspaper criticism and public understanding.
 b. never met public interests and funds for further studies.
 c. endured his experiments under hard conditions.
 d. discarded his aerodrome to exhibit the public.

9. His water-cooled gasoline engine was _____ but he suffered _____ failures when he attempted to catapult his plane.

- a. successful-two b. unsuccessful-a lot of
 c. tripping-twice d. ineffective-a few

10. He flew an unmanned _____ powered model of an airplane.

- a. engine b. wind c. steam d. helium

B. Choose the best word to put in the gaps in the paragraph.

In 1914, eight years after Langley's 11, several 12 were 13 in his "14" machine, and it was 15 at Hammondsport, N.Y., by Gleen H. Curtiss. The United States Navy 16 Langley by 17 its first 18 carrier 19 him. An Air Force Base 20 Virginia is also named after him.

11. a. death b. born c. illness d. operation
 12. a. exhibitions b. changes c. attention d. observations
 13. a. operated b. made c. flown d. published
 14. a. flying b. electrical c. aerodynamic d. aerodrome
 15. a. flown b. crashed c. hijacked d. burnt
 16. a. punished b. prohibited c. honoured d. discouraged
 17. a. naming b. carrying c. sabotaging d. keeping
 18. a. balloon b. aircraft c. wings d. propellers
 19. a. before b. then c. because d. after
 20. a. at b. on c. in d. below

C. Write whether the following statements are true or false referring to paragraphs in the text. (T) → "a" (F) → "b".

- () 21. Samuel P. Langley had failed when he attempted to catapult his plane into the air.
- () 22. Samuel P. Langley is a Brazilian inventor who makes the first successful manned glider flights.
- () 23. His formal education ended with his graduation from the university in Boston.
- () 24. Samuel P. Langley is an American scientist who designs first aerodrome.
- () 25. He flew an unmanned steam powered model of an airplane.
- () 26. He was also a philosopher who studied the phenomenon of flight.
- () 27. His "aerodrome" machine was aviated by G. Curtiss.
- () 28. His brother was also interested in aeronautics.
- () 29. Samuel P. Langley was the chairman of Smithsonian Institution until his death.
- () 30. In 1903, his machine was flown on the Potomac River.

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Name : APPENDIX C (CONTINUED) Date:
Surname : TEST NO: 4
Department :

Read the text carefully

AVIATION TECHNOLOGY

Another aspect of technological advance is the (1)
commercial aircraft itself. A major breakthrough in civil aviation occurred in the 1950s with the introduction of large jet-powered aircraft, which soon replaced most of the post-World War II aircraft on most of the air routes around the world. In October of 1955 Pan American World Airways ordered forty-five jet transports-twenty-five DC-8s from Douglas and twenty Boeing 707s. The first round of jet orders was sparked by this move, and the jet race was on. The Boeing 707 and Douglas DC-8, along with the BAC VC-10, became the transcontinental or intercontinental carriers. Each was capable of carrying one hundred to one hundred eighty passengers for distances of four thousand to five thousand miles, non-stop, at speeds of five hundred to five hundred fifty m.p.h. The early 1960s brought smaller jet aircraft with two or three engines, such as the Boeing 727 and 737, Douglas DC-9, and BAC-111, for intercity service. These planes could economically handle fifty to one hundred passengers at about the same speeds.

In the 1970s the world saw the advent of the jumbo (2)
jets-the Boeing 747, Lockheed L-1011, and the McDonnell Douglas DC-10. These large airplanes are designed to carry between three hundred fifty and four hundred ninety passengers. While the passengers on these planes enjoy a spacious-if not luxurious-ride above the weather, their pilots enjoy the ease, comfort, and safety of a sophisticated, computerized, fully instrumented cockpit. But the advances do not stop there.

A supersonic transport capable of flying faster than (3) the speed of sound was flight-tested in early 1970. The British-French Concorde and Soviet TU-144, both capable of Mach 2 (a maximum speed of about one thousand two hundred m.p.h.), are presently the world's only two supersonic transports (SSTs). (Development of the American SST was discontinued because of environmental and political questions.) The Soviet Union's trouble-plagued supersonic airliner--some six years behind schedule--began regular passenger service in November 1977 on a 2500-mile run between Moscow and Alma Ata, the capital of Soviet Kazakhstan. The Air France/British Airways Concorde has regular trans-Atlantic service from Paris and London to New York and Washington, D.C. It takes the plane less than four hours to make the trip--barely enough time for the passengers to finish the splendid meal they are served.

Throughout the years of development of instrument (4) flying, numerous changes have taken place in aircraft, radio aids, instrumentation, and procedures. Slow flying, poorly instrumented aircraft have gradually given way to high performance jet aircraft with precision devices. New instrument flying procedures have been put into effect, and more efficient air traffic control service methods are being used. Flying by instruments, at one time considered impossible, is now a requirement for all commercial pilots and an integral part of air traffic control.

Another significant development in modern aviation (5) is the emergence of women as pilots and air traffic controllers. With very few exceptions, commercial pilots and air traffic controllers have traditionally been men. This is rapidly changing. In the late 1970s about a dozen women are pilots for major commercial airlines in the United States. In most cases they are second officers or flight engineers. It is simply a matter of time until they will advance to the rank of first officer and then to the captain's seat. It is already commonplace to hear a woman's voice from air traffic control. The entrance of women into these occupations is significant, both for society and for the industry.

A. Choose the best alternative.

1. Paragraph 1: A major breakthrough occurred in the 1950s with the introduction of _____ aircraft.
 - a. jet transport
 - b. jet
 - c. jet-powered
 - d. propeller

2. In October of 1955 Pan American World Airways have started _____ flights with jet aircraft.
 - a. international
 - b. transpoles
 - c. interceptor
 - d. transcontinental

3. Which item does not refer to Boeing 747, Lockheed L-1011, and the McDonnell Douglas DC-10?
 - a. They carry three hundred fifty and four hundred ninety passengers.
 - b. They are comfort and their safety in rather complicated and reliable.
 - c. Their cockpit instruments are fully computerized.
 - d. They are the most advanced aircraft that they have been built.

4. "Supersonic" means that the plane flies _____.
 - a. all over the world
 - b. faster than sound
 - c. noisly
 - d. better

5. The Boeing 727 and 737, Douglas DC-9, and BAC-111 are used for _____ service.
 - a. computerized
 - b. international
 - c. intercity
 - d. intercontinental

6. To fly from Paris to Washington by Concorde takes
 - a. a plenty of time
 - b. more than four hours
 - c. enough time for the passengers to finish their meals
 - d. less than fours hours

7. In paragraph 4, Instrument Flying means:
 - a. the flying, landing, or navigating of an aircraft by means of instruments, rather than by visual observation of the ground.
 - b. low frequency radio ranges which are still used in many parts of the world.
 - c. a station from which a light, electronic signal is sent out to guide or orient an airplane.
 - d. the application of technical advances to air traffic control service.

8. The word computerized explains:
 - a. an instrument which displays magnetic heading information
 - b. a device which determines aircraft's altitude above the earth's surface.
 - c. an electronic device which provides information or data to aircraft in flight.
 - d. a machine which electronically provides rapid solutions to simple or complex calculations.

9. A service which provides for the purpose of preventing collisions or obstructions between aircraft and the expediting and maintaining of an orderly flow of air traffic explains the word _____.
 - a. Air Traffic Control service
 - b. Supersonic Transport service
 - c. Instrument Landing system
 - d. Automated Radar System

10. In paragraph 5, the author implies that
 - a. the entrance of women into aviation is admirable.
 - b. the commercial pilots and air traffic controllers have been educated by women.
 - c. to hear a woman's voice from air traffic control is still unfamiliar.
 - d. the functions of women pilots for major commercial airlines are changing.

B. Choose the best word to put in the gaps in the passage.

As early as 1925 we saw the 11 electronic navigation 12 - a simple radio beacon. In other words, the pilot could 13 between stations. In 1927, when the first 14 was to be made by a United States Army plane from San Francisco to the Hawaiian Islands, a newly 15 radio range was built and two installations were made. The beams from these two stations were 16 toward each other. Although the transmitters worked satisfactorily, the 17 were not always 18 . This project showed the possibility of such a 19 . By the early 1930s, however, 20 had progressed and we saw the introduction of lightweight radio.

