

PEOPLE'S DEMOCRATIC REPUBLIC OF ALGERIA
MINISTRY OF HIGHER EDUCATION AND SCIENTIFIC RESEARCH
EDOLAS (Ecole Doctorale Langues de Spécialité)

AMAR TELIDJI UNIVERSITY – LAGHOUAT
FACULTY of LAW and SOCIAL SCIENCES
DEPARTMENT of ENGLISH



The Impact of Strategy-Based Instruction to Reading ESP texts on Students' Motivation and Achievement

The Case of Electrical Engineering^{3rd} Year LMD Students

*Dissertation submitted to the Department of English as a fulfillment for
the requirements of the 'Magister' Degree in (ESP) English for Specific
Purposes*

Chair : Pr. M . Miliani
Supervisor : Dr . Fatiha Kaid Berrahal
Examiner : Pr. A . Bahous
Examiner : Dr . N . Guerroudj

Presented by:
Mustapha Gasmi

2010 - 2011

ACKNOWLEDGMENTS

I have been blessed because the work I care deeply about flowered under the supervision of an esteemed and valued supervisor, Dr. Fatiha Kaid Berrahal. I am most grateful to her; her guidance was most valuable. I will forever be indebted to Dr. F. Kaid Berrahal for her generosity of spirit.

I thank all those who contributed their help, support and hard work in the EDOLAS Project. Thanks to Pr. M. Miliani and Pr. A. Bahous for feedback on specific areas. I also thank Dr. K. Bouziani and Dr. N. Mostefa Kara for their support. And I appreciate the continuing assistance and thoughtful feedback from M. Garoui. I also acknowledge the cooperation and assistance of A. Bensaad and A. Sadki, who not only ushered me through the maze of test development and validation, but also taught me how to analyze and interpret the data, and provided me with useful comments. Special thanks also go to the examiners who evaluated the end-product of the study both qualitatively and quantitatively.

I thank all those who contributed their help and support. My long-time colleagues at high school and university were nothing short of extraordinary. A. Chettikh, S. Khalfa, S. Hachani, S. Korichi, A. Tiriri, M. Halimi, F. Ziregue, S. Ahmine and N. Titiri, were a constant source of friendship, joyfulness, daily dialogue, and problem-solving support.

To all, many thanks again for your assistance and encouragement. May we all continue to learn from each other.

DEDICATION

This work is dedicated to:

the soul of our Prophet, peace of God be upon Him.

the Soul of my Father, Hadj saadi.

the Soul of my Sister, Freha.

my mother.....

my wife and children (Aouatef, Saadi Hichem, Anfal and Mohamed Abdelmadjid) for suffering through the birth pangs of this study. I hope they will regard the result as worth their sufferings.

ABSTRACT

The present study aims primarily at identifying the effects of strategy-based instruction in reading content-based material on ESP students' motivation and achievement. The research was conducted with 3rd LMD Science and Engineering students whose concern with English is rising due to the lack or unfulfilling translated information. The study was also concerned with diagnosing the effects of a third variable, gender, on students' motivation to read and achievement. To achieve the goals of the study, a variety of research tools has been used: an awareness of reading strategy survey, survey of attitude towards reading in English and a reading performance test.

This study, which lends itself to a descriptive approach, was applied on a population chosen randomly from Amar Telidji University in the town of Laghouat, Algeria. The 120 students formed the whole population, 37 boys and 83 girls. Data for the research was collected and analyzed statistically using the Social Sciences Statistics Software (SPSS version 19) in which a set of tests was applied: T-test, Guttman Split-Half Coefficient and Cronbach's Alpha.

The results showed the presence of statistically significant differences between two groups of students: strategic and non-strategic groups. They also showed statistically significant differences between both groups in terms of attitudes towards reading in English, strategy use and motivation to read. Moreover, the results revealed a clear cut difference, statistically significant, in the various levels of achievement amongst boys and girls. Females outscored boys in the reading performance test. Finally, the results showed slight statistically significant differences between males and females in terms of motivation. Pedagogically, we can employ the results in EFL classrooms to improve reading ESP texts among science and engineering students. In this respect, some pedagogical suggestions to develop EFL reading at tertiary level using Strategy-Based Instruction to reading ESP texts.

LIST OF FIGURES

- Figure (1): Components of Strategy-based Instruction
- Figure (2): Key features of strategy-based instruction
- Figure (3): Characteristics of EFL Learners
- Figure (4): Data Collection Method
- Figure (5): Achievement Test Scores per Category
- Figure (6): Strategy use Scores per Category
- Figure (7): Strategy One: Planning for Reading
- Figure (8): Pre-reading Strategy Scores
- Figure (9): While-reading Strategy Scores per Category
- Figure (10): Post-reading Strategy Scores per Category
- Figure (11): Students' Motivation Total Scores per Category
- Figure (12): Reading Strategies per Category (Gender)
- Figure (13): Strategies Use versus Reading Performance
- Figure (14): Strategies Use versus Reading Performance per Gender

LIST OF TABLES

- Table (1): The distribution faculties and departments at Amar Telidji University, Laghouat
- Table (2): Number of permanent teachers (per degree)
- Table (3): LMD and classical system students
- Table (4): Distribution of LMD and classical system students per faculties
- Table (5): Teachers of English at the electrical engineering faculty
- Table (6): Textbooks used by EFL teachers at the electrical engineering department
- Table (7): Observed EFL sessions (classified per date of observation)
- Table (8): Layout of Students' Motivation for Content-based Reading Questionnaire
- Table (9): Layout of Strategy-based Content-area Deep Reading Questionnaire
- Table (10) : Categories and their assigned point values
- Table (11) : Detailed layout of the Reading Achievement Test Questions
- Table (12): Domains and their responsible staff at the Electrical Engineering Department
- Table (13) : Distribution of Students per Domain
- Table (14) : Key terms of descriptive statistics by SPSS.
- Table (15) : Teachers' Approval for the Validity of the Research Tools
- Table (16).: Reliability Statistics for Reading Performance
- Table (17) : Reliability Statistics for Students' Reading Strategy Use
- Table (18) : Reliability Statistics for Students' Motivation to Read
- Table (19) : T-Test : Independent Samples Test (Students' Motivation to read)
- Table (20) : Students' Motivation (part 1) : Necessity to read in English
- Table (21) : Students' Motivation (part 2) : Attitude towards Reading in English
- Table (22) : Students' Motivation (part 3) : Wants & Desires
- Table (23) : Students' responses to statement 18 in the motivation test
- Table (24) : Students' responses to statement 19 in the motivation test
- Table (25) : Students' responses to statement 20 in the motivation test
- Table (26) : T-Test : Independent Samples Test _ Students' Use of Reading Strategies per Gender
- Table (27) : T-Test : Means per Gender in the Reading Performance Test
- Table (28) : T-Test : Independent Samples Test _ Students' Motivation per Gender
- Table (29) : Gender and Attitude towards reading (in English)
- Table (30) : Gender and Interest in English
- Table (31) : Gender vs. Wants and Desires behind Reading in English

LIST OF APPENDICES

- Appendix (1): Classroom Observed Lesson One (Teaching/Learning Material)
- Appendix (2): Classroom Observed Lesson Two (Reading Material)
- Appendix (3): Classroom Observed Lesson Three (Reading Material)
- Appendix (4): Classroom Observed Lesson Four (Reading Material)
- Appendix (5): Classroom Observed Lesson (Reading Material)
- Appendix (6): Motivation to Read Survey
- Appendix (7): Reading Strategies Survey
- Appendix (8): Classroom Observation Checklist Form
- Appendix (9): Reading Comprehension Performance Test
- Appendix (10): Classroom Observed Lesson One
- Appendix (11): Classroom Observed Lesson Two
- Appendix (12): Classroom Observed Lesson Three

LIST OF ABBREVIATIONS

EAP.....	English for Academic Purposes
EFL.....	English as a Foreign Language
ELT.....	English Language Teaching
ESP.....	English for Specific Purposes
EST.....	English for Science and Technology
LMD.....	Licence Master Doctorat
SBI.....	Strategy-Based Instruction

TABLE OF CONTENTS

Acknowledgement	I
Dedication	II
Abstract	III
List of Figures	IV
List of Tables	V
List of Appendices	VI
List of Abbreviations	VII
Table of Contents	VIII
General Introduction	1
Chapter One: Review of Literature	
1.1 Introduction	10
1.2 English for Science and Technology (EST)	10
1.3 Reading and Disciplines	11
1.3.1 Content-Area Reading Comprehension	11
1.3.1.1 Higher Order Thinking and Critical Reading	13
1.3.1.2 Critical Reading	14
1.4 Strategy-based Reading Instruction in ESP Settings	14
1.4.1 Components of Strategy-based Instruction	16
1.4.2 Strategy-based Instruction to Content-Area Reading Comprehension	18
1.5 Key Reading Strategies that Promote Achievement	20
1.5.1 Pre-reading Strategies	21
1.5.1.1 Activating Prior Knowledge	21
1.5.1.2 Giving a Purpose for Reading	22
1.5.2 During-reading Strategies	22
1.5.2.1 Skimming and Scanning	22
1.5.2.2 Questioning and Inferring	23
1.5.2.3 Evaluating and Drawing Conclusions	23
1.5.3 Post-reading Strategies	24
1.6 Students' Motivation to Read	25
1.7 Explicit Strategy Instruction and Reading Performance	27
1.8 Gender Differences in Using Reading Strategies	29
1.9 in Attitudes towards Reading	29

1.10 Conclusion	30
Chapter Two: Methodology of the Research Work	
2.1 Introduction	32
2.2 Geographical Context of the Research Work	32
2.3 EFL at the Electrical Engineering Department	33
2.4 The Status of the Reading Skill	35
2.5 Engineering Students' Needs	37
2.6 Methodology and Research Procedures	40
2.6.1 Methodology	40
2.6.2 Data Collection	42
2.6.2.1 Review of Literature	42
2.6.2.2 Classroom Observation	43
2.6.2.3 The Survey	45
2.6.2.4 The Reading Achievement & Performance Test	49
2.6.3 The Population	51
2.6.4 Research Procedure	52
2.6.5 Data Analysis	53
2.6.5.1 Validity of the Research Tools	54
2.6.5.2 Reliability of the Research Work	55
2.7 Conclusion	55
Chapter Three: Results & Analysis of Findings	56
3.1 Introduction	57
3.2 General Results of the Research Work	57
3.3 Relations between Strategy Use and Reading Performance	57
3.4 Differences between Good and Poor Readers on Strategy Use	60
3.4.1 Strategy One: Planning for reading	60
3.4.2 Strategy Two: Pre-reading Strategies	61
3.4.3 Strategy Three: While-reading Strategies	61
3.4.4 Strategy Four: Post-reading Strategies	62
3.5 Differences between Good and Poor Readers on Motivation to Read	63
3.6 Relations between Strategy Use and Content Achievement	67
3.7 Relations between Strategy Use, Reading Motivation and Gender	68
3.8 Pedagogical Implications and Recommendations	75

3.9 Conclusion	78
General Conclusion	79
Bibliography	82
Appendices	102
Appendix (1) Classroom Observed Lesson One Reading Material	102
Appendix (2) Classroom Observed Lesson Two Reading Material	104
Appendix (3) Classroom Observed Lesson Three Reading Material	106
Appendix (4) Classroom Observed Lesson Four Reading Material	111
Appendix (5) Classroom Observed Lesson Five Reading Material	113
Appendix (6) Motivation to Read Survey	115
Appendix (7) Reading Strategies Survey	118
Appendix (8) Classroom Observation Checklist Form	122
Appendix (9) Reading Comprehension Performance Test	126
Appendix (10) Classroom Observed Lesson One	129
Appendix (11) Classroom Observed Lesson Two	131
Appendix (12) Classroom Observed Lesson Three	133

GENERAL INTRODUCTION

English has been widely used in many areas such as economics, diplomacy, telecommunication, culture and science and technology. It is not only a means of but also a key to accessing the latest achievements of science and technology. In Algeria, although English is not the medium of instruction in tertiary levels, it is always considered as an access-key at higher education in various educational fields. For most experts, reading is probably the most important skill for foreign language learners due to the little exposure, if not the non-exposure, they have to this language outside the classroom. For Pearson, P.D. and Dole, J., most of the information comes through reading. This is true to the extent that students' academic success is very much dependent on their reading ability in English.

Academic settings nowadays require science and technology students to develop specific reading skills so as to get access to written documentation in English at college now, and in the work place later on. However, many students today lack literacy skills that would ensure their success as readers and allow them to achieve academic success. They do not possess the skills required to read and interpret texts, so they have difficulty understanding the material to be read, particularly longer and more complex passages in a content area. Many experts agree that students need reading skills to excel in academics, create meaning from text, and function in society.

Since reading is considered as a problem-solving activity, the idea of strategic learning of reading has become the matter of investigation in recent years. EFL reading research has long been interested in reading strategies, the ways they contribute to promoting better reading of field related documentation and how these strategies can be incorporated in the reading skill instruction. It is argued that both cognitive and metacognitive abilities are more important and can do more than the content knowledge itself. Researchers have found out that good readers are usually the active and strategic readers who make use of the appropriate strategies during all reading phases (pre-reading, during reading and after reading). Reading comprehension instruction mainly aims at helping students develop the knowledge, skills, and strategies they must possess to become proficient and autonomous readers.

Research in the field of reading is concerned with developing appropriate pedagogies that will suit the needs and promote abilities of foreign language learners.

Paradoxically, reading instruction has long focused on the acquisition of new vocabulary items, ignoring the transfer of reading strategies to content area reading material. But today a great deal of importance is given to the teaching and application of reading strategies across the curriculum, in all subject areas. Thus, both of subjects' teachers and ESP teachers need to collaborate so as to help students learn to effectively use these skills with various texts and in different learning contexts. The more aware of what you are doing, the more effective you become. According to experts in the field of education, one of the various problems encountered by Arab EFL science and engineering learners is the reading problem. These students, including Algerians, suffer from many reading problems as a result of teachers' mishandling of the reading process, students' lack of linguistic competence, differences between English and Arabic, and English spelling-pronunciation irregularities. Moreover, comprehension of printed material is a very complex process because it is affected by a variety of factors. According to many experts, among them Weaver, the three principle elements that shape our understanding of texts are the reader, the text and the situation. The reader is expected to make use of the background knowledge and experience; the layout, language structures and type of writing play a great role, too. Finally, the situation refers to, for example, the reason why we read a given material.

The present study was conducted with a group of students from the electrical engineering department at the University of Laghouat who are dealing with subjects fully documented in English, and their field of study is of a high worldwide importance since all fields of life are dominated by innovations and technology. This specific situation should raise their motivation and develop positive attitudes towards reading English texts so as to achieve academic progress and to have a guaranteed professional future.

Moreover, Electrical Engineering Students are supposed to be exposed to those writings within academia in which a massive amount of information is daily

exposed in English. In order to cope with this material, students are required to be familiar with organizational patterns and structures that are used in this type of writing. Learners also need appropriate instruction that familiarizes them with these materials because educational experts agree upon the fact that learners who are trained on the layout of this type of writing are better at comprehending and retaining new information. Some of the factors that may lie behind the difficulties faced by students can be their lack of appropriate strategies, insufficient background content knowledge, and lack of positive attitude as well as motivation towards reading. That is why the idea of strategic learning of reading has become the matter of investigation in recent years.

This research work is highly motivated by the difficulties that Algerian science and engineering EFL students encounter in situations where specific courses are unavailable and the teaching procedures and materials are inadequate. When dealing with a reading lesson, students often experience the lack of reading strategies which are essential for them to overcome the challenges in the classroom. The motivation for the study is the conviction of the importance of the explicit strategy instruction in enhancing reading comprehension and academic achievement. It is argued that "cognitive and metacognitive" skills are crucial to the learners and are of great importance due to their effects upon students' literacy level. Research into reading has found that effective readers are aware of the strategies they use and that they use strategies flexibly and efficiently. Researchers believed that these strategies could be taught to ineffective language learners so that they can become more successful in language learning. For these reasons, it would be necessary to have an investigation into classroom practice and students' awareness of reading strategies. By doing so, we could recognize the relationship between explicit teaching of reading strategies and student motivation and performance. Hence the title of the present research work is *The Impact of Strategy-based Instruction to Reading ESP Texts on Students' Motivation and Academic Achievement: The case of Electrical Engineering 3rd Year LMD Students*.

The difficulties encountered when getting access to field-related documentation indicate a need for a strategic methodology that will impact deep reading and critical

thinking performances. For many experts, a strategy-based reading instruction remains to be highly significant when dealing with specific domains. Research in the field has proved that when teachers explicitly train their students on the appropriate strategies, students' performance and learning increase. Central to this present research work is the question: To what extent can reading strategy-based instruction help promoting students' motivation and ability to effectively read ESP texts, and then promote scientific literacy?

The purpose of this study is to identify the effects of explicit instruction of reading strategies on science and engineering students' motivation to read ESP texts as well as on their achievement. In order to conduct an in-depth analysis and make inferences, varied questions were raised: Are there significant differences in academic achievement between strategic and non-strategic readers? Are there any differences in motivation between both strategic and non-strategic readers? To what extent is strategy based reading a key-access to content knowledge? Is gender a defining factor of both motivation and strategic reading?

In the attempts to provide answers to the questions above, a set of hypotheses is laid. First, students who are explicitly trained on how to use reading strategies would show a better understanding of ESP texts (field-related material) than those who are not. Thus, they would be active and autonomous readers. Secondly, if students were instructed within a strategy-based and learner-centered framework, those learners' motivation to read would be greater. Next, when a strategy-based instruction is applied to reading, ESP teaching will positively impact the growth of content knowledge. Finally, gender wise, it is assumed that female students are more motivated and more strategic than male students.

Instructional strategies proved to be exceptionally effective in increasing student motivation and performance. Research on reading has identified several highly effective cognitive strategies for students to use in reading comprehension. In the present study, the focus of the study was narrowed to a key sample of strategies: establishing a purpose for reading, working outside of texts (Predicting the topic through images and visuals/Activating prior knowledge), working inside of texts

(Anticipating content/Predicting main ideas through titles and subtitles), learning and retaining academic vocabulary, connecting prior knowledge, questioning, summarizing, Interpreting and evaluating

The objective of this descriptive study is to investigate the relationship between strategy-based reading instruction and that of student motivation to read, and its implication on their academic achievement. That is, the researcher attempts to highlight the need for a future research on the effects of content area reading strategies on science and engineering students' comprehension of ESP texts as well as on their motivation to read authentic material. In this respect, the research at hand aims first at examining whether Electrical Engineering students apply reading strategies during their academic tasks. It aims also at measuring students' motivation to read scientific documentation written in English. The research findings will hopefully help to act accordingly seeking the achievement of a correlation between subject specialty and the English language content at graduation level. In other words, the findings of the study could serve teachers and course designers in conceiving an ESP reading course. It could be considered as a first step in the design of an ESP reading comprehension course for science and technology students that helps promote critical reading skills and increase students' motivation to read effectively authentic material.

When considering the strategy-based reading instruction approach and its effects on students' motivation and achievement, one must consider previous studies to provide a theoretical framework for the present study. Content-based literacy is a flourishing approach in the field of second / foreign language instruction. It has been recognized as a key element to improve motivation as well as literacy at graduate levels, that is why educators are trying to implement content literacy strategies.

The first determining factor is the awareness of strategy use on the part of the learner. Since the main goal behind reading is to extract and construct meaning from texts, the reading process is a complex one that is made up of a variety of complex cognitive abilities requiring the reader to relate new information to prior knowledge which results in a mental representation. So, reading comprehension is an interactive

process that ties the reader to a text. During this interaction, the reader brings with him/her a variety of skills and strategies to deal with the new material. Researchers proved the crucial role of higher-order processing involved in reading. Readers have been found to employ a wide range of strategies, while they are engaged in comprehending texts, since the reading process involves the use of various strategies such as problem-solving strategies to build meaning. Reading strategies have been defined as specific, deliberate, goal-oriented mental processes or behaviours, which control and modify the reader's efforts to decode a text, understand words and construct the meaning of a text.

The second determining factor is motivation. It seems easy to accept the assumption that learning is most likely to occur when we want to learn. Thus, motivation is an important factor in the learning process. It is characterized by being the desire to obtain something practical or concrete from the exposure to a second language. A student with academic motivation has a desire to learn and likes learning-related activities. Positive academic motivation doesn't only help the student to succeed in the studies, but it also helps him see the learning as rewarding and important in all aspects of life.

Strategy instructions helps students who struggle with texts become aware of, use and develop control over learning strategies. Explicit instruction doesn't only show students what to do, but also when, where and why to do so. This type of instruction integrates reading skills and strategies across the curriculum and in all content areas; consequently, students will not improve only their reading ability but also will increase their success in the content areas. Teaching text-comprehension strategies aims at fostering independent reading based on thoughtful interaction between reader and text. Research supports this method which helps mediate reading difficulties, focus students on key concepts, and stimulate cooperative work in class. Reading comprehension strategies have been a focus in reading research, and various researchers agree that some strategies are highly effective for improving reading comprehension. The approach to teaching reading comprehension strategies centers on the direct teaching of specific procedures, such as predicting, interpreting, making

inferences, summarizing and generating questions, and using them in working with texts.

Since reading difficulty remains as one of the most important problems encountered by learners, many studies have compared the reading process of both good and poor readers from the information processing perspective. While skilled readers know how to use effective reading strategies to facilitate the functioning of various cognitive processes and construct meaningful understanding of the text, poor readers simply read the text word by word without using any strategies.

In order to orient the reader to the concepts which are investigated in the present study, a brief discussion of these concepts is made. The first concept is “**critical reading**” which refers to deep reading. The academic Success Center defines it as reading to evaluate the information presented. It is the most advanced type of reading since it requires the greatest interaction of the reader with the writer. The second concept is “**strategy-based instruction**”. It refers to the type of instruction which aims at teaching learners to be strategic readers. In order to perform well with texts, students must understand the rules, rehearse, work on technique, and practice. A coach (teacher) is expected to provide positive feedback, guide, inspire, and share the knowledge and experiences he/she possesses. The third concept is “**academic achievement**” which refers to success in a specific academic domain. It is measured on the knowledge an individual has in a given field of study. The fourth concept is “**cognitive strategies**” which refers to higher-order thinking or ability used, whether consciously or unconsciously, by an individual when treating information presented to him/her.

In short, the present study focuses on reading strategies that have been used with students and have been found to be effective and engaging. What is offered in this work expands the notion of what counts as effective comprehension instruction. Comprehension instruction can be much more than simply asking students questions at the end of a reading or having them respond to what they have read by writing a summary or completing an activity sheet. Comprehension instruction can and should

be effective, but it should also be engaging and creative, and tap into the various talents and gifts of all students.

This research has a descriptive nature in which a variety of research materials has been used. These materials consist of a review of literature, two surveys that measure students' awareness and use of reading strategies as well as their motivation to read in English, and a reading performance test. To find answers to the research questions and identify the effects of strategies-based instruction on students' performance and motivation to read, the population of this study comprises 120 Electrical Engineering students. Having gathered the data through questionnaires, SPSS (Statistical Practice Social Sciences), a computer program used for statistical analysis, is used to measure data. It is software used by researchers of social domains, mainly in descriptive and analytical methods, to manage data and analyze statistics. To do so, a variety of tests – T-tests, Cronpach's Alpha and Guttman's Split Half Coefficient - is applied for analyzing and interpreting the data

The present work comprises a general introduction and three chapters. The General Introduction presents the rationale for conducting the study, the scope of the study, its significance, aims as well as research methods. Chapter 1 provides a theoretical framework for the study, including definitions and types of reading, issues in reading strategies, students' motivation to read in English and achievement. Chapter 2 reports the methodology used in the research including research questions, participants, instruments and the procedures for data collection and analysis. Chapter 3 reports and discusses the major findings. The work ends with a Conclusion that summarizes what is addressed in the study, points out the limitations, draws pedagogical implications and provides some suggestions for further study.

Chapter One: Review of Literature

“The more you read, the better you get at it; the better you get at it, the more you like it; and the more you like it, the more you do it. And the more you read, the more you know; and the more you know, the smarter you grow.” (Trelease, 2001: 64)

1.1 Introduction

English has gained a prominent role and has become a vital tool for educational and professional activities. For students of science and technology, English is not only a subject to be learned but also a key that ensures access to other content subjects¹ (Hutchinson & Waters, 1987). In other words, it is not simply learned for the sake of learning, but for academic purposes and professional activities. Thus, there is no doubt English has become central to science at the global level especially within higher English for Specific Purposes World (Dudley-Evans & St. John, 1998; Hutchinson & Waters, 1987; Swales, 2004, 1990, and 1978; and Widdowson, 1983). In this respect, EST (English for Science and Technology) appeared as one of the main streams of ESP (English for Specific Purposes).

1.2 English for Science and Technology (EST)

The EST community is identified by an involvement in science and technology, and shared interests and practices of scientific discourse and activities. The needs of EST students in relation to the types of specialist discourse they require has been researched by a number of authors including Brown & Lewis (2003) and Hyland (2002). They focused on aspects including discourse analysis, skills to develop, and even the necessary complementarity between disciplines to determine ESP learners' needs. The scientific/technical genres would include the nature and organization of words in scientific discourse (Soler, 2002), their representativeness and significance in scientific texts, the use of tenses, language structures, visual discourse in scientific conference papers, and 'attack skills' (Brown & Lewis, 2003).

¹ Every year about 95% of the worldwide publications are made in English, mainly in the scientific field.

Peter Master and Donna M. Brinton(1998), among many other specialists, state that EST is the oldest form of ESP, and it was once synonymous to ESP. They affirm that the primary concern of EST is reading technical documents. Therefore, reading is an important skill for ESP learners in today's world; it helps develop overall proficiency and provides access to crucial information. With English being the dominant language of the Internet and academia, science and engineering students face great pressures to develop their foreign language reading abilities.

The acquisition of reading skills, however, is never easy, and students need consistent practice to become fluent readers. Because technical and scientific text is written in a very specific form and tone, successful science and engineering readers have to read critically. They need to pay close attention to both style and content (Catherine Wallace, 2003). That is, they are expected to read to find definitions, look carefully for facts, identify the main ideas of texts, evaluating, contrasting viewpoints and synthesizing and so on. But the most important problem often experienced by science students is their reading difficulty (Mastropieri & Scruggs, 1997). This challenge can be easily overcome if students are highly motivated to read. But what can ESP teachers do in order to motivate their students to read in English? Some researchers on this subject point to the implementation of a strategy-based instruction to reading (Kristin Lems et al., 2010).

1.3 Reading and Disciplines

1.3.1 Content Area Reading Comprehension

At tertiary level, the focus of students' school lives shifts from learning how to read to using reading to learn, (John S. Hedgcock & Dana R. Ferris, 2009). At this level, students are expected to read and to understand increasingly more difficult materials in an array of content areas. Simply put, content area reading is the reading that a student needs to complete and understand in a particular subject area. The content areas typically included in this definition are science, social studies, history, and mathematics and so on. The reading associated with content area courses reflects not only the concepts and ideas important to these subjects, but also the text structures used by those practicing the field. Readers often struggle with reading in the content area.

Content-area teachers² can make a difference for struggling readers by incorporating reading comprehension strategies in their teaching—without being teachers of reading (Debra L. Cook Hirai et al.2010; Margaret G. McKeown & Linda Kucan, 2010). To begin with, “*English for specific purposes (ESP) is a branch of English language teaching (ELT) that makes extensive use of content- and task-based syllabi*” (Peter Master and Donna M. Brinton, 1998:21). In order for students to succeed academically, they need to develop key reading skills. Recent studies show that difficulty in reading is translated into serious difficulties in all content areas (Debra L. Cook Hirai et al., 2010). William S. Gray, the then dean of the College of Education at the University of Chicago, provided the first formal relationship between reading and other school subjects. For him,

“it [reading] is a means to gain information and pleasure; it is essential in every content subject, such as history, geography, arithmetic, science and literature. In fact, rapid progress in these subjects depends in a large degree on the ability of pupils to read independently and intelligently” (Dianne Lappe et al., 2004: 76). Finally, if learners do not encounter meaningful content in books, learning will be purposeless for them (John S. Hedgcock & Dana R. Ferris, 2009).

Reading is considered as a set of skills in which the reader makes sense and derives meaning from the printed material, (Caroline T. Linse, 2005). In order to read, one must be able to decode the printed words and also comprehend what is read. Reading comprehension is defined as the ability to comprehend or to make sense from written texts. What does it mean *to comprehend*? Some may say that it is the act of understanding. Dictionaries say that *comprehension* is the ability to know or grasp ideas with the mind. This implies that an action is required from the reader in order *to grasp* the meaning of the written message. Reading experts put it clearly, for them, reading comprehension refers to a meaning that is to be constructed of a written message through an interchange between the interpreter and the message itself (John S. Hedgcock & Dana R. Ferris, 2009). This action also requires the reader to make use of

² Teachers of the different subjects.

his/her previous knowledge related to the text to be comprehended in order to create meaning (Danny Brassell & Timothy Rasinski, 2008).

Reading comprehension is also defined as the process of simultaneously extracting and constructing meaning through interaction and involvement with written language. The process entails three main components: the reader, the text and the activity in which comprehension makes part (Catherine Snow, Chair, 2002). Comprehension goes beyond the written message; the reader brings with him capacities, abilities, knowledge and experiences. The features of a given text also affect comprehension. Moreover, reading is always done for a purpose, to achieve an end. Activity refers to this dimension of reading (Karen Tankersley, 2003; (Catherine Snow, Chair, 2002). Reading in a foreign language depends on the reader's previous knowledge, his/her linguistic knowledge of the target language and the techniques and strategies he/she uses while reading (Debra, L. Cook Hirai et al., 2010). Reading comprehension involves the use of higher order skills which require much deeper thinking that goes beyond word decoding (Caroline T. Linse, 2005; Stephanie McNachie & Antony R. Petrosky, 2010).

1.3.1.1 Higher Order Thinking and Critical Reading

The reader is required to have the ability to process text at higher levels of the thinking process in order to go beyond the text surface and achieve a deep comprehension. In this type of comprehension, the reader might be able to make use of Benjamin Bloom's taxonomy (1956) and make meaning at higher levels. Good readers are those who monitor their own comprehension, interpret, summarize, make connections and process information after having read a given text (Karen Tankersley, 2003). Higher order thinking skills include critical, logical, reflective, metacognitive, and creative thinking (Alexandra Weinbaum et al., 2004; N.R.C, 2000). When a reader encounters questions, unfamiliar problems and uncertainties, these skills are activated. Explanations, performances and decisions are the result of the activation of such skills (Linda, J. Dorn & Carla Soffos, 2005). The reader who makes use of these high level skills is referred to by "active reader" or "critical reader".

1.3.1.2 Critical Reading

Critical reading is a more active way of reading. It is a deeper and more complex engagement with a text. Critical reading is a process of analyzing, interpreting and, sometimes, evaluating the larger meanings of a text and how those meanings are created by the text (Camille Blachowicz & Donna Ogle, 2008; Gerald G. Duffy, 2009). Reading critically requires from the part of the reader to analyze a piece of writing in fine detail, as if with a magnifying glass. Critical reading is important because it is the building block for larger analysis.

We are supposed to think critically in order to read critically. Many mental processes are involved by critical thinking: analysis, interpretation, and evaluation. These processes enable the reader to question the text in different ways. Questions should consider relationships between the text and the author, the reader, and the context. While reading critically, the reader interacts with the text by highlighting important points, taking notes, testing answers, brainstorming, describing, and reflecting on one's own reading and thinking (Karland Dan, 2004).

1.4 Strategy-based Reading Instruction in ESP Settings

Reading is the cornerstone of instruction for all students regardless of their ability level because it sets the foundation for future progress and success in virtually all other facets of life (Catherine Snow chair, 2002). Recent studies have suggested that we should be more successful in teaching every student to read (Shelley O'Hara, 2005). There are various strategies that educators use to teach reading at high levels of education.

Comprehension is the centre of reading. Research makes clear that comprehension skills can be improved with explicit instruction and training (Palincsar & Brown, 1984). Strategies refer to the techniques that instructors provide learners with to use while reading. For Mary Clay (1991:122), a strategy

“is an operation that allows the learner to use, apply, transform, relate, interpret, reproduce, and reform information for communication”.

Experts agree upon the fact that students become successful readers by

learning to use a range of strategies to get at the meaning of a text (Lou Denti & Gilbert Guerin, 2008); Danny Brassell & Timothy Rasinski, 2008).

Tedd Glyn states, “*This has formed the basis of successful literacy teaching for many years. Successful readers use as many of these strategies as possible (phonic (sound and spelling, knowledge of context, grammatical knowledge, word recognition and graphic knowledge).*” (Tedd Glyn et al., 2006:70-71).

Strategies-based instruction (SBI) is a learner-focused approach to language teaching/learning that explicitly combines styles and strategy instructional activities with everyday classroom language instruction (Oxford, 2001; Cohen, A.D., 2003). Students should be given the opportunity to understand not only the material, but also how they can learn it. As language teaching has become more learner-focused and interactive, there has also been an emphasis on helping students take more responsibility for meeting their own language learning needs. Students are expected to become less dependent on the teacher. The approach helps students become aware of the different learning strategies, to understand how to use them systematically and effectively, and learn when and how to transfer the strategies to new language learning. (Bialystok, E. (1990); Dodson, C.J., (1986); Ellis, G. & Sinclair, B., (1989); Green, J. & Oxford, R., (1995); McDonough, S., (1995); O'Malley, J.M. & Chamot, A.U., (1990); Oxford, R.L., (1990).

Strategy-based approach is principally characterized by focusing on the processes (strategies) of learning, thinking and reading that engage students in meaningful problem solving, a high level of student engagement, teacher-student interactions that support construction rather than transmission of meaning and a dynamic approach to reading strategies that gradually releases initiation and control to the learner (Rhoda Koenig, 2010; Stephanie McNachie & Antony R. Petrosky, 2010). In short, strategy-based instruction is mainly referred to by a shift from implicit to explicit instruction whose anatomy is shown through Figure (1). Comprehension strategy instruction needs to occur “*within a context where students*

use the strategies to read and learn from the actual text they are expected to read” (Neufeld, 2005:308). The goal of comprehension strategy instruction is students’ independent use of strategies when reading.

1.4.1 Components of Strategy-based Instruction

Within SBI approach, teachers explicitly state the goal of a strategy to help students become more strategic readers and foster a culture of literacy (Wilson, P. T., & Anderson, R. C., 1986; Lenski, S., & Nierstheimer, S. (2002)). Next, content area teachers explicitly teach the strategy by modeling how to execute the strategy, guiding students’ use of the strategy, and providing multiple opportunities for students to apply the strategy. Through this type of explicit and scaffolded instruction, teachers help struggling readers become confident, competent, and independent users of strategies. Content-area teachers can also improve struggling readers’ comprehension of text by teaching multiple strategies and encourage their use before, during, and after reading (Taylor, B. & Yesseldyke, J.E., 2007; Margaret G. McKeown & Linda Kucan, 2010). For example, a teacher can use an anticipating content activity through the use of visual aids (Mastropieri, M. A., & Scruggs, T. E., 1997) to build students’ interest in a topic before they begin to read. Inquiry Questions includes a series of questions based on the cognitive levels of Bloom’s (1956) taxonomy, which students ask themselves as they read.

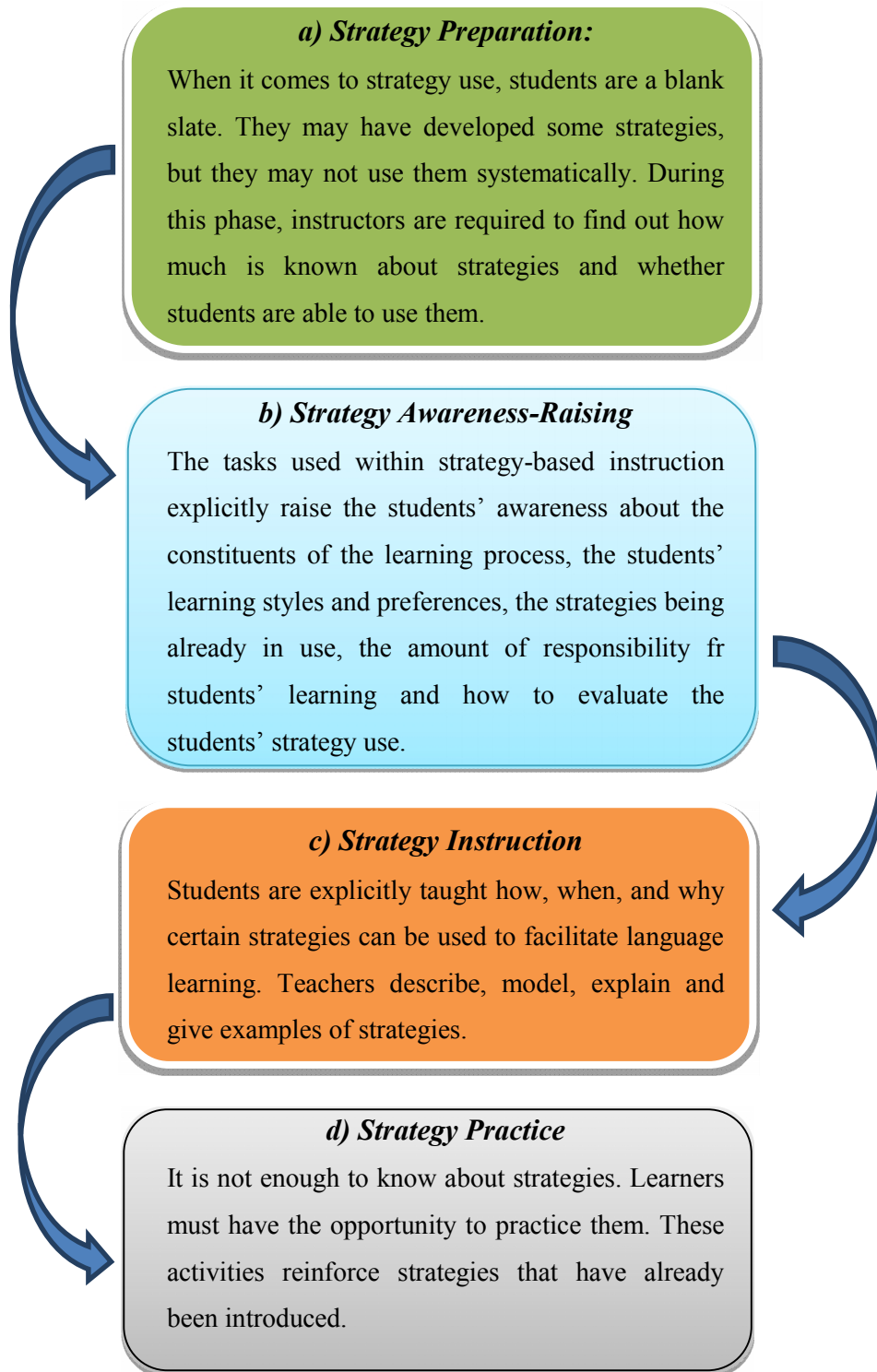


Figure (1): Components of Strategy-based Instruction (Susan, J. Weaver, 2005)

Experts argue that strategy-based instruction is made up of a series of components that develop the students' relationship with learning strategy (Andrew D. Cohen & Susan J. Weaver, 2005) _ Refer to figure (1).