- | | | | |
|---------------------|----------------|----------------|---------------|
| 11. a. advanced | b. unique | c. unreliable | d. first |
| 12. a. aid | b. kid | c. instruments | d. objects |
| 13. a. see | b. indicate | c. navigate | d. frustrate |
| 14. a. freight | b. contact | c. call | d. flight |
| 15. a. developed | b. discovered | c. adopted | d. designated |
| 16. a. directed | b. missed | c. overcame | d. embarked |
| 17. a. points | b. remarks | c. signals | d. signs |
| 18. a. carried | b. started | c. received | d. included |
| 19. a. organization | b. system | c. schedule | d. instrument |
| 20. a. astronomy | b. mathematics | c. education | d. technology |

C. Write whether the following statements are true or false referring to the text. (T) → "a" (F) → "b".

- () 21. An aircraft which travels at a speed greater than the speed of light is called supersonic Transport.
- () 22. An instrument which uses graduated dials with scales for solving time, distance, speed, altitude, airspeed, fuel consumption is called computer.

- () 23. The increasing number of air travellers in the 1970s necessitated development of the jumbo jets.
- () 24. The Lockheed L-1011 and McDonnell Douglas DC-10 were built for this purpose.
- () 25. These huge planes are designed to carry 350 - 400 passengers.
- () 26. Today, they have become familiar sights at the world's major airports.
- () 27. Manuevering of an aircraft according to a standart manner so that air traffic can be controlled in an orderly way. This explanation defines flying procedures.
- () 28. The application of science and technical advances to commercial aviation industry is called Aviation Technology.
- () 29. The first flight from Paris or London to Argentina in Supersonic Concorde jet can not be known according to this text.
- () 30. Flying by instruments means to assing the control to computer in the cockpit.

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TEST-1

Ss. No	GROUP A Interactive Method				GROUP B Structural Method			
	A. Multiple - Choice Test	B. Cloze Test	C. True - False Item	Total	A. Multiple - Choice Test	B. Cloze Test	C. True - False Item	Total
1	6	4	8	18	4	3	5	12
2	7	5	10	22	7	4	4	15
3	3	3	7	13	6	3	5	4
4	6	7	6	19	4	4	5	13
5	9	7	10	26	8	1	4	13
6	8	6	9	23	6	3	7	16
7	7	5	8	20	2	3	5	10
8	5	6	8	19	7	4	3	14
9	9	7	9	25	6	3	2	11
10	8	7	8	23	7	3	4	14
11	7	5	9	21	3	3	6	12
12	8	9	7	24	4	1	4	9
13	10	6	9	25	9	3	4	16
14	9	5	8	22	3	2	6	11
15	7	4	8	19	3	—	4	7
16	9	7	9	25	6	3	5	14
17	5	3	8	16	4	2	6	12
18	6	7	7	20	4	3	7	14
19	9	7	10	26	5	3	2	10
20	10	7	9	26	5	4	5	14
Y _{hi}	148	117	167		103	55	93	
Y _h	432				251			
Y	683							

TABLE 2

TEST - 2

Ss. No	GROUP A Structural Method				GROUP B Interactive Method			
	A.Multiple Choice Test	B.Cloze Test	C.True - False Item	Total	A.Multiple Choice Test	B.Cloze Test	C.True - False Item	Total
1	4	3	5	12	9	6	9	24
2	6	4	4	14	8	7	7	22
3	3	4	5	12	9	6	8	29
4	4	2	5	11	6	3	5	14
5	6	5	8	19	7	8	10	25
6	3	—	7	10	9	7	4	20
7	7	6	4	17	10	7	8	25
8	5	5	6	16	7	5	9	21
9	8	4	3	15	5	4	9	18
10	4	3	7	14	7	4	5	16
11	6	2	4	12	8	4	7	19
12	7	4	8	19	8	5	6	19
13	6	3	2	11	10	6	9	25
14	8	4	3	15	9	8	8	25
15	9	8	4	21	7	4	9	20
16	6	3	6	15	8	5	6	19
17	7	2	4	13	7	4	8	19
18	4	1	5	10	6	6	9	21
19	5	3	2	10	9	7	10	26
20	4	2	4	10	7	6	8	21
Y_{hi}	112	68	96		156	112	154	
Y_h	276				422			
Y	698							

TABLE 3

TEST-3

Ss. No	GROUP A Interactive Method				GROUP B Structural Method			
	A.Multiple - Choice Test	B.Cloze Test	C.True - False Item	Total	A.Multiple - Choice Test	B.Cloze Test	C.True - False Item	Total
1	8	4	9	21	7	4	5	16
2	9	6	8	23	4	2	4	10
3	7	7	8	22	6	5	3	14
4	8	4	7	19	3	6	4	13
5	10	7	9	26	7	8	6	21
6	6	5	9	20	5	6	5	16
7	7	8	7	22	6	4	5	15
8	8	6	7	21	7	2	6	15
9	10	6	8	24	7	5	5	17
10	9	7	9	25	4	3	3	10
11	8	7	10	25	6	4	7	17
12	7	6	8	21	3	5	6	14
13	6	4	9	19	5	5	3	13
14	8	7	8	23	7	4	5	16
15	7	5	8	21	8	3	3	14
16	9	8	10	27	4	2	5	11
17	7	7	8	22	7	5	4	16
18	6	6	7	19	5	4	6	15
19	7	8	9	24	6	5	6	17
20	9	7	9	25	6	4	3	13
Y_{hi}	156	125	167		113	86	94	
Y_h	448				293			
Y	741							

Ss. No	GROUP A Structural Method				GROUP B Interactive Method			
	A. Multiple- Choice Test	B. Cloze Test	C. True - False Item	Total	A. Multiple- Choice Test	B. Cloze Test	C. True - False Item	Total
1	6	4	3	13	7	6	8	21
2	4	3	4	11	8	7	9	24
3	7	4	4	15	10	6	8	24
4	3	1	5	9	6	4	7	17
5	4	3	5	12	7	6	10	23
6	6	2	7	15	8	6	9	23
7	4	4	3	11	8	7	9	24
8	7	5	4	16	10	7	9	26
9	6	3	2	11	9	7	8	24
10	3	4	6	13	6	6	7	19
11	4	1	5	10	8	8	9	25
12	7	2	6	15	7	6	8	21
13	6	7	4	17	6	6	7	19
14	5	4	5	14	7	7	9	23
15	4	3	4	11	4	6	5	15
16	5	5	6	16	9	6	7	22
17	4	3	4	11	9	7	10	26
18	7	2	5	14	8	6	7	21
19	8	4	6	18	7	4	7	18
20	4	5	4	13	9	6	8	23
Y_{hi}	104	69	92		153	124	161	
Y_h	265				438			
Y	703							

APPENDIX E

The data, basic quantities and calculations used in this study.

DATA

$$n_{hi} = 20$$

$$N_h = 60$$

$$N = 120$$

BASIC QUANTITIES

$$A = \sum_h \sum_i \sum_{\infty} y^2 hi$$

$$B_1 = \sum_h \sum_i \frac{y^2 hi}{n_{hi}}$$

$$B_2 = \sum_h \frac{yh^2}{N_h}$$

$$C = \frac{y^2}{N}$$

CALCULATIONS

A- Calculation of the Addition of Squares:

- 1) Addition of squares between main groups: $B_2 - C$
- 2) Addition of squares between sub-groups : $B_1 - B_2$
- 3) Addition of squares within sub-groups : $A - B_1$
- 4) Addition of total squares : $A - C$

B- Identifying the Degrees of Freedom:

- a) For the addition of squares between groups : $H - 1$
- b) For the addition of squares between sub-groups: $K - H$
- c) For the addition of squares within sub-groups : $N - K$
- d) For the addition of total squares : $N - 1$

C- Calculation of the Mean Squares :

$$1) \text{ Mean squares between groups : } S_H^2 = \frac{B_2 - C}{H-1}$$

$$2) \text{ Mean squares between sub-groups : } S_B^2 = \frac{B_1 - B_2}{K-H}$$

$$3) \text{ Mean squares within sub-groups : } S_W^2 = \frac{A - B_1}{N-K}$$

D. Calculation of the estimated value:

$$F = \frac{s_H^2}{s_B^2}$$

E. Null hypothesis and testing

If null hypothesis is rejected at the level of 0.05 confidence level, there is a significant difference between the groups. So, $F_{0.05}$ must be equal to $H-1, N-K < F$.

APPENDIX E (CONTINUED)

F - Ratio Table For
The Analysis of Variance in This Study

payda s.d.	Daha büyük F değeri olaslığı	Pay s.d.								
		1	2	3	4	5	6	7	8	9
29	.100	2.39	2.50	2.28	2.15	2.06	1.99	1.93	1.89	1.86
	.050	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22
	.025	5.59	4.20	3.61	3.27	3.04	2.88	2.76	2.67	2.59
	.010	7.60	5.42	4.54	4.04	3.73	3.50	3.33	3.20	3.09
	.005	9.23	6.40	5.28	4.66	4.26	3.96	3.77	3.61	3.48
30	.100	2.88	2.49	2.28	2.14	2.05	1.98	1.93	1.88	1.85
	.050	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21
	.025	5.57	4.18	3.59	3.25	3.03	2.87	2.75	2.65	2.57
	.010	7.56	5.39	4.51	4.02	3.70	3.47	3.30	3.17	3.07
	.005	9.18	6.35	5.24	4.62	4.23	3.95	3.74	3.58	3.45
40	.100	2.84	2.44	2.23	2.09	2.00	1.93	1.87	1.83	1.79
	.050	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12
	.025	5.42	4.05	3.46	3.13	2.90	2.74	2.62	2.53	2.45
	.010	7.31	5.18	4.31	3.83	3.51	3.29	3.12	2.99	2.89
	.005	8.83	6.07	4.98	4.37	3.99	3.71	3.51	3.35	3.22
60	.100	2.75	2.39	2.18	2.04	1.95	1.87	1.82	1.77	1.74
	.050	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04
	.025	5.29	3.93	3.34	3.01	2.79	2.63	2.51	2.41	2.33
	.010	7.08	4.98	4.13	3.65	3.34	3.12	2.95	2.82	2.72
	.005	8.49	5.79	4.73	4.14	3.76	3.49	3.29	3.13	3.01
120	.100	2.75	2.35	2.13	1.99	1.90	1.82	1.77	1.72	1.68
	.050	3.92	3.07	2.68	2.45	2.29	2.17	2.09	2.02	1.96
	.025	5.15	3.80	3.23	2.89	2.67	2.52	2.39	2.30	2.22
	.010	6.85	4.79	3.95	3.48	3.17	2.96	2.79	2.66	2.56
	.005	8.18	5.54	4.50	3.92	3.55	3.28	3.09	2.93	2.81
...	.100	2.71	2.30	2.08	1.94	1.85	1.77	1.72	1.67	1.63
	.050	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88
	.025	5.02	3.69	3.12	2.79	2.57	2.41	2.29	2.19	2.11
	.010	6.63	4.61	3.78	3.32	3.02	2.80	2.64	2.51	2.41
	.005	7.88	5.30	4.28	3.72	3.35	3.09	2.90	2.74	2.62

APPENDIX F

Sample Reading Materials

EXERCISE I

WRITE BEFORE YOU READ. Write what you understand from the first sentence of the text.

"Landing is by far the most dangerous part of the flight".

I A. ANTICIPATION EXERCISES. Before you read the passage, skim the following paragraphs and answer the questions below. Discuss your answers with your teachers and friends before reading.

Paragraph 1

- What is the topic sentence of this paragraph?

Paragraph 3

- Which device helps us to get information about the crashes?
- What is the importance of black box?

Paragraph 5

- What do pilots think of black box? Why?
- What is the solution against this thought?

Paragraph 8

- How many British Airline planes were hit by birds in 1975?

B. Which of the words below are used in paragraphs 9 and 10 ?

average	safety
middle	unique
air	information
details	hit
charge	generally
large	birds

II READ THE TEXT

III. SCANNING FOR FACTS. Find the following information in the reading passage. Give the number (s) of the paragraph(s) which give(s) the correct topics.

Topic	Paragraph(s)
a) An electronic device which collects and stores information about the aircraft during its flight.	_____
b) An airline has completely truthful about giving its own flights.	_____
c) The average air accidents.	_____
d) Black box is cleared itself.	_____
e) The place of the box in the aircraft.	_____

IV. ORGANIZATION. Arrange the general topics in the list below in the order in which they are written in the reading text.

- ___ A. Birds can cause crashes
- ___ B. All speech in the cockpit is recorded
- ___ C. The resistance of the box is very strong
- ___ D. Pilots are responsible for the most accidents.
- ___ E. Crashes happen during landing
- ___ F. Black box reminds the pilot of captivity.

V. CHECKING THE MEANING. Find the paragraph in which the following sentences or statements occur. Explain the meaning of the items in your own words.

- ___ "Accidents in the middle part of the flight":
- ___ "information about every flight":
- ___ "An honest airline is a safe one":
- ___ "Spies in the cockpit":
- ___ "an accident-free year":

How safe?

Landing is by far the most dangerous part of the flight. (1) In some years, up to 87 per cent of crashes happened during landing. And almost always more than half the crashes happen around that time. About another third of crashes happen during take-off.

Accidents in the middle part of the flight are never more (2) than 1 in 10.

Most accidents are caused by a pilot's mistake. Passenger (3) planes now have a "black box", which records information about every flight. The "black box" (in fact it's red !) records time, speed, direction and height.

It's normally in the tail, which survives best in a crash. (4) The box can survive fire of over 1000°C and being under water for over a month.

And all conversation in the cockpit is also recorded. Pilots (5) were worried about them as "spies in the cockpit", so the recordings are cleared every thirty minutes. And they are only played back after an accident.

But not every problem in the air becomes an accident. 1975 (6) was an accident-free year for British Airways. During that year there were 442,904 hours of flight, and 264,324 take-offs and landings.

But the passengers would have been surprised if they knew (7) the problems they survived. There were 99 alarm warnings because speed became too low for safety. 230 take-offs were given up on the runway. 625 engines were shut down in flight. And 153 planes were hit by birds.

The same airline reported 35 near-misses in the air in the (8) first half of 1976.

These figures are for a specially large and safe airline. (9) An average airline would have had more problems. British Airways shows unusual honesty in reporting its flight details.

Airlines that don't exchange accident information lessen (10) safety for everyone. An honest airline is generally a safe one.

BRIAN MOYNAHAN, International
Airport.

APPENDIX F (CONTINUED)

EXERCISE II

WRITE BEFORE YOU READ. Write a short paragraph about the topic below :

"Your information about Turkish Airlines".

I... ANTICIPATION EXERCISES. A. Read the following paragraphs and answer the questions below. Then discuss your answers in the class before continuing.

Paragraph 1

- What is the safest transportation today?

Paragraph 3

- When does a bell ring in the plane?
- How can a passenger call the hostess?
- Where is the button for calling the hostess?

Paragraph 8

- Is smoking forbidden in Turkish Airlines?
- What is the seating capacity of non-smokers on international flights?

Paragraph 9

- How is milk served when required?

II. READ THE TEXT

Welcome on Board

Taking into consideration the fact that you may be feeling (1) a little nervous during the flight, we would like to remind you that flying today is the safest form of travel.

You may be disturbed by an unusual sound. The noise you (2) hear immediately after take-off is the sound of the landing gear being pulled up as the plane lifts off and gets into flight position. While the plane is taking off it requires greater power than it does while cruising. In the same way, as it prepares to land, the reduced speed causes a change in the sound of engines.

When the "Fasten your seat belts" and "No smoking" signs (3) light up a bell rings. This bell is also heard when passengers ring for one of the cabin crew. During your flight, when you wish to ask a question or request something to eat, drink or read, you may call the hostess by pressing the appropriate button. According to the type of plane you are flying in, this button may be located above your seat or on the arm of your chair; and may be marked by a picture of a hostess.