Through SBI, teachers can map their students' thinking and identify the underlying obstacles to understanding and success. Besides, challenged students see what other students do when they don't know an answer, (Rhoda Koenig, 2010).

1.4.2 Strategy-based Instruction to Content-area Reading Comprehension

According to studies by Dr. Kamal R. Mourtaga and Mohammed Abdulmalik Ali³, the current levels of EFL reading achievement in the Arab world still remain lower than what is needed in the workplace and in universities. And despite the growth in international competition, great numbers of students graduating from high school or universities are increasingly less literate (Robert W. Cole, 2008). In order to enable learners participate successfully in the academic field, effective pedagogical changes are needed to be implemented. Effective reading programs often result in significant increases in students' reading comprehension and should meet learners' needs. Besides, they should take into consideration important research in reading, learning styles, and how the brain learns, (Robert W. Cole, 2008).

Since the 1990's , experts and researchers in the field of reading strategies have shifted their focus to the study of the relationship between strategies and the language learning process and the language cognition process (McDonough, S., (1995); O'Malley & Chamot, 1990). According to many experts (Oxford, 1993; O'Malley & Chamot, 1990), learning strategies play an active role in language learning. How can English teachers improve the language learning of their students? One way is to teach students how to learn more effectively and efficiently. Learning strategies are "*procedures or techniques that learners can use to facilitate a learning task*", (Chamot, Barnhardt, El-Dinary & Robbins 1999:2).

³www.alaqa.edu.ps/ar/aqsamagazine/ten_second/8.pdf

Strategic and skilled students are thought to be better, independent and confident learners. If they understand the relationship between their use of strategies and success in learning English, students become more motivated. The underlying premise is that language learning will be facilitated if students become more aware of the range of possible strategies that they can consciously select during language learning and language use. Recent studies make a close link between learning strategies and learner autonomy (Kristin Lems et al., 2010). The basic goal is to foster independent and effective learners by providing some training on learning strategies. Training on learning strategies is recognized as the cornerstone of strategy-based instruction.

Comprehension is not an easy task; it cannot be accomplished by learners without being strategic and skilled. Students, particularly those studying science and engineering, need strategies to help them think critically about what they read in and outside of school, (Donna Ogle et al., 2007).

Part of the responsibility placed on ESP teachers is to provide students with the skills and motivation to become informed citizens. It is worth mentioning that teachers are having a difficult time getting students to actively read and reflect on materials provided for the development of their knowledge about scientific themes and topics, but students need to be engaged in problems that matter to them. Thus it is vitally important that students learn to use a variety of strategies and techniques to develop concepts about the contents of the different subjects, (Shelley O'hara, 2005). Ken Hyland (2006: 8) states that "*learners have to take on new roles and to engage with knowledge in new ways when they enter high education.*"

Many science students are struggling with reading and are unable to comprehend curriculum materials and material published in English (Taylor, B. & Yesseldyke, J.E., 2007; Margaret G. McKeown & Linda Kucan, 2010) . The students' inability to grasp information from texts is due to the fact that most teachers have had little or no training in teaching reading (Donna Ogle et al., 2007). The ability to read profoundly affects a student's achievement in most areas of a curriculum. When used in content lessons such as science and engineering, this ability benefits the learner in reading to learn and learning to read. (Donna Ogle & Judy McKee, 2005)

What, then, can teachers do to help struggling readers in their classrooms? Put in another way, what skills and strategies do students need to become expert readers of ESP texts?

1.5 Key Reading Strategies that Promote Achievement

All teachers⁴ need to be aware of the best practices and current researches on the acquisition of language and subjects literacies in order to promote student achievement and learning. Various reading strategies are stressed to be used. For teachers, to teach reading effectively at tertiary levels, they should implement a strategy-based approach that increases opportunities for reading and investigation because students want to learn more (Donna Ogle & Judy McKee, 2005; Krashen, S. & Brown, C.L., (2007)); this is at the very heart of constructive approach in which learning involves not the mastery of isolated facts but the construction of concepts. Learning is also facilitated by direct instruction. However,

“direct instruction typically has the most permanent effect when provided in the context of the whole activity that the learner is attempting and is most effective when offered within the context of the learner’s interest and need.” (Weaver, 1996, pp. 153–155).

Reading strategies have to be applied during the pre-, while and post-reading phases. According to Rosenshine (1997), six steps make the cornerstone of the process. The teacher initiates the instruction by naming the strategy. Next he explains its importance and relates it to the students’ prior experiences. Then he models the use of the strategy and verbalizes it. Finally he engages students in reflection. Content-area teachers can implement an integrated strategies approach, such as Reciprocal Teaching (Palincsar & Brown, 1984), or Collaborative Strategic Reading (*Janette Kettmann Klingner et al.*, 1998) to engage struggling readers throughout the reading process. Reciprocal Teaching is an interactive activity between the teacher and students (or between students) that incorporates four strategies: summarizing, question generating, clarifying, and predicting. Another approach, Collaborative

⁴ Not only EFL teachers, but also teachers of other subjects are concerned.

Strategic Reading, is composed of four strategies—Preview, Click and Clunk, Get the Gist, and Wrap Up—that students use before, during, and after reading. Using multiple strategies or an integrated strategies approach, teachers cultivate interest, promote active engagement, and advance comprehension.

1.5.1 Pre-reading Strategies

In order to facilitate the construction meaning and become metacognitive readers, good learners are needed to make use of comprehension strategies. The key strategies of the pre-reading phase include previewing texts and anticipating content through activating students' prior knowledge, guessing, inferring and making connections (McLaughlin & Allen, 2002).

1.5.1.1 Activating Prior Knowledge

New information is learnt by connecting it to what is already known. *“Proficient learners build on and activate their background knowledge before reading, writing, speaking, or listening; poor learners begin without thinking.”*(Irvin, J., 1996).. This prior knowledge, schemata, is a reflection of learner's attitudes, skills, concepts and values he/she brings to a text situation. Researchers argue that background or prior knowledge places the learner in a good position to facilitate learning (Vacca, R. T., & Vacca, J. A., 2002). Learning to think about the text before reading greatly enhances comprehension. The Productive Pedagogies Research has always sought to determine the extent to which classrooms were connected to the world beyond them by integrating background knowledge; this dimension seeks to describe the extent to which knowledge is built on students' existing knowledge.

“In classes where there were high levels of background knowledge, lessons provided students with opportunities to make connections between their linguistic, cultural and everyday experiences, and the topics, skills and competencies at hand” (Debra Hayes, 2006).

Background knowledge was deemed to include community knowledge, local knowledge, personal experience, media and popular culture sources. Students' comprehension and understanding of the new material is enhanced by the amount of explicit connection made between the newly introduced content, skills and competencies on one hand and students' background knowledge on the other. For

instance, during the preview phase, students might be asked to make predictions about the reading based on their background knowledge, pictures, titles, headings, subheadings and charts to guess the topic or main ideas of written passages.

1.5.1.2 Giving a Purpose for Reading

Setting the purpose for reading should always be one of the first objectives as teachers develop their reading lesson plans. *“Teaching ability can be improved by teaching how to read for particular purposes.”* (Anderson, 2000:97). For this reason, it is vital for students to understand why they are reading (Karen Tankersley, 2003). When a given material is assigned for reading, students should be given a purpose for the task. “Read to find out how.....”, “Read to find out why.....” are useful instructions to make the reading task purposeful. The activity can be done individually, in pairs or in groups. When performed in groups, the competent helps the group in showing how to approach the material (Karen Tankersley, 2003; Shelley O’Hara, 2005).

1.5.2 During-reading Strategies

Active readers predict what will happen in the text, question what is not understood and take responsibility for their understanding. They are also able to evaluate to confirm or reject their predictions during their reading and make other predictions while they are reading. In addition, good readers take self-correction strategies when they make mistakes or get confused. Experts assert that a good reader makes use of inferring strategies to separate what is important from what is not, to distinguish facts from opinions and to make conclusions (Dianne Lappe et al., 2004: 307-339). Some ideas regarding the ways in which reading can be accomplished effectively are listed below:

1.5.2.1 Skimming and Scanning

Skimming and scanning are both “top-down” skills. A typical skimming activity would be a general question by the teacher, such as “Is this passage about memories of calculators or computers?” The learners will try to find the answer quickly without going through a deep reading, by applying “speed reading” of certain parts of the whole text. Skimming is mainly concerned with finding the topic sentence, main

ideas, overall theme, basic structure...etc (Jim Scrivener, 2009; Shelley O'Hara, 2005).

Reading for specific information is a contrast to reading for gist, when we frequently go to written text because we want specific details. This skill is referred to as scanning. Caroline T. Linse (2005: 73-75) states that "*the reader's purpose when scanning a text is finding detailed information*". During this stage, scanning and skimming activities are used, in any content area, to give students a chance to slowly go through the process of researching, scanning, and skimming. With so many factors and skills involved in researching, students should move deliberately, step-by-step through the process, including other key skills such as quoting, paraphrasing, and summarizing (Katherine Wiesolek Kuta, 2008: 15-16).

1.5.2.2 Questioning and Inferring

Questioning during reading is a key strategy to develop good comprehension. Competent readers question every element of the passage: the author, the content, the arguments and the ideas in the text. Learners should be taught making the right judgments about the new material as well as the author's point of view. Reading experts assert that inferring is a key skill that needs to be developed. Expert, Susan Hall, states that "*inferring allows readers to make their own discoveries without the direct comment of the author.*" (Gerald G. Duffy, 2009:122). Active readers are those who are skilled in reading between the lines (Idem, 2009). Stated differently, inferring is getting the implied meaning which is not stated directly.

1.5.2.3 Evaluating and Drawing Conclusions

To determine the author's message is not enough; comprehension also involves making judgments about the driven message. The good reader evaluates what he/she reads. Evaluating is a high-order thinking strategy. Readers at upper levels are required to be equipped with the skill of evaluating in order not to get influenced by the author. Evaluating is particularly vital to science and engineering students due to the fact that they are always bombarded by huge amounts of data (Gerald G. Duffy, 2009; Camille Blachowicz & Donna Ogle, 2008). For academic purposes, if students are looking for material as background for an academic research or report, the bulk of their effort focuses on finding and critically evaluating potential sources of evidence

(Stella Cottrell, 2005: 125-130). Drawing conclusions is just a kind of inferring and predicting. When reading, students ask themselves what the author wants them to be thinking at that point. It is more than a summary of the author's arguments or evidences; it will rather include judgments drawn from an analysis of the reasons given (idem, 73-74).

1.5.3 Post-reading Strategies

After reading, the aim should be to help students use their acquired knowledge in similar readings, help them integrate their reading skills with the other language skills: listening, speaking and writing, help them integrate with the foreign culture, make use of key words and structures to summarize the reading passage, extract the main idea of a paragraph or a reading text and interpret descriptions (outlining and summarizing). Teachers may also ask students to use the text to support evidence, support opinions and conclusions, analyze and make interpretations of various parts of the material and to respond through writing tasks that relate to the reading. Finally, advanced readers are required to think critically, evaluate author's points of view and make connections with their content-based prior knowledge (Karen Tankersley, 2003).

To sum up, the following is a summary of the key cognitive behaviours as identified in the proficient reader studies of the 1980s that identified the essential strategies that interactive, meaning-making readers consistently use (Rhoda Koenig, 2010: 85-86):

1. Activating and making connections with relevant prior knowledge (schema) before, during, and after reading text.
2. Drawing inferences from the text in the form of predictions, conclusions, judgments, interpretations and hypotheses.
3. Summarizing or organizing text while reading to determine text structure and message.
4. Asking questions about the author and the text to clarify and focus reading.

5. Depending on the demands of the text, and employing fix-up strategies to maintain meaning and repair comprehension.
6. Synthesizing text and reflecting on what the big ideas in the text are.

1.6 Students' Motivation to Read

Motivation researchers such (Derney, 2001; Lunnenbrink & Pintrich, 2003) believe that motivation is an essential quality to learning for it can affect the learner's performance, strategies use, and behavior in the classroom. Gottfried (1990), an education expert, defines motivation as follows:

".. enjoyment of school learning; an orientation toward mastery, curiosity, and persistence; and an orientation to learn challenging, difficult, and novel tasks. For each student on the roster below, rate the student's intrinsic motivation in writing."

The reasons upper level students read are much more complex than simple curiosity. Background opinions, feelings, social interaction, and goals, all influence motivation. Teachers and instructional practice also play a central role in students' motivation to read (Karen D. Wood & William E. Blanton, 2009). Specific actions that teachers can employ to increase readers motivation include explicit reading instruction. Strategies are great vehicles for kindling struggling readers' curiosity in a topic and building excitement before reading (Vacca, R. T., & Vacca, J. A., 2002). Teachers may also select strategies that promote interaction among students. Teachers can find that providing opportunities for student voice and social interaction is especially motivating for adolescents. (Chambers, G., 1999).

Research on the understanding of motivation can be exemplified by one of the most well-known research studies known as "integrative versus instrumental motivation" (Gardner, 1985/2001). Integrative motivation refers to an interest in the language, the culture, and the people who speak that language, whereas instrumental motivation refers to the motive to learn a language for practical and economic advantages (Gardner, 1985/2001).

The theories in motivation later made a shift to an understanding where people are regarded as active beings that choose to engage in a task consciously. Cognitive

approaches to motivation is a result of this understanding; that human beings are conscious, and that the same stimuli may result in different outcomes in different individuals, as these individuals will have different thoughts and beliefs. This aspect of the cognitive theory gains more importance for EFL contexts (Anamaria Harvey, 1984).

Researchers increasingly are interested in learners' motivation for reading and how it relates to reading comprehension for low-achieving and high-achieving students (Guthrie et al., 2004; Morgan & Fuchs, 2007). Aspects of reading motivation shown to relate positively to reading comprehension include students' self-efficacy for reading and intrinsic motivation to read. Motivation and reading achievement were found to be reciprocally determined, according to a review of 15 studies (Morgan & Fuchs, 2007). Motivation and reading skills were found mutually supportive, driving each other upward/downward. Many studies asserted that strategy-based instructed students would evidence greater effort and a higher sense of intrinsic motivation and concluded that strategy instruction can enhance motivational attributes (Gaskill & Murphy, 2004; Graham et al., 2005; Schunk & Zimmerman, 1998).

As pointed out by John Guthrie and his associates, "motivated students usually want to understand text content fully and therefore, process information deeply. As they read frequently with these cognitive purposes, motivated students gain in reading comprehension proficiency" (Guthrie et al., 2004: 403). In other words, comprehension of complex text involves the conscious application of effortful strategies for processing text; students who are not engaged, or who are not interested in extracting meaning from text, are much less likely to put in the effort to comprehend and, as a result, miss opportunities to become proficient in comprehending complex texts. Finding ways to motivate and engage students in reading is an essential feature of adolescent literacy instruction, particularly as university students face increasingly difficult reading material and classroom environments that usually don't foster the importance of motivation to read (Guthrie et al., 2004). Guthrie and Humenick (2004) identified four features that are critical to increasing students' motivation to read: (1) providing interesting content goals for reading, (2) supporting student autonomy, (3) providing interesting texts, and (4)

increasing social interactions among students related to reading. The low-achieving students should be supported within the context of a reading program built around effective instruction on reading skills and strategies.

Motivation was usually left out as a component of reform movements (Block, E., 1986). In the reform mathematics intervention, Stipek, Givvin, Salmon, & Macgyvers, (1998) included Benchmark, a school for poor readers, which had the premise that every student is teachable, a strategy-based instruction was implemented where students were guided to be goal-oriented, planful and strategic. Seventeen core cognitive strategies were selected by faculty as needed by all students. The self-regulatory strategies include learning and metacognitive strategies, as well as organization, effort, and self-control. The strategies were taught within each content area. Ongoing evaluation of the program at Benchmark revealed that students made progress during the 3-year project as measured by academic assessment measures and teacher reports (Gaskins, I.W., 1994).

Finally, Yu Yuanfang (2009) stated that a contributing factor to the problem of lack of motivation and reading performance is that students are not being prepared with the skills to read the difficult science material that could help them like science more and do better on tests. Being able to read effectively is essential for school success, not just in English but in all content areas.

1.7 Explicit Strategy Instruction and Reading Performance

In terms of reading performance, many university science and engineering students are victims of poor early reading instruction. They were not taught or were insufficiently taught the basic skills necessary for fluent reading and deep processing of ESP texts. Comprehension difficulties are complex and may relate to inadequate vocabulary or conceptual knowledge, weak reasoning or inferential skills, or an inability to apply active comprehension strategies. Because students who do not read well generally do not read very much, they miss out on countless opportunities for reading practice and for learning from what they have read. Some of these students are able to catch up in critical reading skills if provided with sustained instruction (Karen D. Wood & William E. Blanton, 2009).

Students' goals have been described as "*seeking to prove one's competence versus seeking to improve one's competence*" (Dweck, 1992, p. 165). Students with a learning goal are seeking to understand the material they are learning, master a skill, and increase their competence through their own effort. Their judgment of ability is more likely to focus on their improvement from a previous performance. A learning goal is more likely to be associated with positive educational outcomes such as task engagement and an intrinsic value for learning (C. Ames, 1992; Meece, 1991). Performance goal Students are more concerned with their ability, how their performance compares to others, and extrinsic incentives. Attributions for success are more likely to focus on their ability, not effort. In either case, their judgment of their competence is based on comparisons with the performance of others. Performance goals can have a positive effect on motivation and learning (Midgley, Kaplan, and Middleton, 2001).

Goal orientation is associated with a variety of student behaviors and beliefs. These have been divided into cognitive strategies and engagement and motivational beliefs and actions. Students with performance goals (pleasing the teacher or seeking social recognition) had a lower level of cognitive engagement. The use of cognitive strategies and information processing is related to goal orientations of students. Learning goals were the strongest predictor of students' cognitive strategy use (Wolters et al., 1996). These goals were also predictive of deep processing, persistence, effort, and exam performance of college students (Elliot, McGregor, & Gable, 1999). Classroom practices make learning and performance goals noticeable to both students and teachers (Urdu, Kneisel, & Mason, 1999). Students' personal goal orientation can be influenced to some extent by these practices.

A set of reading strategies including genre identification, and the use of predictions and summarizing, produced positive results among low-achieving 2nd graders (Brown et al., 1996). "*Interventions that successfully encourage students to consider ESP texts strategically appear to be effective in encouraging comprehension and then academic achievement*", (David R. Snow, 2005: 24-26). The use of language learning strategies is related to increased language learning achievement and

proficiency. Learning strategies play an active role in language learning. One effective way to guarantee academic achievement is to teach students how to learn more effectively and efficiently. Learning strategies instruction can help students of English become better learners. Finally, students become more motivated as they begin to understand the relationship between their use of strategies and success in learning English (Xue Fuping, 2006 : 2).

1.8 Gender Differences in Using Reading Strategies

It is assumed that the use of reading strategies differs according to gender. Some studies have been conducted to investigate this issue (Wu Weiyang, 2006). Results reveal a confirmation of the assumption that boys and girls use reading strategies differently. Zoubirshaw & Oxford (1995) suggested that there was a significant difference between males and females in using guessing and contextualization. In China, Yang (1999) also found that females had more strategy awareness. He claimed that females were more active in strategy using and used reading strategies more frequently.