When you wish for light by which to read, press the switch (4) over your head, or on the arm of your chair. When the "Fasten your seat belts" sign is extinguished you may leave your seat to go to the toilet. If the toilet is engaged, the word "occupied" will be seen on the door.

On morning flights breakfast is served, on afternoon flights (5) lunch is served, and on evening flights dinner is served. On long-distance flights snacks are served in addition to these main meals.

On scheduled and charter flights special food is available (6) on request for diabetics, vegetarians, and others who for reasons of health, religion or philosophy, are unable to eat the regular meals. However, it is essential to inform Turkish Airlines of this, well in advance, preferably when making your reservation.

Soft drinks are free of charge in international flights. (7) According to international air transport regulations passengers are forbidden to consume their own alcoholic drinks. Alcoholic beverages, cigarettes and tobaccos are being sold tax free during the flights.

Smoking is forbidden in domestic flights. On international (8) flights a section in the front of aircraft covering 60 % of the whole seating capacity has been designated for non-smokers.

We are especially concerned with children and their comfort.(9) We endeavour to anticipate and meet their every need. Milk and baby food is heated up for them when required.

Your cabin attendants will gladly supply you with blankets (10) and pillows upon your request.

Inside the plane you will find suggestion boxes and writing(11) paper. We are always pleased to receive the complaints and suggestion of our passengers.

TURKISH AIRLINES From
Magazine, 11/88.

III ORGANIZATION. Complete the following blanks according to the text that you have just read.

TOPIC	PARAGRAPH(S)
1- The explanation of noise during the taking off and landing.	_____
2- Warnings during the flight	_____
3- Catering service	_____
4- Smoking on aircraft	_____
5- Child passengers	_____
6- Your suggestions	_____

IV LOOKING AT SENTENCES. The sentences below give information which is either of a general nature or specific in detail. In the spaces provided, write G if the information is general and S if it gives specific detail.

- Passengers should inform Turkish Airlines (when making the reservation) if they are unable to eat regular meals.
- Smoking is forbidden in domestic flights.
- Breakfast is served on morning flights.
- Non-smokers have 60 % of seating capacity.

- When the "Fasten your seat belt" sign is extinguished, you can move.
- Passengers are forbidden to consume their own drinks.

V. CHECKING THE MEANING. Find the meaning for the following words in the text. The paragraphs are given for each word.

Paragraph 2

gear _____
crusing _____

Paragraph 3

crew _____

Paragraph 4

extinguished _____
occupied _____

Paragraph 5

snacks _____

Paragraph 6

diabetics _____
vegetarians _____

Paragraph 9

endeavour _____
anticipate _____

APPENDIX F (CONTINUED)

EXERCISE III

ANSWER BEFORE YOU READ. Answer the following question with a few sentences?

- What is aviation management ?
- What is aviation management concerned with ?
- What are the main procedures before/after the planes land/
take off ?

I. ANTICIPATION EXERCISE. Before reading the text, skim the following paragraphs and give the answers.

Paragraph 2

- How long does the information reach the staff?
- Who are these people working at the airport?

Paragraph 3

- What do high-lift trucks carry?

Paragraph 4

- What are the routine actions in the plane before the flight?

Paragraph 8

- How many fuel tanks has A 707 got?
- What is the pilot's duty?

Paragraph 9 and 10

- Who comes to plane before ten minutes?
- What does the starter truck do?
- Who talks to control tower?

II. READ THE TEXT

Turn-round

An international flight can take off again within ninety (1) minutes after it lands.

The first warning to the ground staff comes when the (2) plane is still seven minutes away. The information reaches the men with the steps, the food-suppliers, the cleaners, the fuellers, the engineers, Customs and so on. The incoming aircraft is met by fifteen trucks and thirty people as it taxis to a stop.

A power truck arrives to provide electric light and (3) fresh air while the plane is on the ground. There are two pairs of steps and two luggage trucks. Three high-lift trucks carry fresh food, stores and cleaning things. Fresh water is brought for the tanks-450 litres on a 707, and 1100 litres on a huge Jumbo jet.

The cleaners move in. All the unused food is unloaded (4) and thrown away, and fresh meals go into the kitchens. The lavatories need fresh soap and paper. Special supplies arrive for babies, and medical sets are checked.

Three hundred newspapers come out to the plane-a big (5) international airport can supply same-day papers from forty or more countries.

With thirty minutes left, the lavatories are emptied, (6) cleaned and filled with fresh water. The passenger lights and seats are all checked. The carpets are cleaned, and so is every window. Fresh supplies of information are put in the seatback pockets: maps, postcards, writing-paper, envelopes, safety information.

There is a supply of spare food for the crew-they will (7) eat this if the ordinary food is unsafe for any reason.

A 707 has seven fuel tanks, and a pilot has to be on (8) board to control the fuel from the two tankers.

With fifteen minutes left, a bus brings the stewardesses, (9) who check the food and the stores. The luggage and mail arrives. With ten minutes left, the crew bus returns with the captain and flight crew. They have been told about weather conditions, and they have made a flight plan.

The tankers leave, and the passenger buses arrive, (10)
with eight minutes left. A starter truck gets ready to start
the engines with high-pressure air. The doors close, and the
captain radios for the control tower's OK.

The turn-round is complete. (11)

BRIAN MOYNAHAN, International Airport.

III. SCANNING FOR FACTS. Find the following information in the
text and give the number of the paragraph.

The number of trucks and people when the
incoming aircraft lands.

At an international airport, you can find
papers from forty or more countries.

Crew has got different food.

Catering staff check the food and the
stores.

Electric light is supplied by power
truck.

Necessary things (during the flight) are
put in the seatback pockets.

Medical sets are checked

Crew is on board with ten minutes left

An international flight can take off
again within ninety minutes.

Lavatories are filled with fresh water

IV. RELATING EVENTS. Arrange the following sentences related to
the text.

- () A. The passenger lights and seats are checked.
- () B. All the unused food in the plane is unloaded.
- () C. The tankers leave and passenger buses arrive.
- () D. The food suppliers, the cleaners, the fuellers, the
engineers and customs wait for the plane's landing.
- () E. A bus brings the stewardesses to check the food and the stores.

- () F. The high-lift trucks arrive to supply fresh food, stores and cleaning things.
- () G. The flight crew and the captain are on the board having planned.

Prepared by Ömür EMENER

APPENDIX F (CONTINUED)
EXERCISE IV

I. ANTICIPATION EXERCISE. Before you read the text skim the following paragraphs and answer the questions below.

Paragraph 1

- What is the main problem of all world airlines?

Paragraph 2

- How many members has AEA got?
- What are the results of AEA's research on "no show"?

Paragraph 4

- In what ways does the airline feel sorry?

Paragraphs 3-5

- How can airlines minimize the affair?

II. In which paragraph(s) are the words used?

quantity	cooperation
utilisation	aspect
dissatisfaction	campaign
raise	cancellation
annual	hardship

III. READ THE TEXT

"NO-SHOW"

In the industrial world of aviation, in accordance with the development of economy and technology, raise in number of passenger cause the increase in number of "NO-SHOW"s. Consequently it is a constant complaint of all world airlines but no satisfactory results can be obtained to minimize the problem. (1)

Association of European Airlines (AEA) which has 20 members including Turkish Airlines have been searching for the precautions that have to be taken against the "NO-SHOW" affair. According to the research of the association, approximately 900.000 passengers are "NO-SHOW" in annual seat utilisation. From the point of financial aspect, it means a loss of 200.000.000 US dollars for the members. (2)

This topic is discussed annually in special meetings by AEA of in which last meeting the precautions held by each member and their benefits are discussed. Besides a campaign is launched by AEA to educate and promote passengers, agencies and airlines which are thought to be the main reasons in this damaging statement. (3)

We, unwillingly must state that THY customers take quite a place in the quantity of "no-show" results declared by AEA. We believe that passengers do not spend the same care for the cancellation of their denied seats as they do for their reservations. Passengers having reservations on a .determined flight and having the, wish of flying on a previous one or changing the carrier, without any information of cancellation will take part in the "NO-SHOW" problem. In this case, the airline feels not only the financial pressure but also the psychological defect of dissatisfaction for the customers on the waiting list. On the other hand, the vacant seats caused by "NO-SHOW", passengers attracts attention and critics of the ones who had difficulty in obtaining seat or found space by chance on the same flight. (4)

We believe cooperation shown by both passengers and agencies to cancel seats inadvance, in case of denial will complete the efforts of airlines to minimize "no-shows". (5)

The will relieve unnecessary hardship for both companies and passengers.