It is worth mentioning that the gender gap in reading is not a new phenomenon. The 1994 and 1998 School Achievement Indicators Programme assessments revealed that girls performed better in reading and writing than their male counterparts. Additionally, a female reading advantage has been observed in the 57 countries participating in the Programme for International Student Assessment (PISA), in which 15-year-olds are assessed in reading, math and science.

1.9 Gender Differences in Attitudes towards Reading

Boys and girls show a number of reading-related differences that go beyond performance differences on large-scale assessments. Girls tend to do more non-assigned reading, reading for enjoyment, or reading for general interest than boys. Girls report liking to read more than boys and more girls than boys rate themselves as confident readers. Girls also report more out-of-class reading, more sharing and discussion of reading materials and more time doing homework than boys. Boys, on the other hand, report that they prefer watching television or movies over reading.

Boys spend less time reading than girls, are less motivated to pick up a book, do not value reading as an activity, are less confident readers and see themselves as having lower reading skills than girls (OECD “PISA”, 2009: 63-79).

As a result of their attitudes and behaviors, girls tend to have a greater number of experiences with reading activities, which may explain their better performance in reading assessments. By contrast, boys’ attitudes and behaviors may be acting as barriers in the development of reading skills.

1.10 Conclusion

Recent research works have revealed that a great majority of high school and university students have been struggling with reading content-related material written in English as a foreign language. Many researchers and experts relate failure in literacy learning to social and institutional arrangements more than to attributes of individuals. This approach gives a sense that students will acquire literacy if appropriate strategies are devised to facilitate their increasing participation in activities that will support learning. The goal, then, of strategy-based or explicit strategy instruction is to help educators develop strategies to ensure student achievement and motivation to read material written in English. There is one major aspect of human thinking central to both language and science: “**cognition**”. Therefore, this indicates that thinking, language, and science can be braided together and when these three important processes meet together, the result is stronger, active and more durable learning.

Chapter Two: Methodology of the Research Work

Knowing a great deal is not the same as being smart; intelligence is not information alone but also judgment, the manner in which information is collected and used.

_ Carl Sagan

2.1 Introduction

This chapter provides a detailed description of the geographical context and the methodology used in the present study. It describes the population of the study, the research instruments, data collection and data analysis procedures. The chapter ends with recommendations withdrawn from the present research work

2.2 Geographical Context of the Research Work

Amar Telidji University is located in the city of Laghouat, situated 400 kilometres (250 miles) south east of Igiers. It was first promoted as a university center in the 1986 program of decentralization, many educational and training institutions were established in Laghouat thereafter. During this promotion year, the university was established and given full university status in 2001. Since then, many new departments have been opened and many courses have been offered in a variety of specialties. It comprises four (04) faculties. The division of these institutions is shown through table (1).

Faculties and Departments at Amar Telidji University, Laghouat

Faculty	Number of departments
Faculty of Technology and Engineering Sciences	08
Faculty of Economics and Management Sciences	03
Faculty of Arabic Literature and Foreign Languages	06
Faculty of Human Sciences and Sociology	03

Table (1): The distribution of faculties and departments at Amar Telidji University, Laghouat during the Academic Year 2010-2011.

As indicated in table (2), LMD students at the University of Laghouat make up a total of 9176, a number that greatly exceeds those who study in the classical system.

LMD & Classical System Students at Amar Telidji University, Laghouat

Domain	Degree	Number	Total
LMD	Licence	6319	9176
	Engineer	1481	
	Licence	8626	
	Master	550	

Table (2): LMD system students at Amar Telidji University, Laghouat (2010-2011)

Faculty	Number		Total	LMD
	LMD	Classical		Rate %
Science & Engineering	3708	1481	5189	71.46 %

Table (3): LMD and classical system students at Science & Engineering Faculty (2010-2011)

As shown in the table (3), 71.46% indicates the rate of LMD students (5189) at the Faculty of Sciences and Engineering which comprises four departments:

1. Mechanical Engineering Department
2. Electrical Engineering Department
3. Civil Engineering Department
4. Industrial Chemistry Department

The Electrical Engineering Department puts under the disposal of its students 7806 titles in 9300 copies at the central library. Besides, 8694 titles (40772 copies) are available in three languages (Arabic, French and English) at the local library of the department.

2.3 EFL at the Electrical Engineering Department

A classroom observation was conducted in the 2010-2011 university year among third year LMD Electrical Engineering students of Amar Telidji University to identify the English teaching learning practices. The findings of this study were very informative in pointing out the nature and extent of the kind of teaching and learning that occur in university. More important, the researcher aimed at considering whether the reading skill is given the importance it deserves, and whether that skill

development helps students improve their academic achievement. Prior research suggests that constructivist teaching has an impact on student achievement (Wilson, P. T., & Anderson, R. C., 1986, 2002).

The electrical engineering department is part of a very large institution, the Faculty of Science and Engineering. Students of this department have always been taught English as a foreign language due to the lack of an official syllabus. According to the official aims for this stream, the general objective behind the teaching of English is to enable students achieve an acceptable level of fluency and accuracy to comprehend technical material written in English and to communicate in the target language. This subject has often been taught either by part time teachers who hold a BA (licence) degree or by few of the subject teachers. The latter show an acceptable level of English due to the fact that they either accomplished their studies at universities where English is the medium of instruction (IELEC, Boumerdes) or spent some time abroad with native speakers of English. However, they didn't have any ESP training during their curriculum. This makes us realize that English teachers are not fully equipped in terms of training to teach ESP and achieve the required objectives (see table 4).

EFL Teachers⁵ at the Electrical Engineering Department (2010-2011)

Teacher A	Ph.D (Information Technology)
Teacher B	Licence (English)
Teacher C	M.A. (Information Technology)
Teacher D	Doctor (Electrotechnics)

Table (4): Teachers of English at the electrical engineering faculty

Based on the classroom observation, teacher-student contact is very limited because of the amount of time allocated to English teaching at the Electrical Engineering department; teachers have to teach only 1h:30/week, during which they don't find any officially set material designed for use when preparing their EFL lessons. Teachers often focus on vocabulary acquisition and grammar structures. They tend to teach grammar explicitly, and most of the time out of context.

⁵ Teachers were given those initials (A,B,C &D) respectively according to the attendency dates.

2.4 The Status of the Reading Skill

Engineers and scientists spend more of their time seeking relevant information. Studies show that engineers spend up to 75% of their time dealing with information, Court, Culley and McMahon (1997) estimate that engineers and scientists spend 20 to 30% of their time just searching for information. Others, such as Expert Rzevski (Carol Tenopir & Donald, W. King, 2004), argue that much more time is spent in information seeking, maybe as much as 70% of an engineer's time. Much of this time is not used efficiently, however, and since engineers typically need information within short time frames, delays result in uninformed decisions.

Despite the fact that the reading skill is considered as one of the most important skills and a key-access to the mastery of other subjects, English teaching is characterized by the nonexistence of an official program and practical directives. Yet, the objectives of the module are stated clearly in the official directives “*to comprehend technical communication and to communicate effectively in the target language*” (Official syllabus, 2010).

In most university departments, in EFL classes, more importance is attached to grammar rather than to the teaching of the reading skills and implementation of reading strategies. In this case, reading is taught as a product rather than a process to be developed. Nevertheless, according to researchers, the goal is no longer to teach grammar, but to show students how to make use of grammar they already know in discourse analysis. Besides, the aim of English textbooks must be to develop among students the ability to recognize how the different subjects are expressed via English (Allen, Bryce L., 1991).

During the observations, the researcher has come to conclude that unlike most of the faculties at the University of Laghouat in which English is taught by Licence holders who deal with the subject in a traditional way, the Electrical Engineering Department teachers attach more importance to the subject. This is partly due to the fact that English is taught by EFL teachers who are originally specialized in subjects other than English. These teachers deal with the reading skill in a very impressive

way. For the selection of the material, they often rely on three textbooks they agreed upon (see table 5).

English Textbooks Adapted by EFL Teachers (2010-2011)

01	Eric, H. Glendinning. English in Electrical Engineering and Electronics. Oxford: Oxford University Press, (1980).
02	Eric, H. Glendinning & Norman Glendinning. Oxford English for Mechanical Engineering. Oxford: Oxford University Press, (1980).
03	Felixa Eskey. Better English through Reading in Science and Technology. USA: The University of Michigan Press, (2005).

Table (5): Textbooks used by EFL teachers at the electrical engineering department

The strengths and weaknesses of the actual situation of the reading skill at the science and engineering faculty are as follows:

- a- Groups of students range from 09 to 25 students per group. The lowest the number of students is, the better the job will be. The rate of assimilation among students will increase, giving an opportunity to everybody to participate.
- b- Reading is characterized by being purposeful because in real life people read for different reasons. Many people all over the world read in more than one language. Large populations have learned to read in a first or second language for different reasons. In modern societies, people read throughout the day different types of texts because print is all around them. People read advertisements, labels, newspapers, posters, e-mails and so on. And in formal settings, people read in academic contexts to learn. One may read to extract information, but in real life, we never read in order to answer a variety of pre-determined questions. Teachers can build comprehension questions that serve students' specific needs (Norbert Pachler & Kit Field, 2001).
- c- Most of the time, content is given more importance than the reading skills and strategies themselves. A text that deals with the constituents of the

computer may seem a mere description of an object rather than an opportunity to train on certain needed comprehension strategies that help master some required skills.

- d- Teachers prepared students for the new material by using a range of activities that aim at enabling students' use their background knowledge (other subjects).
- e- Teachers presented material appropriate to the purpose of field of study and provided relevant reading assignments.
- f- Classrooms are often characterized by being talk and chalk classes. The situation is completely monitored by the teacher who is considered as an end rather than a means. A great number of students are passive and demotivated.
- g- Teachers supported the lessons with useful classroom exercises and visual aids (pictures, realia).
- h- Grammatical competence is given priority over communicative competence.
- i- Through their behavior in class and the activities they chose, teachers used approaches to help students comprehend key ideas related to their academic discipline. However, they followed few approaches that favor some kind of higher order thinking.

2.5 Engineering Students' Needs

As far as language teaching is concerned, understanding the students' needs is a crucial component that contributes a lot to the success of the teaching/learning process. Needs analysis is the background for a thorough diagnosis that helps teachers and researchers identify students' lacks, wants and needs, upon which appropriate procedures, techniques and methods can be built (Richard A. McKay et al., 2000). In foreign and second language teaching, an increasing importance is attached to careful

studies of learner needs as a prerequisite for effective course design. In this context, Michael H. Long (2005:) states that:

“... language teaching using generic programs and materials, not designed with particular groups in mind, will be inefficient, at the very least, and in all probability, grossly inadequate.”

The aim behind an ESP course is to enable a group of target learners to function adequately in a target situation, the context in which the learners will use the specific English for specific purposes. The concept of Needs analysis includes learners' personal information, the factors which may affect the way learners learn, the language information about the target situation, the learners' lacks and the language abilities of the target learners, Dudley-Evans and St. John (1998).

What do specialists identify as essential language-related learning needs for students in science or engineering? According to ABET, (2008: 216),

“science, computing and engineering schools must demonstrate that their students have the ability to apply knowledge of mathematics, science, and engineering, the ability to analyze and interpret data, the ability to identify, formulate, and solve engineering problems, knowledge of contemporary issues and the ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.”

English courses and English instruction have to be adapted to the learning needs of university students majoring in science or engineering. In planning the use of various teaching strategies, teachers must be prepared to make adjustments according to the needs and learning styles of their students (Carbo, Dunn, & Dunn, 1986). Put more clearly, English instruction needs to be embedded within science and engineering content courses.

In order to identify science and engineering students' needs in terms of reading in English, the population for analysis comprised 120 students of Electrical Engineering from Amar Telidji University, Laghouat. The findings of the study were based on data obtained from classroom observation, two surveys (one relates to

motivation towards reading and another relates to the use of deep reading strategies) , and a pre-treatment achievement and performance test (reading comprehension achievement test). A combination of instruments was deemed necessary in order to obtain the best results. For Prior (1995), surveys and questionnaires offer EAP data of great importance about the linguistic and rhetorical structure of academic texts. By analyzing the learners’ present situation, the researcher attempts to specify the learners, analyze their needs, select or evolve materials, evaluate, observe students in the natural academic environment, and ask the students, the language specialists and the subject specialists. The findings will lead to changes in the English courses, focusing on problem-solving situations carried in the form of pair and group work activities (Sarah Benesch, 2005; Lou Denti & Gilbert Guerim, 2008). In this context, Jordan (1997: 127-136) states that needs analyses have been “*refinements to the starting positions of present situation and future/target situation*”.

In sum, although EFL learners may share common features, they also vary considerably, depending on their age, their past experiences, their motivations, and key features of their current life situation (Denise D. Nessel & Carol N. Dixon, 2008). Figure 2 contains a summary of key characteristics of EFL learners.

Key Characteristics of EFL Learners



Figure (2): Characteristics of EFL Learners

As indicated by the graphic, each characteristic interacts with all the others. The result is a unique pattern for each individual.

2.6 Methodology and Research Procedures

2.6.1 Methodology

The research lends itself to have a descriptive nature because knowing the actual and immediate state of the subjects would be more fruitful than registering their past needs, which proves that the historical approach doesn't fit the present research. Besides, the researcher didn't choose the experimental approach due to time constraints.

The purpose of this exploration would focus on strategy-based reading instruction related to ESP texts. The study focused on a group of science and engineering students. A multitude of questions may deserve to be addressed within the area of content area reading strategies related to the use of ESP reading materials in the tertiary level. However, the researcher has chosen to narrow the focus of this study in an effort to conduct an in-depth analysis, allowing inferences to be formed. This research exploration focused on these fundamental questions:

1. Are electrical engineering students motivated to read ESP texts?
2. What reading strategies do electrical engineering students use while dealing with ESP texts?
3. What reading strategies should ESP teachers use in science and engineering classes to deal with ESP texts?
4. How should ESP teachers implement these strategies?
5. What effects would these strategies have on students' content reading competency?

In an attempt to find answers to these questions, the researcher has decided upon a variety of research tools. A survey and a reading achievement test are meant to serve as the main research tools.

Research methodology is defined as the way of systematically solving research problems. According to Wayne, C. Booth (2003), research is defined as a systematized effort to gain new knowledge. According to Clifford Woody (Kothari 2004), the researcher either defines or redefines a problem, formulates hypothesis, suggests solutions, gathers and organizes data, makes deductions, and then carefully tests the conclusions to see whether they fit the pre-set hypothesis or not.

As stated above, this research has a descriptive nature which comprises surveys and fact-finding enquiries. Kerlinger (1970) has defined the descriptive research as that in which the independent variable or variables have already occurred and in which the researcher starts with the observation of a dependent variable or variables. The researcher then studies the independent variable or variables in retrospect for their possible relationship to, and effects on, the dependent variable or variables. The researcher is thus examining retrospectively the effects of a naturally occurring event on a subsequent outcome with a view to establishing a causal link between them. In case x causes y , then clear causality can be established; the model can explain outcomes.

The researcher has opted to approach the study through a population⁶ that differ on the dependent variable (academic achievement) by applying a “motivation to read” survey and a reading comprehension performance test, and discover how the subjects differ on a range of independent variables (motivation to read and use of reading strategies). The ex post facto research (descriptive research) here seeks to discover the causes of a particular outcome (reading comprehension performance) by comparing those students in whom the outcome is high (high marks on the reading test) with students whose outcome is low (low marks on the reading test), showing either presence or lack of the independent variable (use of reading strategies), and taking into account the results of the second independent variable survey (motivation to read). The results are expected to indicate whether explicit instruction of and training on reading strategies makes difference and affects both motivation and academic achievement.

⁶ The population comprised 120 subjects, 83 females and 37 males.

2.6.2 Data Collection

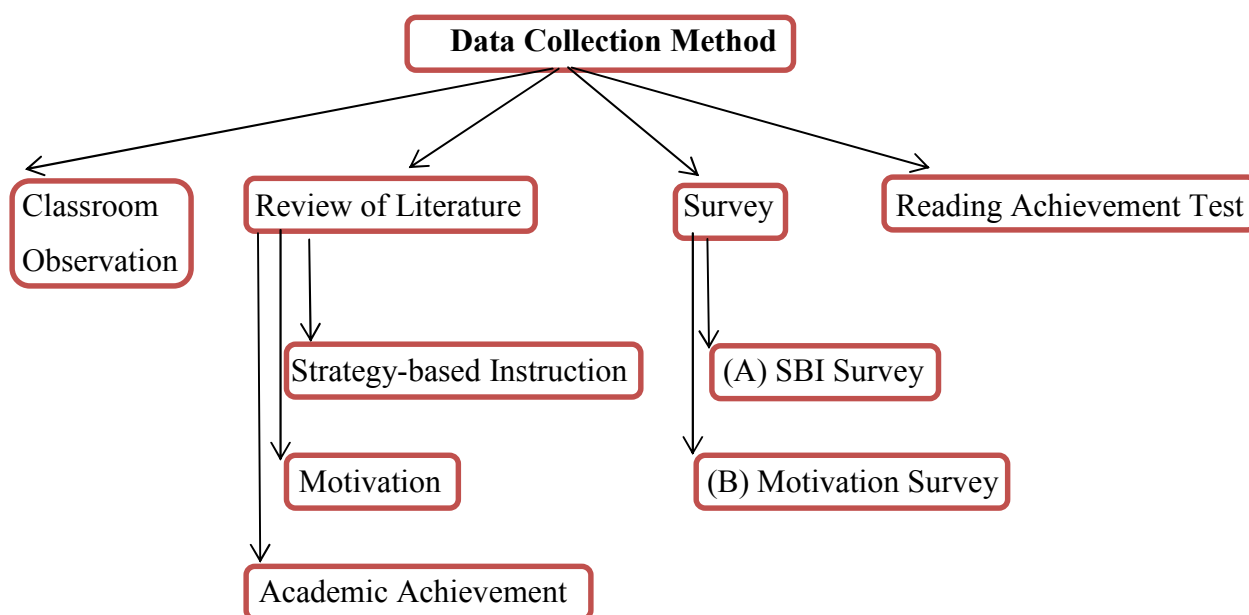


Figure (3): Data Collection Method

In order to accomplish the present research, a review of literature was compiled, a classroom observation was conducted, a survey was asked, and a reading comprehension performance test was applied to the population, (see figure 3). This work is of a quantitative and qualitative type whose main aim is to find a solution to the problem. Such research helps analyze the different factors that make students behave in certain ways in terms of reading and to understand the reasons that make them either like or dislike reading critically the scientific material written in English.

2.6.2.1 Review of Literature

The literature review aims to summarize the extent of the research in order to inform the reader of what is known of the subject and to familiarize the researcher with the latest developments in the area of research. The intention is to give a comprehensive review of previous research into specific topics in the report (Louis Cohen et al., 2000). On this basis, the researcher surveyed the literature related to motivation and strategy-based reading with a particular focus on critical reading in order to ensure a successful completion and evaluation of the research under

investigation. This literature served as a solid background to put the topic in the whole view and to keep focused.

2.6.2.2 Classroom Observation

Classroom Observation⁷ is a process by which researchers, teachers and consultants sit in on one or more class sessions, record the instructor's teaching practices and students' actions, and then in some cases meet with the instructor to discuss the observations. The purpose behind classroom observation is either to receive feedback from an objective, experienced observer, or engage in context-specific discussions about teaching with a consultant or gather data for research purposes (Megan W. Stuhlman et al., 2009).