TURKISH AIRLINES
from Magazine, 7/87.

IV. CHECKING THE MEANING. Find the meaning for the following words from the context in which they are used in the reading passage. Explain each word with your own words.

Paragraph 2

precaution _____
affair _____
utilisation _____

Paragraph 3

benefit _____
launch _____
promote _____

Paragraph 4

vacant _____

V. ORGANIZATION. Answer the following questions.

Paragraph 1

1. What is the function of the word consequently?

Paragraph 2

2. Which words tell you that "No-Show" is a problem?

3. What does AEA stand for?

Paragraph 3

4. What does the word this topic refer to?

5. What are your suggestions?

Prepared by Ömür EMENER

APPENDIX F (CONTINUED)

EXERCISE V

READER GENERATED QUESTIONS. Read the first sentence and make 10 meaningful questions about it.

"The airlines of the world offer many varieties of services in many different kinds of aircraft".

I. ANTICIPATION EXERCISES. Before reading the selection; skim the following paragraphs and answer the questions below.

Paragraphs 1 and 2

- What are the two most common types of commercial aircraft?
- What is the difference between trunk lines and feeder lines?
- Are there any feeder lines operating in your area?

Paragraph 3

- Is it possible to provide more effective transportation than highways or railroad? If so, give an example.

II. READ THE TEXT

Airline services (1)

The airlines of the world offer many varieties of (1) services in many different kinds of aircraft. Transcontinental and transoceanic flights are made in giant jet planes, some of which can carry several hundred passengers on each flight. Smaller jets are commonly used on the shorter, more, heavily travelled routes between major centres of population-Paris-London, for example, or New York-Chicago. In contrast to the jets are propeller airplanes, as they are now generally called, which are slower and smaller than the jets. Many different kinds of propeller planes fly on short routes into small airports that can not handle the big planes. The DC-3 (or the Dakota, as the British call it), one of the first successful commercial airplanes, is still used in many parts of the world.

There are several ways in which airline service can be (2) divided into categories. One distinction is between trunk lines and feeder lines. Trunk lines are those which operate between major population centers. New York to San Juan, Puerto Rico, is an example of a trunk route. Feeder lines, which are sometimes called local lines, connect smaller cities and towns with each other or with the major centers and the major airports. A passenger traveling from Binghamton, New York to Mayaguez, Puerto Rico, would probably take a flight on a feeder airline from Binghamton to New York City. There he would change to a major airline which would take him on to San Juan. At San Juan he would transfer to another feeder airline to travel on to Mayaguez.

In the last few years, there has been a rapid development (3) of feeder airlines in the United States and in many other countries. Some smaller cities have no other means of public passenger transportation. In countries where there is a large frontier, such as Canada or Brazil, air service may provide access to some areas even before they are reached by roads. Similarly, in countries with rugged terrain, such as Colombia, airplanes can provide more effective transportation between regions than highways or railroads.

III. MEMORY QUESTIONS. Tell whether the following questions are True or False. Show where in the text the information is stated. Write the number of each paragraph in parentheses.

T/F

P

- () 1. The varieties of services change from airline to airline. ()
- () 2. Feeder airlines in the United States have achieved rapid development. ()
- () 3. Colombia was not good at providing feeder airlines. ()
- () 4. Trunk lines deal with the flights to small cities and towns. ()
- () 5. Some propeller planes are still used in many parts of the world. ()

IV. CATCHING WORDS. Fill in the spaces in the following sentences with the appropriate word or phrase. Concentrate on paragraph numbers related to text.

1. The term _____ includes not just airplanes, but also helicopters, gliders, and balloons. (1)
2. Several _____ airlines connect the small cities with the large cities. (2)
3. The _____ from New York to Paris on that airline always goes by way of London. (1)
4. _____ planes came into service on the airlines in the 1950's; before that time _____ were used. (1)
5. Flights which are crossing the ocean are called _____. (1)
6. _____ is the way or road or line which transportation moves between two points. (1)
7. A company which offers air transportation between two or more points is called _____. It includes all the support activities, such as aircraft, airports, ticket offices, and so on, that are necessary for providing the air transportation. (2)
8. Aircraft is used as a technical-sounding equivalent to _____. (1)
9. There are two main types of _____ aircraft of which engine totally different. (1)
10. The airlines _____ service over established routes. (3)

V. VOCABULARY PRACTICE. Use the following words and expressions in sentences of your own.

ramp :

timetable :

fare :

aircraft :

runway :

flight :

Prepared by Ömür EMENER

EXERCISE VI

I. PRE-READING DIRECTIONS. Before reading the whole text, do the following:

A. Read the paragraphs 2, 3 and 7

Write three questions that you think will be answered in this text.

- 1) _____ ?
 2) _____ ?
 3) _____ ?

B. Read paragraph 6.

Explain the freight.

What do many airlines call freight?

Was freight carried in the baggage compartment of the plane in early times?

C. Answer the following True/False questions before you read the text. (T) or (F)

- () Cargo can also refer to goods being transported by ship.
 () Airline timetables do not give frequency of service and meal service.
 () In airline usage, the rental of an aircraft by a group or an individual is called charter.
 () Charters are also faster, smoother and larger than props.
 () First class and economy class are formerly known as tourist class.

II. READ THE TEXT. Answer all the above questions again. Do you still agree with your original answers?

Airline Services (2)

Airline passenger service can also be divided into scheduled (1) and non-scheduled flights. A scheduled flight leaves at the same time on the same day to the same destination. The schedule for the flight is published by the airline in its timetable. The passenger can make a reservation in advance for a scheduled flight with the reasonable expectation that the flight will leave at a certain time and go to a certain plane regardless of the number of passengers who have tickets for the flight. Many scheduled flights often carry only a small number of passengers.

A non-scheduled flight, on the other hand, depends on the (2) availability of passengers and aircraft. It is more or less the air version of taxi or rent-a-car service. It takes passengers where they want to go at a time that is convenient for them, as long as a plane is available. Non-scheduled flights may carry only a few passengers in a small plane, or they may carry hundreds of people on a jumbo jet. These later flights are often called charters. Charters are especially popular with groups on vacation since they usually cost much less than scheduled flights on the same routes.

Scheduled airlines often provide non-scheduled services- (3) particularly charter flights-during the tourist season. Occasionally, they also provide extra sections of scheduled flights at times when travel over a particular route is especially heavy-during a holiday weekend, for example. An extra section of course depends on the availability of aircraft.

On the flight itself, there is usually a distinction between (4) first class and economy, which was formerly known as tourist class. The first class passenger has more space and receives more in-flight service. In most modern jets, the seating plan in first class is usually two seats on each side of the aisle; in economy there are usually three seats side by side. The first class seats are usually farther apart so that the passenger has more room for his legs. To the passenger, the chief difference between first class and economy may well be the cost-first class fares are much higher than economy fares.

Many airlines offer one-service flights especially on (5)
short, heavily traveled routes. On a few routes, notably
New York-Washington, New York-Boston, and Los Angeles- San
Francisco, there are shuttle flights. The passenger does not
have to make a reservation in advance, and he pays for his
ticket either at the departure gate or on the flight itself.

A final distinction is between passenger and freight (6)
service. In the early days of the airlines, freight was
usually carried in the baggage compartment of the plane. In
some cases, freight was even carried in the passenger compartment.
In this event, the reclining seats were taken out, the passengers
sat in "bucket seats" along the sides of the plane, and the
freight was strapped down in the middle of the compartment.
Nowadays small shipments may still be carried in the baggage
compartment, but there are also special planes which provide
both scheduled and non-scheduled air freight service. Some of
these planes are converted from passenger aircraft; others are
specially designed to carry freight. With these special planes,
freight in bulk can be moved by air, though the cost is usually
considerably higher than surface shipment.

The airline industry is still very young. The first (7)
scheduled service across the Atlantic, for instance, began
in 1939. Today the airlines carry millions of passengers every
year on both local and long-distance flights. In some areas
of the world, air service is the only effective means of public
transportation. The airlines are still growing rapidly and at
the same time occupying an increasingly important place in the
economy of many nations. They employ thousands of people to
handle the passengers and freight that they carry.

Many of these people work in various technical jobs where (8)
they have little or no direct contact with the public-in aircraft
maintenance or air traffic control, for example. Thousands of
others, however, come into daily contact with the traveling public.
They include reservations and ticket agents, ground service
personnel, stewardesses and other flight personnel, and many others.

EUGENE HALL, AVIATION.

III. CATCHING WORDS. Fill in the spaces in the following sentences with the appropriate word or phrase, concentrate on paragraph numbers related to the text.

1. Even though it cost more, he preferred to travel _____ because there was more space for his leg. (4)
2. The _____ for economy service is less than that of first class service. (4)
3. He didn't need a reservation to get a seat on the _____ from New York to Washington. (5)
4. There was so much business over the Christmas weekend that the airline put on several _____. (3)
5. When he looked at the _____, the departure time for his flight was given as eight o'clock, but the agent told him that it left at eight-fifteen. (1)

IV. PARTICIPATING THE TEXT. Read the following questions and write your own answer and discuss them with your teacher and classmates.

1. What is an airport? Describe your local airport.

_____ .

2. Have **you ever** travelled by plane? If so, in which class have you travelled? Which differences have you noticed during the flight?

_____ .

3. Why would you be interested in working for an airline?

_____ .

4. What is the difference between first class and economy class? Make a list.

First Class

Economy Class

5. What are some of the types of jobs that are offered by the airline industry? Write your own views.

_____ .

APPENDIX F (CONTINUED)

EXERCISE VII

I. PRE-READING DIRECTIONS. Before reading the whole text, do the following:

A. Read paragraphs 1 and 2

- Why is the movement of freight by air more complicated than the movement of passengers by air?

- By whom are a large number of air freight shipments handled?

B. Answer the following True/False questions before you read the text.

() Goods must be packed in such a way that they will not damage other goods.

() Each package should be marked so as to identify the name and full address.

() Customs Carrier is an agent who handles Customs and other government formalities on freight shipment.

() Air waybill is a list of goods together with shipping directions for each shipment of air freight.

() Making room for freight is not available for passenger baggage.

II. READ THE TEXT. Answer all the above questions again. Do you still agree with your original answers?

Air Freight(1)

The movement of freight by air is more complicated than (1)
the movement of passengers by air. For one thing, of course,
freight can not speak for itself or walk from plane to plane
when making a connection or take care of its own travel
documents. Every piece of freight has to be carefully labelled
and transported from place to place—not just from airport to
airport but also from point of origin to point of destination
—door to door, to use a common expression. In addition, there
are more government regulations, and usually more complicated
ones, for international shipment of freight than for passengers.

Because of these complications, a large proportion of (2)
air freight shipments are handled by freight forwarding
agencies, which fill a function similar to that performed
by travel agencies for passengers. In other words, they take
care of making all the necessary arrangements so that the
customer is not bothered with many of the details. Many
shipments are also made by companies or government officies
that do so much shipping that do so much shipping that they
are experienced in all the procedures. Many of these companies
and officies employ special shipping clerks.

Only a relatively small number of shipments originate (3)
with the general public or with companies that do not make a
regular practice of shipping by air. Many shipments from
general public **consist** of personal effects—personal belongings
of the shipper which are usually shipped because the customer
has been transferred to a new job or is making an extended
stay in a different area.

Like the reservations agent, the air freight agent (4)
does most of his work by telephone. Let's suppose that a
shipping clerk calls in from a company that sends a large
number of shipments by air freight. The air freight agent
assigns an air waybill number to the shipment. Then he
arranges for the pick up of the shipment from the customer.
He can also book the shipment on whatever flights are
necessary. When the shipment is received by the airline,
each piece is marked with the air waybill number for
identification.

Air freight is carried either in the baggage compartment of regular passenger flights or by freight flights on planes that have been especially designed or adapted for carrying cargo. The freight flights usually operate between major shipping points. In the United States, for example, a freighter might be routed from New York to San Francisco by way of Chicago. From larger stations that are not served by direct freight flights, the freight office probably has an allotment of space on passenger flights that connect with a freight flight—from Washington to New York, for example. At smaller stations, freight would probably go out on a space available basis on passenger flights. Making room for freight, incidentally, is another reason for weight limitations on passenger baggage.

EUGENE HALL, THE LANGUAGE OF AVIATION.

III. CONTEXT CLUE. Which paragraphs in the text help you understand the meaning of the words or phrases below?

	Paragraph(s)
Making room for freight	_____
Personal effects	_____
Air waybill number	_____
door to door	_____
label	_____
pick up	_____

IV. CLOZE EXERCISE. Complete the following paragraph without referring back to the text. When you finish, check your work against the original paragraphs. If you get at least 40% correct, your score is good.

Paragraph 1. The movement of 1 by air is more 2 than the movement of passengers by air. For one thing, of course, freight can not 3 for itself or 4 from plane to plane when making a 5 or take 6 of its own travel documents. 7 piece of 8 has to be 9 10 and 11 from place to place-not just from airport to airport but 12 from point of origin to point of 13 -door to door, to 14 a common expression. In 15 , there are more 16 regulations, and usually more 17 ones, for 18 shipment of 19 than for 20 .

V. SPECIFIC STUDY. Think of how something is done: baking a cake; playing football; making tea, recording, etc. write three things that you have BEFORE you answer a call at the airport.

1. _____
2. _____
3. _____

Now, write the first three steps that you will take at the BEGINNING of the telephone conversation.

1. _____
2. _____
3. _____

Now, write three actions that you must not do DURING the telephone conversation.

1. DON'T _____
2. DON'T _____
3. DON'T _____

VI. GENERAL DISCUSSION IN SPECIFIC TOPIC.

1. Give some examples of articles which you think will fall into the category of Restricted Articles.

2. What is required of a customer who wants to ship a pet by air freight?

3. If you were going to work in ground passenger services for an airline, what kind of work would you prefer to do? Give your reasons.

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APPENDIX F (CONTINUED)

EXERCISE VIII

I. PRE-READING QUESTIONS. Before reading the text, skim the following paragraphs and answer the questions below.

Paragraph 1 and 2

- How are charges for air freight determined?
- How can payment for air freight differ from payment for a passenger ticket?

Paragraph 4

- Define what **consignee** is.
- To whom would copies of the air waybill go?
- What information is shown on the airbill?

Paragraph 5 and 6

- What does an air freight sales representative do?
- Why will air freight continue to grow in importance to the airlines?

II. CATCHING THE WORDS. Which of the words below are used in paragraphs 3 and 4?

probably	prospective
airlines	twelve
value	rate
new	consignee
past	document
waybill	itself

III. READ THE TEXT.

Air Freight(2)

The charges on air freight are determined either by (1)
weight or weight plus volume -that is, by the size of the
pieces in the shipment. Generally, a certain number of
cubic inches is considered the equivalent of a pound of
weight. On international shipments, the shipper is at
present allowed 194 cubic inches for each pound. If he
exceeds the volume allowance, he pays a higher rate. As
with passenger fares, however, there are special rates for
certain kinds of goods.

With passengers, the fare for the flight is almost (2)
always paid in advance. Even when a passenger uses a credit
card, his fare is legally prepaid since the credit card
company is assuming the responsibility for payment. With
freight, however, the airline can also accept payment on
delivery; this is probably customary with large, frequent
shippers. The member of the general public who was shipping
personal affects would probably be asked to prepay. In regard
to international shipments, however, some countries do not
permit any shipments except those that have been prepaid, no
matter who the shipper is.