Researchers consider classroom observation as an orientation to deepen the present research and understand the structure of a social setting. Classroom observation aims at studying both explicit and tacit cultural knowledge, knowing the impact of an immediate event, getting an inside view of reality and focusing on the person and the setting. Observing subjects in the field is always the best way to determine their usability requirement (Allwright, D. & Bailey, K. M., 1994). In order to introduce classroom reforms, researchers have developed self-administered, reflective approaches for teachers to use. Some approaches address changes in classroom behaviors, especially the interactions among teachers and students. Classroom observation methods include a wide range of approaches: checklists, inventories, timed interval ratings, holistic ratings, narrative descriptions, logs, questionnaires, rubrics, matrices, models, conceptual grids, and open-ended questions. An important consideration for researchers is what unit of instruction they will study. Will they observe an entire class period? A segment, an entire day, an entire course or program? Different protocols observe different units of instruction.

What teaching and learning practices should be the focus of classroom observations? Obviously those intended to measure and enhance teacher performance. The key component of any classroom setting, with regard to learning and development, is the nature and quality of interaction between teachers and students

⁷ Classroom observation was the first step. Classes were attended before all other research tools.

(Megan W. Stuhlman et al., 2007). Researchers and educational theorists have organized the findings from their studies into a variety of domains, but the present study focuses on the instructional support.

Because quantitative research provides us with numbers, and qualitative research provides us with words and behaviors, the researcher decided to plan some classroom observation sessions. In this respect, the researcher attended a series of sessions with different groups and different teachers of English at the Electrical Engineering Department. For this reason, a sample observation grid was composed. Attending the sessions without interfering, the researcher followed the phases of the lessons and took notes (King, R., 1979; Wolcott, 1973).

As a first step, a pre-observation meeting was held separately with each of the three teachers. The purpose of this meeting was to share information that helps both the teacher and the observer prepare for the observation. Information exchanged during this meeting included the purpose of the observation, course information (including the syllabus), class activities and teachers' attitudes and impressions about his students. This meeting was followed by two observations with each teacher (see table 6); the length of time of each observation was one hour and a half (a university session length). An observation follow-up was held between the researcher and observer. The discussion was descriptive rather than evaluative; it focused mainly on students' behavior. And it emphasized sharing information rather than giving advice.

Classroom Observation Sessions per Date of Attendance (2010-2011)

Teacher	Date	Timing	Group	Lesson
Teacher (A)	Feb 10	8-9.30	3 rd Year Instrumentation	Reading
Teacher (B)	Feb 10	9.40-11.10	3 rd Telecommunication	Reading
Teacher (A)	Feb 17	8-9.30	3 rd Year Instrumentation	Reading
Teacher (C)	Feb 14	14.20-15.50	3 rd Electro-technics	Grammar & Structure
Teacher (B)	Feb 17	9.40-11.10	3 rd Telecommunication	Vocabulary
Teacher (C)	Feb 21	14.20-15.50	3 rd Electro-technics	Grammar & Structure
Teacher (A)	Feb 24	8-9.30	3 rd Year Instrumentation	Grammar & Structure

Table (6): Observed EFL sessions (classified per date of observation)

2.6.2.3 The Survey

Due to time constraints, it was impossible to interview all the students. Therefore, the survey was used as a research tool for gathering data about students' motivation to read documentation published in English and strategy training/use. Anderson, G. (2001) pointed out that questionnaires allow the gathering of reliable and valid data, relatively, in a short time. The latter is a four-point Likert scale. Through it, the researcher intended to gather data at a particular point in time with the intention of describing the nature of existing conditions. It was used for logistical and research considerations. The main goal behind this survey was to investigate the students' motivation and readiness to read critically the scientific material published in English on one hand, and on the other hand to see whether the subjects are strategic readers when dealing with ESP texts. And later by applying the achievement test, the researcher will find out whether reading strategies can make a difference in student academic achievement.

As stated above, the survey⁸ was divided into two parts (A) and (B). While part (A) surveys students' motivation to read in English, part (B) questions students' use of reading strategies. Teachers and specialists have long recognized that motivation is at the heart of many of the most pervasive problems faced when teaching learners to read. Very recent studies revealed that teachers ranked motivating students as one of their primary concerns, and creating interest in reading was rated as the most important area for future research (Mori, S., 1992). This importance attached to motivation is supported by a documented link between motivation and achievement. The layout of the survey was as follows:(see Appendix 6)

Survey (A) = Motivation to Read Survey		
Questions 1-20 (50-point scale)		
Students' Motivation for Content-based Reading Questionnaire		
	questions 1-3	These questions were intended to evaluate science and engineering students' awareness of the need

⁸ The survey was applied as a diagnosis test before applying the achievement test.

Part One		to reading scientific documentation published in English
	questions 4-5	Questions 4 and 5 were intended to evaluate the student's self-evaluation of his/her reading ability.
Part Two	Questions 6-7	These two questions aimed at evaluating the student's attitude towards reading in English.
	Questions 8-9	Questions 8 and 9 were asked to see whether the student is intrinsically motivated to read in English.
	Questions 10-13	Questions 10-13 were asked to know the type(s) of scientific texts the student is interested in reading.
Part Three	Questions 14-17	These questions aimed at identifying the student's desire behind developing the ability of reading
	Questions 18-20	These questions concerned the student's personal view of the effects that may result from reading in English.

Table (7) : Layout of Students' Motivation for Content-based Reading Questionnaire

In order to assess the extent to which students retrieved and used reading strategies, they were introduced to a reading-strategy knowledge test that was based on metacognition questionnaires. It included 32 statements, classified into four parts. For the students' choices and their equivalent grades, refer to table 11. The range of points, however, that the students could achieve at the end varied between 0 and 34. The internal consistency (Cronbach's α) of the test was $\alpha = .76$.(see Appendix 7)

Survey (B) = Strategy Use Survey		
Questions 1-32 (80-point scale)		
Strategy-based Content-area Deep Reading Questionnaire		
Part One	Question 1	Strategy One: Planning for reading - Being purposeful when reading

	<p>Questions 2-7</p> <p>Question 2</p> <p>Question 3</p> <p>Question 4</p> <p>Question 5</p> <p>Question 6</p> <p>Question 7</p>	<ul style="list-style-type: none"> - Reading for a specific purpose - Reading for author's point of view - Reading for main & supporting ideas - Reading for technical vocabulary - Reading for interpreting charts & tables - Reading for summarizing - Reading for analyzing & evaluating
Part Two	<p>Question 8</p> <p>Question 9</p> <p>Question 10</p> <p>Question 11</p> <p>Question 12</p> <p>Question 13</p>	<p>Pre-reading strategies (working inside/outside texts)</p> <ul style="list-style-type: none"> - Predicting the topic of a text - Predicting the main idea from titles - Using pictures to guess main ideas - Using key words to predict ideas - Using background knowledge - Reading the first and last paragraphs as keys to grasp the gist of a whole passage
Part Three	<p>Question 14</p> <p>Question 15</p> <p>Question 16</p> <p>Question 17</p> <p>Question 18</p> <p>Question 19</p> <p>Question 20</p> <p>Question 21</p> <p>Question 22</p> <p>Question 23</p>	<p>While-reading strategies (reading & rereading)</p> <ul style="list-style-type: none"> - Skipping new words - Use of affixes to guess meaning of words - Use of dictionaries while reading - Ignoring grammatical structures - Pausing & analyzing grammatical structures - Analyzing structure to understand complicated sentences - Attempting to understand the passage, sentence by sentence. - Questioning while reading - Interpreting writer's intention while reading - Finding author's reasons for his beliefs

	Question 24 Question 25 Question 26	- Taking notes and going over them after - Rereading for building comprehension - Rereading for checking understanding
Part Four	Question 27 Question 28 Question 29 Question 30 Question 31 Question 32	Post-reading strategies - The ability to grasp author's conclusions - Separating what is important from what is not - Always evaluating what we read - The skill to base judgments on evidence - Making connections between subjects - Solving doubts/exchanging opinions with teachers/classmates

Table (8) : Layout of Strategy-based Content-area Deep Reading Questionnaire

The survey was a of a Linkert-type scale in which the subjects were asked to respond to each statement in terms of agreement or disagreement. Although Likert uses five categories, the researcher decided upon using only four categories: strongly agree, agree, disagree or strongly disagree (see table 9). The researcher can use fewer or more categories if necessary (Louis Cohen et al., 2007). Each category was assigned a point value.

Categories and the Assigned Point values

Category	Strongly agree	Agree	Disagree	Strongly disagree
Point value	04	03	02	01

Table (9) : Categories and their assigned point values

Both surveys (A) and (B) were administered to the sample population (Electrical Engineering 3rd Year LMD Students, University of Laghouat) on Monday, February 28th, 2011, during their weekly English sessions. Each student's total score is calculated by adding his/her item scores. As for motivation, the higher score is the more motivated the student is. And for reading strategy use, lesser scores are signs of lack of strategies. The Likert-type offers countless advantages. It is more reliable, and

it provides more precise information about the subjects' opinion on an issue (Louis Cohen et al., 2000).

2.6.2.4 The Reading Achievement & Performance Test

The educational achievement test⁹ was designed to measure the students' deep reading proficiency (abilities or skills) at the time of testing. The students' scores in this test were intended to be matched with the scores obtained in the survey. If a given subject got a high score in the survey, he would normally have a good score in the achievement test. In other words, students who are able to employ the appropriate reading skills and strategies should in all probability be more competent readers, and thus find the reading test easier than those who apply a limited range of skills and strategies.

During the pre-reading phase, each student was given a handout that showed pictures of the components of a computer and a calculator. They were asked to predict the topic of the text to be read later. The main goal behind this task was to enable students anticipate the content of the reading material and make use of previous knowledge. Then, students were required to guess the general or main idea of the text by using the given title as a cue. By then, students were supposed to have been ready for the main part of the test, the during-reading phase.

During the while-reading phase, students were exposed to a two-paragraph expository text which was followed by a variety of questions. The text was selected with the assumption that the theme would be familiar to the participants. The passage, entitled "*Machines with Memories*", consisted of 115 words (see Appendix 9). It had to do with the constituents of the calculator.

Here follows a detailed explanation of the questions that preceded and followed the reading passage:

⁹ The test comprised 10 questions.

Reading Achievement & Performance Test			
Pre-reading	1	Students look at pictures and guess the topic of the reading passage.	- Guessing / Predicting
	2	Students read the title of the text and predict main idea of the text.	
	3	Students supply their personal uses and others' uses of a computer	- Using previous knowledge - Anticipating content
While-reading	1	MCQ : finding the main idea of the text	- Locating the topic sentence
	2/3	MCQ : students complete the sentence with the right alternative	- Reading for specific details
	4	Students complete the given chart with information from the text	- Information transfer
	5/6	This time students scan only paragraph one, for specific information.	- Differentiating comparison from contrast / cause from effect (focusing on language structure)
	7	Detailed comprehension	- Differentiating facts from opinions
	8	Students make use of their knowledge	- Using context and previous knowledge to understand new vocabulary items
	9	Students make use of their knowledge	- Using context and previous knowledge to understand new vocabulary items
	10	Students find in the passage the author's view	- Eliciting author's opinion by focusing on language use.
Post-reading	11	Students give arguments. A contextualised word	- To make connections with other subjects

		was given as a cue.	- To make judgments
--	--	---------------------	---------------------

Table (10) : Detailed layout of the Reading Achievement Test Questions

2.6.3 The Population

Engineering is largely a practical activity. It is about putting ideas into practice. The research work was applied on Electrical Engineering students. Electrical Engineering is about the generation and distribution of electricity and its many applications. It is mainly concerned with developing components and equipment for communications, computing, and so on. This field includes electricity generating, electrical installation, lighting, etc. The Department of Electrical Engineering at Amar Telidji University provides 3rd Year LMD students with six domains (see table 112).

Domains & Sub-domains of Study Available at the Electrical Engineering Department

Domain	Sub-domain	Responsible
Electrical Engineering	Tele-communication and networks	Dr. Benkouider
	Instrumentation	Dr. A. Birane
Electronic Engineering	Industrial Security	Dr. B. Mokhtari
	Renewable Energies	Dr. A. Hamdi
	Electro-technics	Dr. S. Chetih

Table (11): Domains and their responsible staff at the Electrical Engineering Department

The study population comprised 120 learners who enrolled as third year LMD Electrical Engineering students in Amar Telidji University, Laghouat. Their ages ranged from 20 to 29. The sample consisted of 37 males and 83 females (table 12). The sample was distributed as follows:

Distribution of Students per Domain (2010-2011)

Domain	Males	Females	Total
Tele-communication and networks	02	12	14
Instrumentation	07	11	18
Industrial Security	08	10	18
Renewable Energies	04	10	14
Electro-technics	16	40	56
Total	83	37	120

Table (12) : Distribution of Students per Domain

The population was chosen randomly according to the official distribution of students made by the Electrical Engineering Department. The participants have come from different secondary schools in the different wilayas of middle and southern Algeria: Laghouat, Ghardaia, Djelfa, El Bayedh, Tiaret, Ouargla and Tamanrasset. They had from five to six years of English study in Middle and Secondary Schools. They passed their “Baccalaureate” exam in scientific and technical streams whose coefficient of English is 2. As they all come from state-run schools, they share nearly the same educational background. The learners’ first and second languages are respectively Arabic and French. They display little command of the French language. At university, all subjects are taught either in Arabic and few of them in French. In this context, it is worth noting that third year LMD EFL program aims at equipping learners with the necessary language background and skills to enable them to effectively understand and communicate in English.

2.6.4 Research Procedure

For the sake of reliability, the researcher decided to have the tasks done by the students’ teachers, with whom the students had been familiar. Each student was given a number to be used as identification while answering the questionnaire and the test. Before the treatments (survey and achievement test) began, those teachers were given instruction to make their students take the tasks seriously enough. They were also asked to encourage their students to ask for whatever clarification that might be raised while answering the questions of the survey. Eventually, many questions seemed unclear and necessitated teachers’ intervention. Few of them even asked for translation of some questions in Arabic. It took them one whole session (one hour and a half) to complete the questionnaire.

The next session was devoted for the reading achievement test. Again, teachers were entreated to remind the students that the test was not an official one; it was part of a research work. That’s why they were not asked to mention their names. As a first step, students were shown a picture (computers, calculators and hard disks), and were asked to guess what the passage to read was about (pre-reading phase). The sequence

took ten minutes. The remaining fifty minutes were devoted for the reading test. Students were instructed to read the passage carefully, and then answer the questions. According to their teachers, a lot of students encountered some difficulties understanding the questions, which urged teachers to intervene and provide some explanations.

2.6.5 Data Analysis

Quantitative data analysis has no greater or lesser importance than qualitative analysis. L. Cohen states that this type of data analysis is a powerful research form; It is often associated with large scale research, but can also serve smaller scale investigations (Louis Cohen et al., 2007). Numerical analysis for this research was performed by software, the Statistical Package for Social Sciences (SPSS,) which applies statistical formulae and carries out computations. SPSS is a computer program used for statistical analysis. SPSS was released in its first version in 1968. It is among the most widely used programs for statistical analysis in social sciences. It is used by market researchers, health researchers, survey companies, government, education researchers, marketing organizations and others. In addition to statistical analysis, data management and data documentation are features of the base software.

The present research was a mixture of two types of statistics, descriptive and inferential. Descriptive statistics describe and present data in terms of summary frequencies (the mode, the mean, the median, minimum and maximum scores, the range, the variance, the standard deviation and the standard error). No inferences are made by this type of statistics, but they simply provide the reporter with a numerical report of the findings. The main key items of descriptive statistics follow in table 13:

Key Terms by SPSS

the mode	the score obtained by the greatest number of people
the mean	the average score
the median	the score obtained by the middle person in a ranked group of people
the range	the distance between the highest and the lowest scores
the variance	a measure of how far scores are from the mean, calculated as the average of the squared deviations of

	individual scores from the mean
the standard deviation (SD)	a measure of the dispersal or range of scores, calculated as the square root of the variance
the standard error (SE)	the standard deviation of sample means

Table (13) : Key terms of descriptive statistics by SPSS.

By contrast, inferential statistics are meant to make inferences and predictions based on the data gathered. A good example of inferences to be made is hypothesis testing. Inferential statistics are more valuable and more powerful for researchers (Louis Cohen et al., 2007). A t-test was applied in order to test the hypotheses. The latter assesses whether the means of two groups are statistically different from each other. To achieve this end, the researcher opted for a two-tailed test. Unlike the one-tailed test which is used with a directional hypothesis, the two-tailed test is not. While the directional hypothesis indicates “more or less”, the non-directional indicates only difference, but not where this difference lies.

2.6.5.1 Validity of the Research Tools

As validity is an important key to effective research, the researcher attempted to improve it through careful choice of population, appropriate instrumentation and appropriate statistical treatments of the data. And as it is impossible for any research to be 100 per cent valid, validity, then, should be seen as a matter of degree rather than as an absolute state (Gronlund, N.E., 1981). For this reason, both the survey and the test were given to teachers at the Psychology and English Departments for approval. To enable the Psychology teachers understand all items of the survey, a translation in Arabic was done. The following table (14) shows teachers’ degree of approval:

Validity of Research Tools

	Teacher (A)	Teacher (B)	Teacher I	Teacher (D)
Motivation Questionnaire	82%	91%	79%	93.5%
Strategies Questionnaire	87%	86%	91%	89%
Proficiency Test	81.5%	88%	92%	94.5%

Table (14) : Teachers’ Approval for the Validity of the Research Tools

2.6.5.2 Reliability of the Research Work

Reliability is another crucial key for any research. In the case of the present research – quantitative research – reliability is synonymous to dependability, consistency and replicability over time, over instruments and over groups of respondents. Cohen argues that it is concerned with precision and accuracy. In order to accomplish a reliable research, the latter must demonstrate that similar results would be found in case the research were to be carried out on a similar group of respondents in a similar context. Guttman's test of reliability, Split-half, was applied to the present research. Split-half reliability refers to the administration of a single test that is divided into two equal halves. For example, a 60-question aptitude test that purports to measure one aspect of academic achievement could be broken down into two separate but equal tests of 30 items each. Theoretically, the items on both forms measure the same construct. This approach is much less susceptible to time-interval effects because all of the items are administered at the same time and then split into separate item pools afterward (Morrison, K.R.B., 1993).

2.7 Conclusion

This chapter served as an endeavor from the part of the researcher to provide its readers with in-depth information about the methodology that governed the work. It also provided details about the population of the study. A preamble of the research tools used in the present work and the reasons as well as the theories behind the choice of such instruments is viewed. The chapter ended with presentation of the ways and techniques used while analyzing and interpreting the results of the study.

Chapter Three

Results and Analysis of Findings

3.1 Introduction

The present study aimed at examining the effects of a reading strategy based instruction and students' motivation on their academic achievement within an ESP context. It attempted to test the hypotheses mentioned in chapter one.

In order to answer the research questions and test the research hypotheses, quantitative analysis was used. The findings will be presented descriptively and statistically. The findings for this study were collected and obtained through a combination of two main instruments, a survey and a reading achievement test, with the participants in the study. Both techniques were conducted in the classrooms' natural settings during the English sessions. Students' papers were checked, reviewed and analyzed by the researcher in an attempt to share the researcher's findings for each of the participants and their setting. The results and discussion of the findings of this study are on the following pages.

3.2 General Results of the Research Work

As mentioned previously, the population of the study undertook a reading performance test which comprised ten questions, a reading strategy use survey and a motivation to read survey. By applying both of Cronbach's Alpha and Guttman Split-Half Coefficient, the tests revealed the following:

- a) Reliability statistics for the reading performance (0.526)¹⁰
- b) Reliability statistics for students' reading strategy use (0.823)
- c) Reliability statistics for students' motivation to read (0.745)

3.3 Relations between Strategy Use and Reading Performance

The researcher's assumption was of a two-tailed type, one side is assumed to be more or less strategic than the other, more or less motivated than the other and more or less performant than the other. T-tests were computed as a measuring tool to assess variable one, the reading performance. Means (M) and standard deviations (SD) of variable one, reading performance, are shown in Table 15.