We have mentioned the air waybill several times. It (3)
is the most important document in the shipping of air
freight. It might well be described as the ticket on which
the freight travels. The common practice on most airlines
is to mark each piece of freight in the shipment with the
air waybill number.

The air waybill is a complicated document, much more (4)
complicated than a passenger ticket. There are usually as
many as twelve copies of each air waybill. Copies go to the
shipper, the consignee, and each airline on which the
freight travels. The air waybill shows the value of the
shipment, the charges, the insurance, the flights on which
the freight is being shipped, and a great deal of other

information. Naturally, the airline for which a prospective freight agent goes to work will give him intensive training in filling out the air waybill as well as in all other aspects of the job.

In addition to air freight agents, many airlines (5) have air freight sales representatives -outside sales personel- whose duties are similar to those who work in the charter area. Besides developing new business, the sales representatives may also deal regularly with special customers-probably shippers who frequently use air freight service.

Air freight, like chartering, will probably make up (6) a larger share of the total airline business in the future. The airlines generally make a larger profit carrying freight than they do carrying passengers, a fact which guarantees the growth of air freight services.

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IV. ORGANIZATION. Answer the following questions.

1. In what paragraph is consignee introduced?
2. What is "cubic inches?"
3. How many cubic inches are there in each of the following packages?
 12 " x 5 " x 20 "
 10 " x 18 " x 24 "
 14 " x 20 " x 30 "
4. How many cubic inches of volume does IATA allow for one pound of weight in international air freight shipments?
5. What is another term for a cargo plane?

V. COMPREHENSION CLUES. Choose the correct answer.

1. In Paragraph 1, 194 indicates
 - a. the number of passengers in a flight.
 - b. the number goods in a flight.
 - c. the amount of volume on international shipments. allowed by IATA.
 - d. the numbers of international shipments allowed by IATA a year.
2. In Paragraphs 3, 4 and 5, the air waybill is
 - a. numbered, and ordinarily the number appears on each piece in the shipment,
 - b. approved by IATA before and after the flight.
 - c. designed according to types of aircraft.
 - d. permitted by customers to carry in freights.
3. In paragraph (5), Freight Forwarding Agency is an agency that
 - a. provides ground services such as ticketing or making reservations for a passenger.
 - b. makes all kinds of arrangements for travellers-reservations for transportation, hotels, tours, etc.
 - c. makes all the arrangements for the shipment of freight either by air or surface.
 - d. protects the airline against the loss of his seat.
4. In paragraph (5), A sales representative is used as an agent who
 - a. handles customs
 - b. follows up on sales and deals with special customers who use air freight service more.
 - c. deals with government formalities on freight shipments
 - d. regulates the currency of groups and single entity charterers.

5. In paragraph (1) underlines that international flight rules are
- a. organized by IATA by the help of each airline.
 - b. regulated by government of each country.
 - c. suggested by general public.
 - d. adjusted in accordance with the quality of airlines.

VI. FINDING ABBREVIATIONS. What do all abbreviations written below stand for?

ICAO _____

ETA _____

IATA _____

ETD _____

VIP _____

AEA _____

RQ _____

NE _____

Prepared by Ömür EMENER

APPENDIX F (CONTINUED)

EXERCISE IX

I. ANTICIPATION QUESTIONS. Before you read the text, skim the following paragraphs and answer the questions below.

Paragraph 1, 2 and 5

- Most governments require commercial airlines to fly under what kind of rules?
- What is one of the most important aids available to a pilot?
- Who directs the movement of aircraft on and in the vicinity of an airport?

Paragraph 8

- An air traffic control beacon, or secondary surveillance radar, is compatible with the operation of what?

II. COMPREHENSION CLUES. Answer the following True/False questions before you read the text.

- () Control tower is a terminal facility which provides air traffic control service to land aircraft.
- () The term IFR is officially used in all countries.
- () ICAO is an agency of the United States of America which recommends procedures for aircraft operations on an international basis.
- () Enroute explains the times and area between departure and destination.
- () A person who is skillful at providing air traffic control services is called Air Traffic Controller.

III. READ THE TEXT. CHECK YOUR ANSWERS.

Air Traffic Control(1)

Most governments require commercial airlines flying within their borders to operate under instrument flight rules (IFR) at all times. While flying by instrument, a pilot has various navigational aids that help him take off, fly, and land safely. One of the most important aids is the series of air traffic services (ATS) which operate throughout most of the world. (1)

Looking at domestic air traffic service first, the United States system is probably the best example to use. The Americans are recognized as world leaders in aviation. They provide technical aid to other nations and train hundreds of foreign nationals every year. Moreover, the rules and procedures advanced by the International Civil Aviation Organization (ICAO) and those of the United States are, while not identical, compatible. (2)

The air traffic control/air navigation system in the United States is a vast network of facilities located in all fifty states, as well as Guam, American Samoa, Panama, and Puerto Rico. It includes twenty-five air route traffic control centers, some four hundred airport control towers, over three hundred flight service stations, more than one thousand radio navigation aids, nearly five hundred instrument landing systems, and some two hundred fifty long-range and terminal radio systems. Moreover, nearly half of the system's manpower complement of more than fifty thousand people is engaged in some phase of air traffic control; eighteen thousand are actual air traffic controllers. (3)

Air route traffic control centers handle enroute aircraft operating under instrument flight rules (IFR) between airport terminal areas. Altogether, the twenty-five centers log more than twenty-three million flights a year with thirteen centers recording in excess of one million operations each. The typical center has responsibility (4)

for more than one hundred thousand square miles of airspace, which generally extends over a number of states. A center is usually named after a large city located within the geographical area it covers--Boston Center, Denver Center, or Los Angeles Center. To keep track of aircraft in its area, a center may use as many as six or seven long-range radars and ten to twenty remote radio communication sites. Each radar site covers an area of two hundred miles in radius. The controller staff can range from three hundred to seven hundred people, with more than one hundred fifty on duty during peak periods at the busiest facilities.

Airport traffic control towers direct the movement of aircraft on and in the vicinity of an airport. Tower facilities can range from the familiar glass-walled cupola atop an airport terminal building to a freestanding structure soaring more than two hundred feet into the air. The staffing of a tower varies widely with the size of the operation. It can range from a three -to four- person operation, which keeps the tower open ten or twelve hours a day, to a controller work force of more than one hundred fifty people working in shifts around the clock. (5)

Flight service stations are the direct descendants of the airways communications stations established in the 1920s to provide weather data and other assistance to early mail pilots. The Americans operate more than three hundred of these facilities at airports around the country. Although general aviation pilots are the principal users of this communications system, they also serve the military and commercial air carriers. The people who operate these facilities brief pilots on weather, airport conditions, winds aloft, preferred routes, and other flight planning data. (6)

At sixty-three high-density terminal locations, the Americans have installed the highly sophisticated, fully computerized Automated Radar Terminal System III (ARTS-3). (By the end of 1980, another sixty-seven aerodromes will receive the ARTS-2, a system similar to the ARTS-3 except for certain data limitations.) (7)

Automated and semiautomated radar approach control facilities have become an important factor in air traffic control at major terminal airports, not only in the United States but worldwide. Much of their success is due to the versatility and inherent reliability of secondary surveillance radar (SSR), or the air traffic control beacon system, as it may be known in various parts of the world. (8)

The techniques and elaborate mode system used in SSR are compatible with the operations of the primary radar system but have additional features which enhance the overall ATC system presentation. The constant reply transmitted by an aircraft's transponder tends to make the SSR system insensitive to close-in ground objects and weather which cause problems in primary radar systems. Coding of the transmission from the ground-based interrogator and replies from the airborne transponder enable the system to gain specific information from a responding aircraft. (9)

For example, the ARTS-3 uses the airplane's transponder returns to display a full data block, which consists of an alphanumeric tag that indicates aircraft identification, altitude, computed ground speed, tracking, and altitude for those aircraft with automatic altitude reporting capability(see figure 1). Moreover, it provides other features including flight-strip printing, the capability for computer-to-computer data exchange between automated terminals or enroute control centers, and aircraft spacing or sequencing; it also alerts the controllers to a potential aircraft conflict. (10)

The United States plans for all the enroute centers and terminal systems to be tied together nationwide in a common network for the exchange of data. There is also a plan to use aeronautical satellites to enhance aircraft communications and surveillance on over-ocean routes, and to install a new, improved landing system for more precise aircraft approaches. (11)

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IV. CLOZE EXERCISE. Complete the following paragraph without referring back to the article. When you finish check your key words.