¹⁰ Scientifically and according to Grunbach's test, whenever the result is inferior to 0.5 (zero point five), it is statistically significant.

Variable Measured	groups	N	Mean	Std. Deviation	Mean Difference	T	Df	Sig. (2-tailed)
Reading Achievement Test	gr1 : >= 90	62	13,35	3,306	1,554	2,385	118	,019
	gr2 : < 90	58	11,79	3,825				

Table (15).: Reliability Statistics for Reading Performance

As shown in Table 16, group one refers to those students who seem to be strategic readers through their answers (Strategy questionnaire) whereas group two are those who seem to be nonstrategic. Table 1 summarizes the outcome of the reading comprehension measurement. The difference in score change between the two groups revealed that there was a trend for group one to demonstrate greater gain scores than group two, $t = 2.385$, $sig = 0.019 < 0.5$. The finding was significant; it confirmed the hypothesis that the more strategic the reader is the higher the achievement will be. The “strategic” group whose mean scored $M = 13.35$ showed greater comprehension skills and competence than the “nonstrategic” group whose mean scored 11.79; It can be concluded that there are statistically significant differences in the achievement mean according to the strategy variable between both groups (group 1 and group 2).

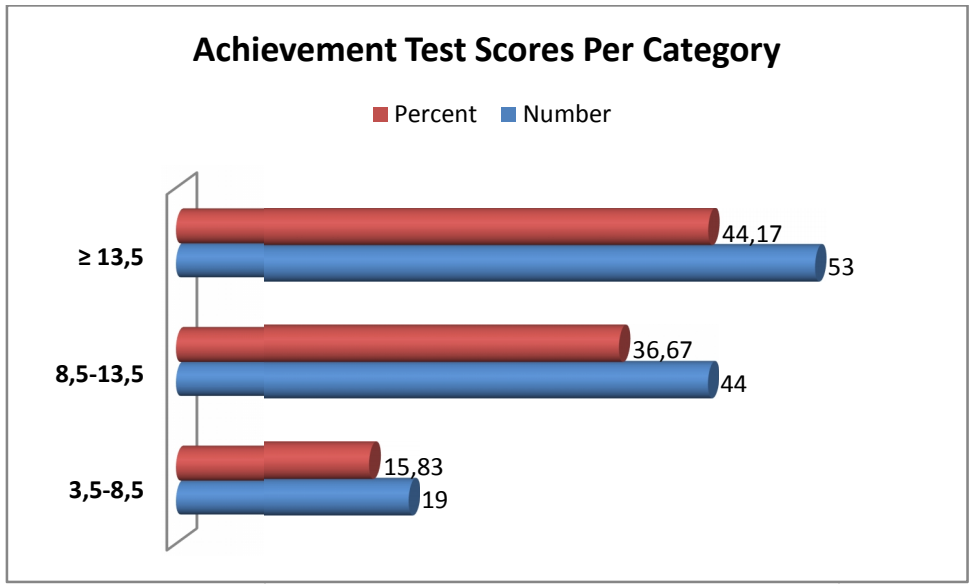


Figure (4)

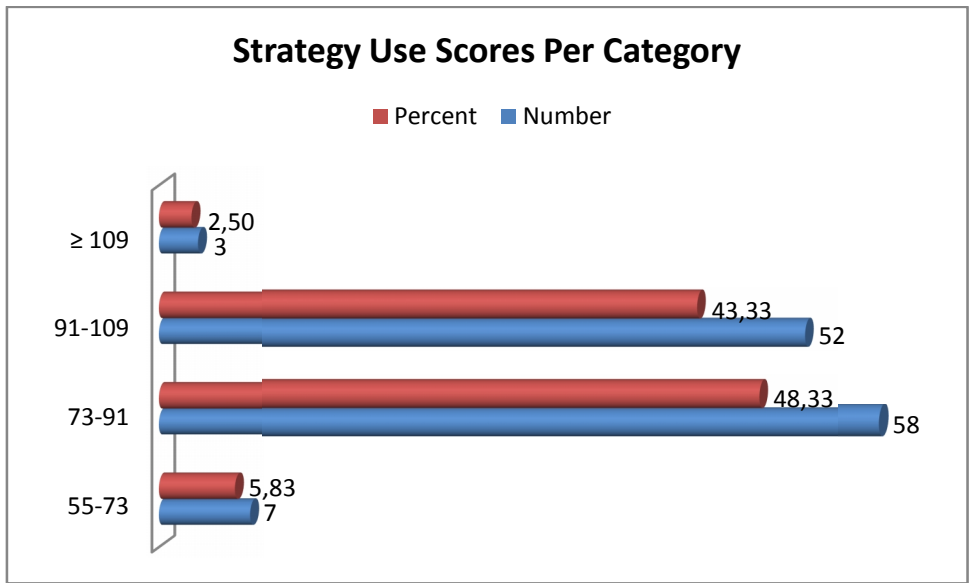


Figure (5)

As illustrated in Figure (4), the highest scores in the reading achievement test have been obtained by those students who showed a great deal of strategy use when responding to the survey statements as in Figure (5). 36.67% of the population scored 8.5-13.5, and 44.17% scored ≥ 13.5 out of twenty. On the other hand, 48.33% scored 73-91 while 43.33% got 91-109 in the strategy use questionnaire. This leads us to

conclude that as far as the learner is explicitly exposed and trained on reading strategies, he/she is expected to score better in terms of reading performance.

The reading strategies the students have possibly been trained on previously either by their EFL teachers at university and/or by their English teachers during their secondary school years apparently provided the students in group one “strategic group” with a more in-depth insight about the content of ESP texts. The readers in group one clearly monitored and experienced some of the covert and mental tricks proficient readers play in the process of reading. Majority of participants in group one demonstrated effective reading 71i month during the test as can be seen in achievement test scores (Figure 4).

3.4 Differences between Good and Poor Readers on Strategy Use

3.4.1 Strategy One: Planning for reading

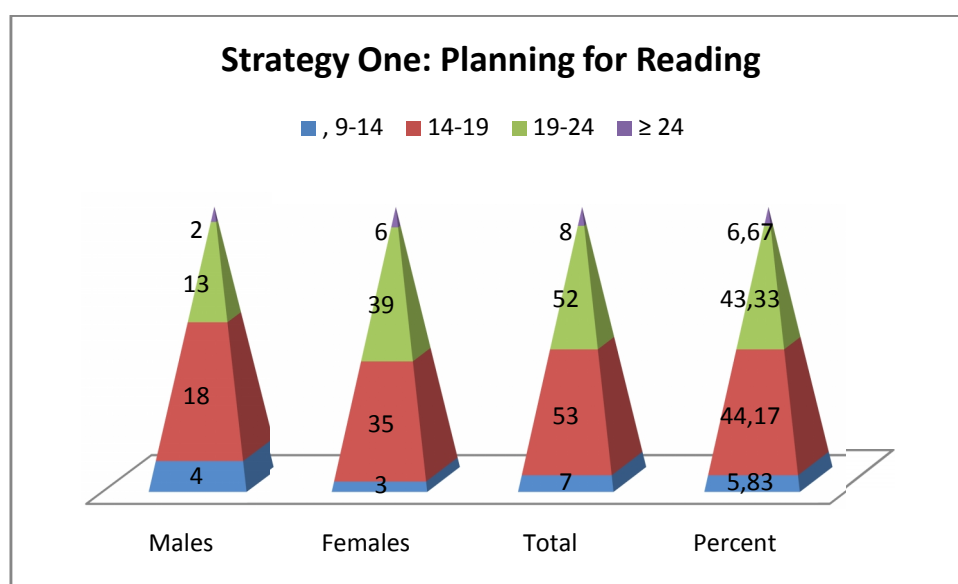


Figure (6)

Part one included seven (7) statements. It aimed at identifying whether students are skilled in terms of being purposeful when they read documentation written in English. Purposeful reading is a key skill. As shown in Figure (6), 44.17% of the population scored 19-24 out of 28 and 43.33% scored ≥ 24 out of 28. *“There is an old saying that a picture is worth a thousand words. When it comes to comprehension, this saying might be paraphrased, ‘a visual display helps readers understand,*

organize, and remember some of those thousand words.’”(Pearson, P. D., and N. K. Duke, 2002).

3.4.2 Strategy Two: Pre-reading Strategies

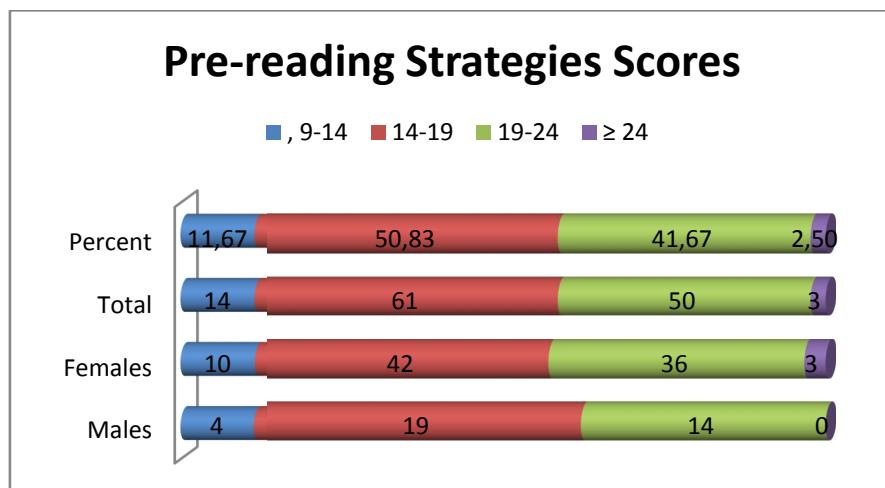


Figure (7)

Before being exposed to the reading test, students were shown a picture (computers, calculators, laptops and a mobile phone) and were required to guess what the text would be about. This aimed at identifying to what extent, students were able to anticipate meaning and guess the content of a reading passage using pictures, titles and graphs as a cue. They were also asked to locate the topic sentence of the reading passage. This aimed at testing students’ ability to predict the main idea of the text and see whether they make use of their background knowledge. It is worth mentioning that proficient learners always build on and activate their previous knowledge before doing any learning activity (Irvin,J., 1996; Shelley O’Hara, 2005). Anticipating and guessing content of a reading material is a key skill that active readers need to be equipped with. “As they read, good readers frequently make predictions about what is to come.”(Pearson, P. D.and N. K. Duke., 2002). Part two of the strategy use survey included 6 statements with a total value point of 24. As shown in Figure (7), 50.83% of the population scored 14-19 and 41.67% scored 19-24, and 2.50 scored ≥ 24 .

3.4.3 Strategy Three: While-reading Strategies

As can be seen in the reading performance test, multiple choice questions were asked to test students’ ability to use some while-reading key strategies such as

analyzing, using structure to understand meaning, getting focused while reading to answer questions, interpreting writer’s intentions, and finding author’s supporting ideas. In this respect, part three which included 13 statements with a total value point of 52 in the reading strategy use survey was set. The results came as shown in Figure (8). 58.33% of the population scored 29-37 and 37.50% scored ≥ 37 out of 52.

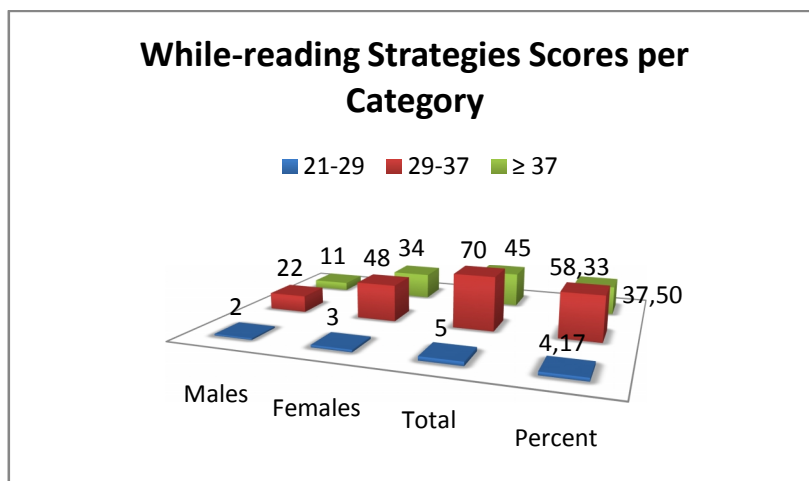


Figure (8)

3.4.4 Strategy Four: Post-reading Strategies

The effective reader is so strategic that hemakes predictions, organizes information, and interacts with text. He evaluates what he reads in light of his previous knowledge,(Danny Brassell & Timothy Rasinski,2008). Key strategies of this phase of reading are, for instance, evaluating, making judgments based on evidences, grasping conclusions, looking for connections between subjects and so on. The last two questions of the achievement test aimed at identifying the degree of presence of such skills among the population of the study. As for the strategy use survey, statements 27-32 (total point value = 24) aimed at identifying to what extent the students make use of these strategies. The findings revealed that 51.67% scored 13-18 and 39.17% scored ≤ 18 (figure 9).

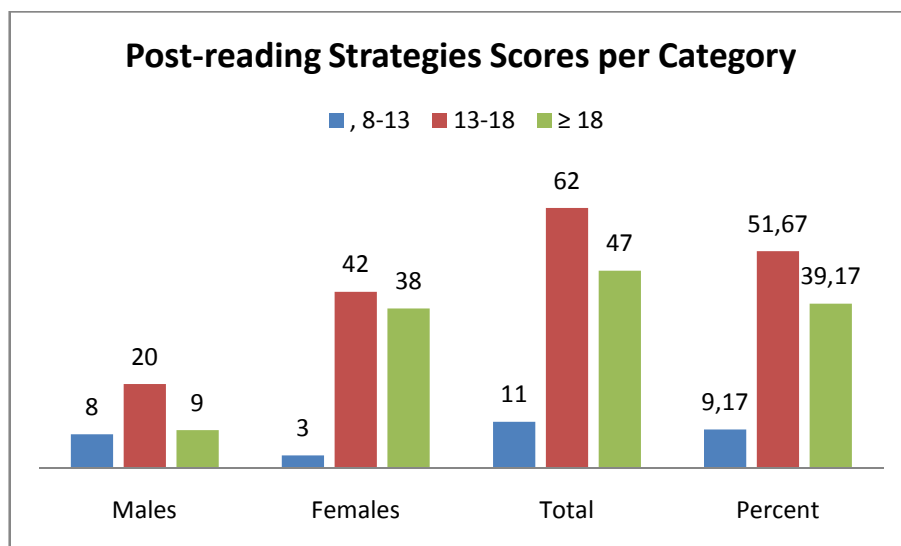


Figure (9)

Students with reading-strategy knowledge outcomes showed better reading performance. This finding confirmed that students having problems in reading comprehension can expand their knowledge of reading strategies and are able to make use of these higher-order skills to improve their reading comprehension (Midgley, C., Kaplan, A., & Middleton, 2001; Danny Brassell & Timothy Rasinski, 2008). This outcome replicated the findings of a number of earlier studies (; Rosenshine, 1997;; Faye Antoniou1 and Elmar Souvignier, 2007) in that students facing problems in text comprehension are likely to learn and use cognitive and metacognitive comprehension skills that also generalize to new subject matter or over time.

3.5 Differences between Good and Poor Readers on Motivation to Read

By applying the T-test to the students' scores obtained when responding to survey (B), Motivation to reading in English Survey, Group one outnumbered group two. As shown in table (16), the total mean obtained by group one was 63.03% whereas group two got only 56.76%. This resulted in statistically significant differences in motivation mean according to the strategy variable. All figures in red didn't exceed 0.5 which makes all of them significant statistically. This also is in favor of the research hypothesis. More active or strategic readers are more motivated than those who read without exercising reading strategies.

T-Test : Independent Samples Test (Students' Motivation to read)

Variable Measured	groups	N	Mean	Std. Deviation	Mean Difference	T	Df	Sig. (2-tailed)
Necessity to read in English	gr1 : >= 90	62	13,98	2,343	1,277	2,954	118	,004
	gr2 : < 90	58	12,71	2,392				
Attitude towards English	gr1 : >= 90	62	23,06	2,958	2,789	5,119	118	,000
	gr2 : < 90	58	20,28	3,008				
Wants and Desires	gr1 : >= 90	62	25,98	1,769	2,208	4,785	118	,000
	gr2 : < 90	58	23,78	3,140				
Total Motivation	gr1 : >= 90	62	63,03	4,304	6,274	6,205	118	,000
	gr2 : < 90	58	56,76	6,602				

Table (16)

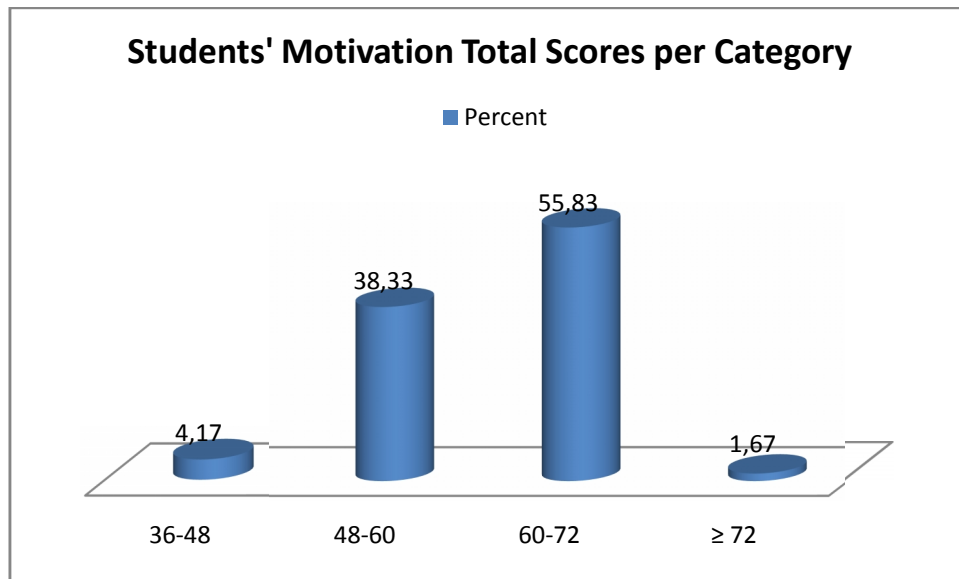


Figure (10)

It has already been mentioned that in the strategy use questionnaire, 48.33% scored 73-91 and 43.33% got 91-109. Figure (10) illustrates the rates referring to the scores obtained by students in the motivation questionnaire: 55.83% scored 60-72,

and 38.33% scored 48-60. Statistically, it is apparent that the second hypothesis has been realized since $T=6.205$ which is significant at 0.5 (refer to Table 2 and figure 3). In short, regarding motivation, students in group one (strategic group) did demonstrate significantly greater gains than students in group two (nonstrategic group). This finding may reflect the fact that motivation is an important factor in learning strategies. The strength of motivation can have a conducive effect on the quantity of learning strategies they employ. Oxford & Nyikos find that “the degree of expressed motivation is the single most powerful influence on the choice of language learning strategies”

Students' Motivation (part 1) : Necessity to read in English						
Category	Males	Percent	Females	Percent	Total	Percent
7 -11	11	29,73	4	4,82	15	12,50
11-15	20	54,05	48	57,83	68	56,67
≥ 15	6	16,22	31	37,35	37	30,83

Table (17)

Students' Motivation (part 2) : Attitude towards Reading in English						
Category	Males	Percent	Females	Percent	Total	Percent
13-18	6	16,22	4	4,82	10	8,33
18-23	19	51,35	43	51,81	62	51,67
≥ 23	12	32,43	36	43,37	48	40,00

Table (18)

Students' Motivation (part 3) : (wants and desires)						
Category	Males	Percent	Females	Percent	Total	Percent
13-18	3	8,11	0	0	3	2,50
18-23	5	13,51	11	13,253	16	13,33
≥ 23	26	70,27	72	86,747	98	81,67

Table (19)

By reference to the above tables, it is noticeable that a great number of the population of the study seem greatly motivated. In terms of students' feeling of the necessity to read documentation published in English, 56.67% scored 11-15, and 30.83% scored ≥ 15 (Table 17). Besides, 51.67% got 18-23 and 40% scored ≥ 23 in part (B) of the motivation questionnaire _interests in the English language (table 18). Finally, for students' wants and desires behind reading in English, 81.67% scored ≥ 23 (table 19). The participants' responses showed that an interest in the language and a strong extrinsic reward, such as academic success and job opportunities, are the most common reasons the participants reported for choosing and sustaining effort in learning and reading in English. Thus, these students expressed high perception of past experiences resulting in high perception of future expectations. To sum up, the findings confirmed that motivation to learn is paramount to student success. The sources of motivation are complex. The motivation to learn is personal and comes from within an individual, but can be influenced by external factors. Educators must keep the principles of motivation at the fore front of all instructional design (Niebuhr, K., 1995 ; Wolters, C. A., Yu, S., & Pintrich, P. R. (1996).

To relate the present study to previous ones, it is worth mentioning that Guthrie, Wigfield & Perencevich(2004) strongly believe that learning and motivation are intertwined and cannot be disaggregated to study one or the other. The research they presented focused on reading comprehension and the motivation of learners. They conducted a research that sought to improve reading comprehension by helping students learn and use the appropriate strategies. The findings showed significant improvement in reading comprehension. This result is strongly supported by other researches carried out in different settings (Norbert Pachler & Kit Field, 2001).

3.6 Relations between Strategy Use and Content Achievement

The researcher hypothesised that by applying a strategy-based instruction to reading, ESP teaching will positively impact the growth of content knowledge. In order to test this hypothesis, part three of the motivation test included key statements that sought answers to the researcher's hypothesis. The students' responses to the three statements (18-19) revealed the following :

- a) Statement one : I think that reading in English is critical in my career.

Degree of agreement	Point Value	M	F	M %	F %
Strongly agree	4	16	37	43,24	44,58
Agree	3	14	32	37,84	38,55
Disagree	2	6	10	16,22	12,05
Strongly Disagree	1	1	2	2,70	2,41

Table (20) : Students' responses to statement 18 in the motivation test

- b) Statement two : English is important to me ; it helps me gain knowledge

Degree of agreement	Point Value	M	F	M %	F %
Strongly agree	4	19	54	51,35	65,06
Agree	3	15	26	40,54	31,33
Disagree	2	2	2	5,41	2,41
Strongly Disagree	1	1	1	2,70	1,20

Table (21) : Students' responses to statement 19 in the motivation test

c) Statement Three : Reading in in English is a key to academic success.

Degree of agreement	Point Value	M	F	M %	F %
Strongly agree	4	17	46	45,95	55,42
Agree	3	13	29	35,14	34,94
Disagree	2	6	6	16,22	7,23
Strongly Disagree	1	1	2	2,70	2,41

Table (22) : Students' responses to statement 20 in the motivation test

These questions were addressed using descriptive statistics (Table 20,21&22). Statistical differences between students' responses confirm their awareness of the crucial need for reading in English so as to gain content knowledge and ensure academic success. Both groups, males and females, got high scores. For statement 18, 43.24% males and 44.58% females of the whole population strongly agreed. In statement 19, the rate of the students who strongly agreed reached 51.35% males and 65.06% females. Finally, option one again was chosen by a high number of students, 45.95% males and 55.42% females. These findings made clear that a great majority of the science and engineering students consider reading competency as a key factor in enabling students to gain knowledge in subjects other than the language itself.

3.7 Relations between Strategy Use, Reading Motivation and Gender :

Hypothesis three is concerned with the possible relation between gender and strategy use on one hand, and motivation on the other. As the research lends itself to a two-tailed type, no side was favored to the other ; At the very start of the research, it was wondered whether gender is a key factor in determining students' mastery of reading strategies use and motivation. Gender differences studies reached different conclusions, some favouring males and others favouring females (OECD. PISA, 2009).

The results of the T-test revealed some significant interaction on both dependent variables that would support the third hypothesis. An effect for reading in the English language was found among females, when compared to males. A more detailed analysis of the data on the basis of dependent variables will now be presented.

The reading strategy survey was used to measure the skills and strategies that students are equipped with and make use of when reading ESP texts. The descriptive statistics for strategy survey are reported in Table 26. The mean score (M) for strategy training among males was 85.92, while the mean (M) for females was 91.08. Group one (males) scored slightly lower than group two (females), the reading mode main effect was significant, $T=-2,663$, $sig = 0.009$ which is less than 0.5. Therefore, there are statistically significant differences in strategy mean according to the gender variable among the whole population.

T-Test : Independent Samples Test _ Students' Use of reading Strategies per Gender

Variable Measured	Groups	N	Mean	Std. Deviation	Mean Difference	T	df	Sig. (2-tailed)
Planning for reading	Male	37	17,73	3,372	-1,258	-1,934	118	,056
	Female	83	18,99	3,255				
Pre-reading strategies	Male	37	17,57	2,672	-,987	-1,878	118	,063
	Female	83	18,55	2,652				
While-reading strategies	Male	37	34,92	4,912	-1,274	-1,442	118	,152
	Female	83	36,19	4,258				
Post-reading strategies	Male	37	15,70	3,170	-1,647	-2,963	118	,004
	Female	83	17,35	2,639				
Total scores for strategy Training	Male	37	85,92	10,566	-5,165	-2,663	118	,009
	Female	83	91,08	9,464				

Table (23)

A more detailed statistical explanation of the data found in Table (23) is provided through the following graph (figure 11) :

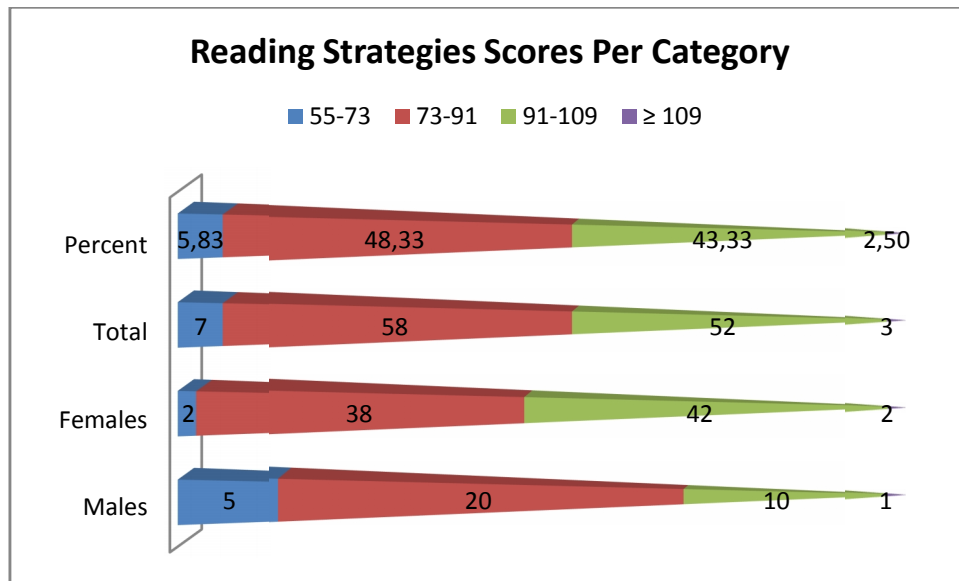


Figure (11)

As illustrated in the above graph, the strategy survey revealed that 42 out of 83 female students scored 91-109 out of 128 whereas only 10 males ranked in the same category. Besides, 38 females scored 73-91 against only 20 males who got this score. Thus, there are statistically significant differences between both groups, males and females in terms of reading strategy training/use.

T-Test : Means per Gender in the Reading Performance Test

Variable Measured	Groups	N	Mean	Std. Deviation	Mean Difference	T	df	Sig. (2-tailed)
Total scores in the Achievement Test	Males	37	11,82	2,849	-1,115	-1,561	118	,121
	Females	83	12,94	3,903				

Table (24)

The Reading Achievement Test was used to measure the effects of reading strategies training/use on students' performance. The descriptive statistics for the Reading Achievement Test shown in Table 24 revealed that the means (M) for the two groups were a little bit different. There was a slight difference between both

groups, females and males. The mean score (M) for the performance among males was 11.82 , while the mean for the reading performance among females was 12.94. In the strategy training survey, females scored higher than male students. The reading performance and strategy use main effects, and the interaction between them were significant, (T = -2,663 with a significance rate 0.009 ; T = -1.561, significance rate = 0.121).

This leads to conclude that the reading assessment results revealed that the majority of female science and engineering students at the University of Laghouat performed at a satisfying level of proficiency. These results also revealed a persistent literacy gap between boys and girls (see Figure 12). Many factors contribute to the gender gap in literacy. Boys and girls show differences in reading attitudes, behaviours and preferences, all of which can have an impact on performance in reading assessments.

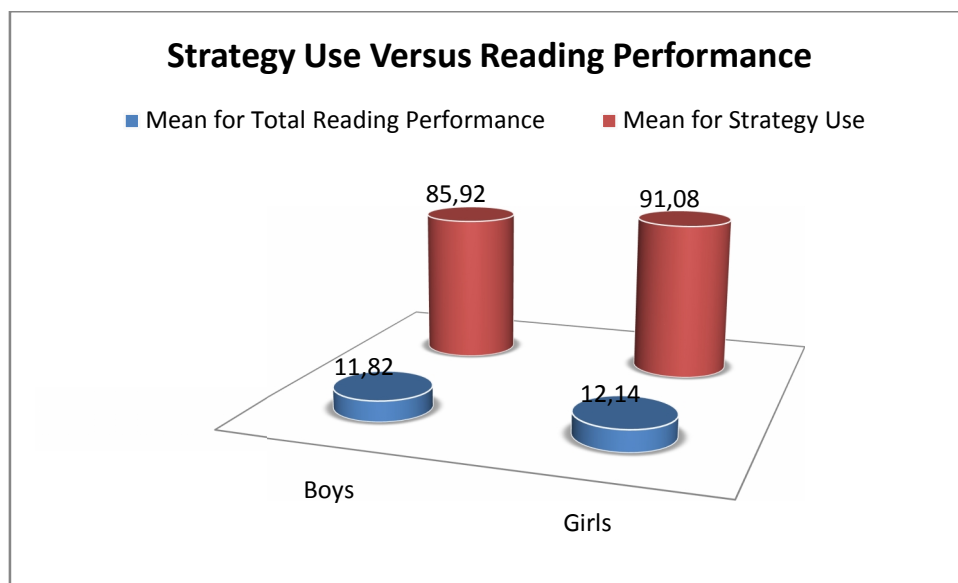


Figure (12)

The Motivation Survey was used to measure the effect of reading strategy training on students' motivation to read documentation published in English. The descriptive statistics for the Motivation Survey shown in Table 3 revealed that the means for the two groups, females and males, were different and statistically

significant mainly in part one of the survey, attitude towards reading material published in English. The mean motivation score (M) for the females was 61.13, while the mean for the male students was 57.46 with a significance rate of 0.003 which is again less than 0.5 (see Table 25 and Figure 13).

T-Test : Independent Samples Test _ Students' Motivation per Gender

Variable Measured	Groups	N	Mean	Std. Deviation	Mean Difference	T	df	Sig. (2-tailed)
Motivation (Feeling of necessity)	Mâle	37	12,22	2,417	-1,663	-3,616	118	,000
	Femelle	83	13,88	2,287				
Motivation (Attitude)	Mâle	37	20,92	3,336	-1,153	-1,794	118	,075
	Femelle	83	22,07	3,215				
Motivation (wants & desires)	Mâle	37	24,32	3,567	-,856	-1,586	118	,115
	Femelle	83	25,18	2,269				
Total scores for Motivation	Mâle	37	57,46	7,328	-3,673	-3,026	118	,003
	Femelle	83	61,13	5,539				

Table (25)

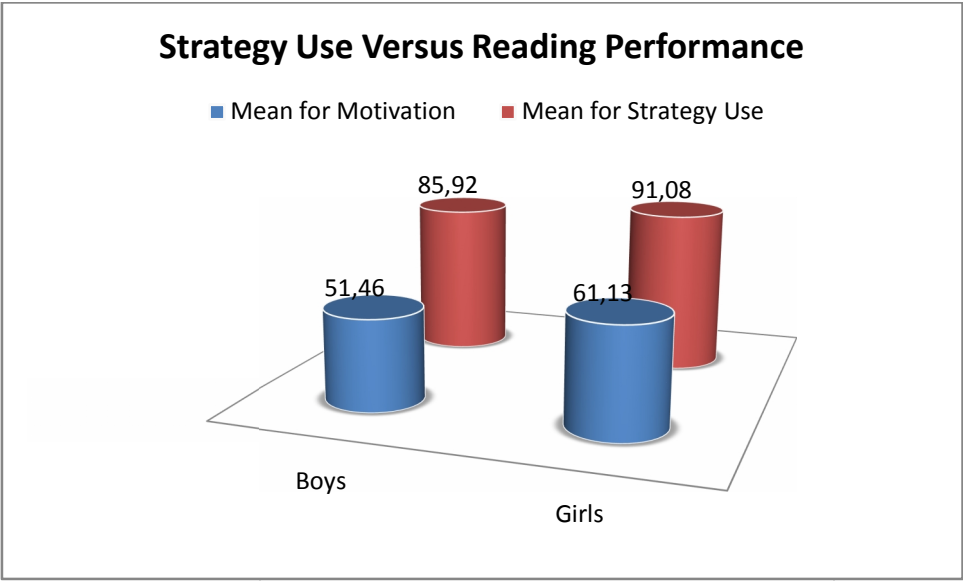


Figure (13)

Gender and Attitude towards reading (in English)				
Category	Males	Percent	Females	Percent
07-nov	11	29,73	4	4,82
11-15	20	54,05	48	57,83
≥ 15	6	16,22	31	37,35

Table (26)

Gender and Interest in English				
Category	Males	Percent	Females	Percent
13-18	6	16,22	4	4,82
18-23	19	51,35	43	51,81
≥ 23	12	32,43	36	43,37

Table (27)

Gender vs. Wants and Desires behind Reading in English				
Category	Males	Percent	Females	Percent
13-18	3	8,11	0	0
18-23	5	13,51	11	13,25
≥ 23	26	70,27	72	86,74

Table (28)

These findings confirmed that boys and girls show a number of reading-related differences that go beyond performance differences. Girls tend to do more non-assigned reading, reading for enjoyment, or reading for general interest than boys. « *The females show a more positive attitude to reading and a preference for reading a variety of genres compared to males* », (Dimitris Anastasiou & Eleni Griva, 2009: 86). Girls report liking to read more than boys and more girls than boys rate themselves as confident readers. Girls also report more out-of-class reading, more sharing and discussion of reading materials and more time doing homework than boys. Boys spend less time reading than girls, are less motivated to pick up a book, do not value reading as an activity, are less confident readers and see themselves as having lower reading skills than girls (Refer to the above tables 26,27&28). A lot of researchers have investigated and indicated differences between male and female students in reading preferences, reading performance and strategy use (OECD “PISA”, 2009).

As a result of their attitudes and behaviours, girls tend to have a greater number of experiences with reading activities, which may explain their better performance in reading assessments. By contrast, boys' attitudes and behaviours may be acting as barriers in the development of reading skills.

To conclude with, the rationale for the explicit teaching of comprehension skills is that comprehension can be improved by teaching students to use specific cognitive strategies or to reason strategically when they encounter barriers to understanding what they are reading. Explicit or formal instruction in the application of reading strategies has been shown to be highly effective in enhancing understanding (Catherine Snow, Chair, 2002). So, as proved by the measuring tools, the obtained findings confirmed that students who receive strategy training would be more motivated, better performers and better language knowledge holders. A thing that would come to reinforce the positive interaction between students strategy training and their academic achievement.

3.8 Pedagogical Implications and Recommendations

Strategy instruction helps students who are struggling with the text become aware of, use, and develop control over learning strategies (Palinscar & Brown, 1984). « *Explicit instruction, however, attempts not only to show students what to do, but also why, how, and when.* », Pearson (2002) argued, and concluded that such instruction helps students develop independent strategies for coping with the kinds of comprehension problems they are asked to solve in their lives in schools (p. 22). As a result, readers become successful readers in their everyday lives.

The results of the present research have all been discussed in each of the previous sections. After viewing the results, it is safe to say that there are numerous effective strategies for teaching critical reading to science and engineering university students. Each of the techniques and methods (refer to the review of literature) had been proven to be effective in most cases with students, mainly those struggling with reading documentation published in L2 and this research shows that similar techniques can be used with either Amar Telidji University or any other university science students in order to help them overcome their handicaps in terms of reading

ESP texts and show better academic achievement not only in English but also in the different subjects.

Educators need to understand that it is their responsibility to provide students with the opportunities they need to learn how to read regardless of their ability level. Educators will have to find a balance of literacy strategies and methods to meet the various needs of the diverse population of students they serve. To do so, countless options are open for educators and teachers.

During in-service training seminars, education inspectors provide efficient means for orienting teachers on how to conduct their own styles and strategies-based instruction. O'Malley and Chamot (1990) refer to this as "*developing in teachers the understanding and techniques for delivering effective learning strategy instruction to students.*" Participation in this kind of seminars can serve teachers in understanding their students' needs. They can also learn how to embed the strategies into everyday class activities and how to help students choose strategies related to specific curricular guidelines.

These seminars could be provided as in-service orientation across language programs. This kind of strategy instruction would ideally include several different approaches : lectures, outside reading of journal articles and book excerpts describing learning/teaching experiences and issues, paired and small-group discussions, hands-on strategy activities and observation of classes taught by teachers who have already implemented strategies-based instruction with their students.

Discussions among teachers are likely to focus on the emergence of SBI as a means of integrating diverse teaching philosophies, methodologies, and approaches to learning, as well as on methodological issues concerning the language learning process. These discussions (in pairs or small groups) can create a meaningful classroom context for these instructors.

Another useful resource for the teachers is the opportunity to observe authentic class sessions conducted by other language instructors who have already undergone the strategy instruction program. The teachers attend each other's sessions, meet to exchange ideas about the presented lessons and discuss how the strategy instruction fits into the curriculum. Teachers are required to encourage learners to give their

comments about the different strategies. It is the learner himsel/herself who can provide some of the most significant comments and ideas about classroom instruction.

If no classes to observe are available, teachers could make use of audiovisual aids (videotapes of class sessions taught by native speakers who provide strategies-based instruction. These can serve a lot in showing the teachers how the strategies are being embedded into a particular course curriculum.

In the light of what the present study has revealed, several directions for future research emerge. These include the need to refine and expand the methodology used by EFL teachers at University. Moreover, it is hoped that the findings for the research will foster changes in the approach used in this research in teaching ESP courses to be implemented in the country. This will hopefully empower students to adopt an effective approach to reading ESP texts.

In addition, in order to increase intrinsic motivation among science and engineering students (especially the male ones) educators need to explicitly teach them effective ways and strategies to read ESP texts (Guthrie et al., 2004). Thus, the approach that schools ought to adopt should aim at :

- a) promoting reading awareness,
- b) seeking the development of students' linguistic, cognitive and sociocultural background
- c) encouraging their growth of metacognitive skills by explicitely training them into a variety of strategies (Carrell et al., 1989).