Paragraph 2. Looking 1 domestic air traffic 2 first, the United States 3 is probably the 4 example to use. The Americans are 5 as world leaders in 6. They provide 7 aid to other 8 and 9 hundreds of foreign nationals every 10. Moreover, the rules and 11 advanced by the 12 Civil Aviation 13 and those of the 14 states are, while not identical, 15.

V. MATCHING PHRASES AND FINDING PARAGRAPHS. For each phrase on the left, find the word or phrase that goes with it on the right, write the number in the blank space and paragraph number in parenthesis.

- | | |
|------------------------------------------------------|------------------------------------------|
| <u> </u> secondary surveillance radar | 1. air traffic controller () |
| <u> </u> for most commercial flying by instrument | 2. mode system in SSR () |
| <u> </u> works in the tower | 3. air traffic control beacon system () |
| <u> </u> automated radar system | 4. flight service station () |
| <u> </u> primary radar system | 5. ARTS 3 () |

VI. FINDING ABBREVIATIONS. Find the abbreviations in text and write them in full.

EXERCISE X

I. ANTICIPATION EXERCISE. Before you read the text, skim the following paragraphs and answer the questions below.

Paragraph 1, 2 and 3

- Define a controlled area. A controlled area TS also known as what?
- What is a jet route?
- How many ICAO flight information regions are there?
- What is FIR?

Paragraph 5, 6 and 9

- Give the dimensions of a control area.
- What is an advisory route?
- On an advisory route, who controls traffic?

Paragraph 10 and 11

- On which routes may commercial flights usually operate in individual nations?
- What kind of service takes precedence over flight information service

II. READ THE TEXT. Review the questions and your answers above.

Air Traffic Control(2)

The United States has a fairly complex system by which it divides and controls its airspace. Let us consider one of these controlled areas: the positive control area (also referred to as APC or area of positive control). This includes the airspace over most of the United States from eighteen thousand feet to FL (flight level) 600, except over Alaska where it is FL 240 to FL 600. It is in this area that the jet routes are located and where most commercial flights take place. For operations within positive control space, aircraft must: (1) be operated under IFR at a specified altitude assigned by ATC; (2) be equipped with the instruments needed for IFR operations and flown by a pilot rated for instrument flight; (3) have a transponder, replying to mode 3/A interrogation with code specified by ATC; and (4) be radio equipped for direct pilot/controller communications on the frequency specified by ATC. (1)

There are eight designated ICAO regions throughout the world. For the purpose of assisting and controlling aircraft within each ICAO region, the airspace has been further divided into information regions and controlled airspace. The basic breakdown of the ICAO regions begins with the flight information regions. (2)

A flight information region (FIR) is an airspace of defined dimensions within which flight information service (FIS) and alerting service is provided. This service is used basically to notify appropriate organizations regarding aircraft in need of assistance. The assistance is provided by either a flight information center (FIC) or an area control center. (3)

Flight information service supplies exactly what the name implies; no control is offered or undertaken. No flight plan or change of flight plan can be approved or disapproved by the FIC. The information provided (4)

consists of severe weather warnings, changes in status or navigational aids, conditions of aerodromes and facilities, and other information considered necessary to safe flight operations. Any change or revision of the flight plan based on this information is entirely the responsibility of the pilot. However, he or she should notify the FIC so that all traffic in the area will be advised of the change.

Controlled airspace is established according to the (5) needs and available facilities in different areas. It is an airspace of defined dimensions within which air traffic control service is provided. Controlled airspace may appear in various forms:

1. A control area (CTA) is defined airspace which (6) extends upwards from a specified height above the earth. Its lower limit is not less than two hundred meters or, in some cases, seven hundred feet above the earth. The lower limit does not necessarily have to be established uniformly in a given CTA. It may laterally encompass an entire FIR or only a portion of one, or it may extend along designated airways. An upper limit is established when air traffic control is not provided above such limit, or the control area is situated below an upper control area (UTA). This situation is similar to the FIR/UIR relationship previously discussed. They have common functions and the UTA may cover several CTAs, FIRs or portions thereof.

2. A control zone (CTLZ) laterally encompasses those (7) portions of the airspace not within control areas and contains the paths for IFR flights in arriving and departing aerodromes. A control zone's lower limit is the ground and, if located within the lateral limits of a CTA, it extends vertically to at least the lower limit of the CTA.

3. A terminal control area (TCA) is a portion of a CTA normally situated at the confluence of airways in the vicinity of one or more major aerodromes. A TCA supplements a CTLZ and is established to protect IFR flights over a wider area in the vicinity or aerodrome. (8)

4. An advisory route (ADR) is merely a recommended route in uncontrolled, advisory airspace. No control will be offered but advice or suggestions will be made to facilitate flights. This service does not afford the degree of safety -and cannot assume the same responsibility- as air traffic control service does with respect to the avoidance of collisions. The pilot must decide and inform the unit providing this service if he will comply with the advice or suggestions. When flying ADRs, entry clearance into CTAs must be obtained. (9)

When air traffic control is implemented within the airspace of an FIR, the area is designated as CTA/FIR. (10) However, in some areas, the CTAs may cover only a portion of a given FIR. The air control center will then exercise positive control within that portion designated as a control area. If a portion of the FIR does happen to be excluded from a designated FIR/CTA, then only flight information service will be given in that portion. Air traffic control service takes precedence over flight information service within these areas.

Finally, air corridors are designated by individual nations and are normally the only routes in which aircraft may operate. Corridors should be considered positive control routes. (11)

III. COMPREHENSION TEST. Choose the best alternative referring to the paragraphs in the text.

1. Airspace of defined dimensions within which air traffic control service is provided to controlled flights is called _____

- | | |
|--------------------|-----------------------|
| a. transponder | c. aeronautical chart |
| b. controlled area | d. radar vectors |

2. Paragraph 4 primarily explains
 - a. specified information, related to the indeed flight of an aircraft, that is filed with an air traffic control activity.
 - b. publications used with authority of a state and containing information of air navigation.
 - c. low and medium frequency navigation aid.
 - d. altitude at or below which the vertical position of an aircraft.

3. CTA stands for _____.
 - a. Central Traffic Area c. Civil Traffic Association
 - b. General Traffic Altitude d. Control Area

4. Paragraph 9 concerns with
 - a. the number of control zones in the world.
 - b. the advice or suggestions given by pilots.
 - c. ADRs flights without applying to CTA.
 - d. the degree of safety.

5. A control area established in the form of a corridor equipped with radio navigation aids is called _____.
 - a. runway c. airway
 - b. taxiway d. railway

IV. COMPREHENSION EXERCISE. Answer the following True/False questions.

- () 1. Corridors should be considered advisory route.
- () 2. Advisory route is preferred to provide advice or suggestions.
- () 3. Track is a path projection of an aircraft in relation to the surface of the earth.

- () 4. The control area is situated below an upper control area is called terminal control area.
- () 5. Controlled airspace is divided into several parts which are classified according to needs and features of different areas.

V. CONTEXT CLUE. In which paragraphs are the words or phrases below used?

safe flight operation ()
 ICAO ()
 FIS-flight information service ()
 air corridors ()
 airway ()
 controlled airspace ()
 EFR-flights over a wider area ()
 suggestion ()

VI. CLOZE EXERCISE. Read the text one more. Complete the paragraph without referring back to the text. When you finish, check your answers.

There are 1 designated ICAO 2 throughout the world. For the purpose of assisting and 3 aircraft within each 4 region, the airspace has been further 5 into information regions and 6 airspace. The 7 breakdown of the ICAO 8 begins with the 8 information regions.

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