'Reading and gender' remains an area open for research and discussion. Further research is needed so as to contribute importantly to the development of improved literacy interventions for young children (Wu Weiyong, 2006). The findings of the present study suggest that language educators should take into consideration the differences between the two genders and promote equal learning opportunities in order to adjust the apparent differences between female and male students, with the aim of avoiding the possible creation of a gender gap in educational outcomes.

So it would be logical to suggest that greater importance should be attached to the constructive role of strategy trainings which seem to be totally missing in majority of ESP classes in Laghouat University. Therefore, in order to facilitate the reading comprehension of readers, such strategies should be incorporated within the normal syllabus and teachers should be more attentive to those strategies and try to overtly teach the readers how to apply such tricks in actual process of reading.

3.9 Conclusion

Although the results of the present research work provided certain support for the researcher's hypotheses, certain limitations should be acknowledged and kept in mind when interpreting the findings. First, the researcher would have preferred to work on a whole population, but randomly selected samples would support the generalizability of the results. Second, this study was conducted in a Southern town, Laghouat. Therefore, the results may not be applicable to other geographical locations across the country, mainly for boys who showed great lack in reading strategies and achievement. It is worth mentioning that the findings provide potential insights for future research ; more studies need to be done on science and engineering students to help them improve their content-related reading performance. Comprehension is the essential goal of reading and reading instruction. Effective reading instruction is the one that digs deeper and deeper by teaching learners not only what but also how to. It should be engaging for students and teachers. As indicated by this study, motivation is crucial to learning, and SBI proved its efficiency in enhancing motivation among content-area readers. It would be interesting to incorporate a strategy-based instruction to reading in all English courses designed for science and engineering students.

GENERAL CONCLUSION

Today, addressing the needs of students, particularly those who struggle with reading material published in English is one of the most complex problems in education. Several factors interact to make it difficult to help this community of students become good readers, which include the fact that reading is typically not given the importance it deserves by EFL teachers at many institutions such as the science and engineering departments. Besides, according to the findings by Ericson (2001) and Biancarosa & Snow (2004), most teachers of English are newly appointed graduates who lack experience in this specialized field and do not consider the teaching of reading as their prior responsibility.

When learners attempt to read ESP texts in a foreign language, they often encounter difficulties in comprehending this specialized material in English. The factors that are obstacles to students' reading achievement can be addressed through changes in classroom instruction, according to the findings of the present research. These obstacles should be addressed through reading material and classroom instruction that promote achievement. Struggling readers deserve special attention and support with self-monitoring for understanding as much as they need more access to literacy. Effective reading should be implemented, focusing both on the material to be learnt and the way we acquire it.

In this respect, strategy-based instruction emerged as an approach to teaching students not only what but also how to learn. This approach is highly recommended by educators and is supported by plenty of researchers. Specialists of the field state that strategy-based instruction is a key factor that enhances students' motivation which, in turn, promotes literacy and achievement not only in English but also in all content-subjects. If a reading strategy instruction were implemented, students would be provided with the needed motivation that would help them overcome their reading difficulties.

The objective of the present study was to examine the relationship between students' awareness and use of reading strategies and their motivation as well as

achievement in terms of reading comprehension. In other words, the main objective was to see whether exposure to and knowledge of strategies makes a difference in terms of motivation and achievement or not. The data was collected using a variety of research tools: classroom observations, reading strategy survey, motivation survey and a reading performance test. The present research was a mixture of two types of statistics, descriptive and inferential. A t-test was applied in order to test the hypotheses. The latter assesses whether the means of two groups are statistically different from each other. To achieve this end, the researcher opted for a two-tailed test.

The study addressed the following research question: To what extent can a reading strategy-based instruction result in promoting students' motivation and ability to effectively lead a deep reading of ESP texts, and then enhance progress in scientific literacy? Teachers' instructions and classroom practices are very important factors of students' motivation and achievement. From the surveys, it is apparent that strategic students are usually highly motivated to read material published in English. The lack of knowledge about reading strategies caused them a lack in motivation.

The scores obtained in the reading performance test revealed that students who were aware and made use of the reading strategies scored better than those who lack knowledge about strategies. This study has also found out statistically significant differences between females and males in terms of strategy use. Females seemed more strategic, motivated and high achievers than males because the most pronounced gender difference in achievement is the advantage of girls in reading. On average, girls read more and enjoy reading more than boys. Girls' advantage is consistent across countries, different age groups, survey periods, and study programmes.

Based on these findings, some recommendations can be made to the teachers as follows. It can be seen clearly that the more aware of reading strategies the student is the higher achiever he is. Therefore, it is necessary for a teacher to be aware of this fact and think of ways to improve students' reading proficiency by providing them with instructions on reading strategies. To do so, teachers should improve their own theoretical knowledge about reading strategies. Then, a number of metacognitive and cognitive strategies can be taught to students to develop their pre, while and after-reading

comprehension ability. These strategies may include planning for reading, guessing, anticipating, using background knowledge, connections with subject contents, inferring, evaluating and summarizing and so on. Furthermore, teachers should be given opportunities to participate in training activities, meetings and seminars that help improve classroom instruction

While the study provides some implications for teachers, it is not free from limitations. First of all, limitations were found in the number of the population and classrooms observed. The research surveyed science and engineering students of the University of Laghouat, and only a few classroom sessions were observed so the result may not apply for science and engineering students of the universities of the whole territory. Secondly, because of time constraints, the researcher preferred the descriptive study. However, an experimental study is highly recommended for future research works to find out more about training learners to develop reading strategies. This research would be useful for EFL teachers to enhance their students' reading proficiency.

What students learn and how they are taught at secondary schools and universities are issues that have occupied educators for many years and have been the focus of numerous research works. These studies point to the growing body of empirical research showing that learning can be enhanced when university instructors incorporate teaching strategies that are student-centered, interactive, and structured around clearly stated measurable learning outcomes. This has been subject of the recent educational reforms led by the Algerian Officials and specialists who launched new textbooks where a clear cut is made between units designed for EST students.

BIBLIOGRAPHY

- ABET. Criteria for Accrediting Engineering Programs. Baltimore, MD: Engineering Accreditation Commission. (2008): 216-217, 2008. In Miguel F. Ruiz-Garido et al. English for Professional and Academic Purposes. Amsterdam-New York: Editions Rodopi B.V. 2010.
- Afflerbach, P., Pearson, P. D., & Paris, S. G. "Clarifying differences between reading skills and reading strategies." The Reading Teacher, 2008, 364-373. In Dimitris Anastasiou & Eleni Griva. "Awareness of reading strategy use and reading comprehension among poor and good readers." Elementary Education Online, 8.2 (2009): 283-297. Retrieved April 5th from website: <http://ilkogretim-online.org.tr>
- Alderman, C. The New College Course Map and Transcript Files : Changing course-taking and achievement. Washington, DC : National Institute o Post-secondary Education, Libraries and Lifelong Learning, 1995. In Richard D. Lambert & Elana Shohamy. Language Policy and Pedagogy : Essays in Honour of A. Ronald Walton. Philadelphia, Amsterdam : John Benjamins B.V., 2000.
- Alexander, P. Graham, S., and Harris, K. "A perspective on Strategy Research: Progress and Products." Educational Psychology Review. 10 (2008): 129-154. In Carol Wade Fetters. An Exploration of Strategy-Based Reading Instruction using Expository Science Text in Grades 2-5. Diss. Louisiana State University, August, 2010.
- Alexandra Weinbaum et al. Teaching as Inquiry : Asking Hard Questions to Improve Practice and Student Achievement. New York : Oxford, 2004.
- Allen, Bryce L. "Cognitive research in Information science: Implications for design". In Annual Review of Information Science and Technology. 26 (1991): 3-37. In Carol Tenopir & Donald, W. King. Communication Patterns of Engineers. Canada: Wiley-Interscience Publications, 2004.
- Allwright, D. & Bailey, K. M., Focus on the language classroom. NY: Cambridge, 1994.

- Ames, C. Classrooms: “Goals, structures, and student motivation.” Journal of Educational Psychology, 84 (1992): 261-271. In M. Kay Alderman. Motivation for Achievement : Possibilities for Teaching & Learning. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.,2004.
- Anderson, C. How’s it going? A practical guide to conferring with student writers. Portsmouth, NH: Heinemann,2000. In Robert W. Cole. Educating Everyday’s Children: Diverse Teaching Strategies for Diverse Learners. Alexandria, Virginia, USA: the Association for Supervision and Curriculum Development (ASCD), 2008.
- Anderson, G., Fundamentals of Educational Research. Bristol, PA: Falmer Press, 1990.
- Anderson, G. and Arsenault, N. Fundamentals of Educational Research. London: RoutledgeFalmer,2001.
- AndersonPearson et al., (1984): 255-291. In Danny Brassell & Timothy Rasinski. (Eds.). Comprehension that Works : Taking Students Beyond Ordinary Understanding to Deep Comprehension. Huntington, CA : Shell Education. (2008).
- Arons, A.B. Achieving “Wider Scientific Literacy.” Daedalus, (1983): 111–112. In Richard A. McCray, Robert L. DeHaan, and Julie Anne Schuck. Improving Undergraduate Instruction in Science, Technology, Engineering, and Mathematics: Report of a Workshop. Washington, D.C.: The National Academies Press, 2003.
- Bialystok, E. Communication Strategies. Oxford: Blackwell, 1990. In Bialystok, E. L2 Learning Strategies: Learning strategies questionnaire. Retrieved February 18th, 2011, from website: http://homepage.ntlworld.com/94imon.c/SLA/L2_learning_strategies.htm
- Biancarosa, G., & Snow, C. Reading Next: A vision for action and research in middle and high school literacy. Washington, DC: Alliance for Excellent Education,2004.
- Blachowicz Camille & Donna Ogle. Reading Comprehension : Strategies for Independent Learners. New York : The Guilford Press, 2008.

- Block, E., "The comprehension strategies of second language readers." TESOL Quarterly, 20 (1986): 463-494.
- Bloom, B.S. Taxonomy of Educational Objectives. Handbook I : Cognitive Domain. New York : McKay, 1956. In Catherine Snow, Chair. Reading for Understanding : Toward an R&D Program in Reading Comprehension. Pittsburg : RAND, 2002.
- Brown, R., Pressley, M., Van Meter, P., & Schuder, T. "A quasi-experimental validation of transactional strategies instruction with low-achieving second grade readers". Journal of Educational Psychology. (1996).
- Brown, T. P. & Lewis, M. "An ESP project: Analysis of an authentic workplace conversation." English for Specific Purposes, 22.1 (2003): 93-98. In Abdelfatteh Harrabi. "Tunisian science and technology students' perceptions of ESP courses: a step towards a program design." English for Specific Purposes World. 29.9 (2010). Retrieved December 19th 2010 from website : www.esp-world.info/Articles_29/Science.pdf
- Carbo, M., Dunn, R., & Dunn, K. Teaching students to read through their individual learning styles. Englewood Cliffs, NJ: Prentice-Hall, 1986. In Robert W. Cole. Educating Everyday's Children: Diverse Teaching Strategies for Diverse Learners. Alexandria, Virginia, USA: the Association for Supervision and Curriculum Development (ASCD), 2008.
- Carol Griffiths. Lessons from Good Language Learners. Cambridge: Cambridge University Press, 2008.
- Carol Tenopir & Donald, W. King. Communication Patterns of Engineers. Canada: Wiley-Interscience Publications, 2004.
- Caroline T. Linse. Practical English Language Teaching: Young Learners. New York: the McGraw Hill Companies, Inc. 2005.
- Carrell, P.L. ,B.G. Pharis, and J.C. Roberto. "Metacognitive Strategy Training for ESL reading." TESOL Quarterly. 23 (1989): 647-678.

- Catherine Snow, Chair. Reading for Understanding : Toward an R&D Program in Reading Comprehension. Pittsburg : RAND, 2002.
- Catherine Wallace. Critical Reading in Language Education. New York: Palgrave Macmillan, 2003.
- Chall, J.S., Jacobs, V.A., & Baldwin, L.E. The Reading Crisis: Why Poor Children fall behind. Cambridge, MA: Harvard University Press, 1990. In Carol Wade Fetters. An Exploration of Strategy-Based Reading Instruction using Expository Science Text in Grades 2-5. Diss. Louisiana State University, August, 2010.
- Chambers, G. Motivating Language Learners. Clevedon : Multilingual Matters, 999. In Candia Morgan et al. Modern Foreign Languages : Teaching School Subjects. New York : Routledge, 2007.
- Chamot, A.U., Barnhardt, S., El-Dinary, P.B., & Robbins, J. The learning strategies Handbook. White Plains, NY: Addison Wesley Longman, 1999.
- Cohen, A.D. Strategy Training for Second Language Learners. Minnesota: Center for advanced research on language acquisition, University of Minnesota, 2003. In Jirapa Abhakorn. Situational Influences on EFL and ESL Learners' Beliefs and Strategies Use. Retrieved January 6th, 2011, from: Jirapa.Abhakorn@ncl.ac.uk
- Court, Andrew W., Stephen J. Culley, and Christopher A. McMahon. "The influence of Information Technology in New Product Development: Observations of an Empirical Study of the Access of Engineering Design Information." International Journal of Information Management 17.5 (1997): 359–375.
- Crookes, G. & Schmidt, R. "Motivation: Reopening the research agenda. Language Learning," 41.4 (1991): 469–512. In Setsuko Mori, Redefining Motivation to Read in a Foreign Language. Reading in a Foreign Language. Volume 14, No. 2. (October 2002). Retrieved on March 7th, 2011 from website : <http://nflrc.hawaii.edu/rfl>
- Cummins, J. "Cognitive/academic language proficiency, linguistic interdependence, the optimum age question and some other matters." Working Papers on Bilingualism,

19 (1979): 121–129. In Ana Hernandez. “From English Learners: Reaching the Highest Level of English Literacy.” International Reading Association, 2003.

---, “The role of primary language development in promoting educational success for language minority students in California State Department of Education” (Ed.), Language Minority Students: A theoretical framework. (1981): 3–49. Los Angeles: Evaluation, Dissemination, and Assessment Center, California State University. In Ana Hernandez. “From English Learners: Reaching the Highest Level of English Literacy.” International Reading Association. (2003).

---, “Bilingualism, language proficiency, and metalinguistic development”. In P. Homel, M. Palić, & D. Aaronson (Eds.). Childhood: Aspects of linguistic, cognitive, and social development. (1987): 57–73. Hillsdale, NJ: Erlbaum. In Ana Hernandez. “From English Learners: Reaching the Highest Level of English Literacy.” International Reading Association. (2003).

Danny Brassell & Timothy Rasinski. Comprehension that Works : Taking Students Beyond Ordinary Understanding to Deep Comprehension. Huntington, CA : Shell Education, 2008.

David R. Snow. Classroom Strategies for Helping At-risk Students. USA: McREL, 2005.

Deborah Stipek, Karen B. Givvin, Julie M. Salmon, and Valanne L. MacGyvers. “Can a Teacher Intervention Improve Classroom Practices and Student Motivation in Mathematics?” The Journal of Experimental Education. (1988): 319-37. In Joel Dziedzic. “Motivational Strategies for Teaching Mathematics” Spring 2004. Retrieved on March 6th, 2011, from: www.kewaskumschools.org

Debra Hayes. “Telling stories: Sustaining whole school change in schools located in communities with deep needs.” Paper presented at the Australian Association for Research in Education annual conference, University of Western Sydney, 27th November – 1st December, 2006 within the symposium: Changing Schools, Changing Times: the first year. Retrieved on February 18th, 2001 from: <http://www.sydneyr.det.nsw.edu>.

- Debra L. Cook Hirai et al. Academic Language/Literacy Strategies for Adolescents : A « How To » Manual for Educators. New York : Routledge, Taylor & Francis, 2010.
- Denise D. Nessel & Carol N. Dixon. Using the Language Experience Approach with English Language Learners: Strategies for Engaging Students and Developing Literacy. Thousand Oaks, CA: Corwin Press, 2008.
- Dianne Lapp et al. Content-area Reading and Learning: Instructional Strategies. London: Lawrence Erlbaum Associates, 2004.
- Dimitris Anastasiou& Eleni Griva. “Awareness of reading strategy use and reading comprehension among poor and good readers.”Elementary Education Online, 8.2 (2009): 283-297. Retrieved April 5th from website : <http://ilkogretim-online.org.tr>
- Dodson, C.J. “Language-learning strategies of monolinguals and bilinguals”, in Oksaar, E. (ed.), Sociocultural Perspectives of Multilingualism and Language Acquisition. Tubingen: Narr, 1986. In Bialystok, E. “L2 Learning Strategies: Learning strategies questionnaire.” Retrieved February 18th, 2011, from website: http://homepage.ntlworld.com/98imon.c/SLA/L2_learning_strategies.htm
- Dweck, C. S. “The study of goals in psychology.”Psychological Science, 3 (1992):165-167. In M. Kay Alderman. Motivation for Achievement : Possibilities for Teaching & Learning. Mahwah, New Jersey : Lawrence Erlbaum Associates, Inc., 2004.
- Dwyer, F.M. “The effect of overt responses in improving visually programmed science instruction.”Journal of Research in Science Teaching, (1972): 47-55. In Richard A. McCray, Robert L. DeHaan, and Julie Anne Schuck. Improving Undergraduate Instruction in Science, Technology, Engineering, and Mathematics: Report of a Workshop. Washington, D.C. : The National Academies Press, 2003.
- Abdelfatteh Harrabi. “Tunisian science and technology students’ perceptions of ESP courses: a step towards a program design.”English for Specific Purposes World, 29.9 (2010). Retrieved December 19th 2010 from website: www.esp-world.info/Articles_29/Science.pdf

- Elliot, A. J., McGregor, H. A., & Gable, S. "Achievement goals, study strategies, and exam performance: A monthly analysis." Journal of Educational Psychology, 91.3 (1999): 549-563. In M. Kay Alderman. Motivation for Achievement : Possibilities for Teaching & Learning. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc., 2004.
- Ellis, G. & Sinclair, B. "Learning to Learn English." CUP, (1989). In Bialystok, E. "L2 Learning Strategies: Learning strategies questionnaire." Retrieved February 18th, 2011, from website: http://homepage.ntlworld.com/99imon.c/SLA/L2_learning_strategies.htm
- Ericson, B. Teaching reading in high school English classes. Urbana, IL: National Council of Teachers of English, 2001. In Susan Lenski & Jill Lewis. Reading Success in Struggling Adolescent Learners. New York: The Guilford Press, 2008.
- Faye Antoniou¹ and Elmar Souvignier. "Strategy Instruction in Reading Comprehension: An Intervention Study for Students with Learning Disabilities." Learning Disabilities: A Contemporary Journal, by LDW5.1 (2007): 41-57. Retrieved on February 6th, 2011, from <http://faculty.rcoe.appstate.edu/koppenhaverd>
- Fielding, L. & Roller, C. Making Difficult Books Accessible and Easy Books Acceptable: The Reading Teacher, 678-685, 1992. In Carol Wade Fetters. An Exploration of Strategy-Based Reading Instruction using Expository Science Text in Grades 2-5. Diss. Louisiana State University, August, 2010.
- Gardner, R. C. "Integrative motivation and second language acquisition. In Z. Dörnyei & R. Schmidt" (Eds.). Motivation and second language acquisition. (1-19). Honolulu: University of Hawai'i, Second Language Teaching & Curriculum Center, 2001. In Setsuko Mori, "Redefining Motivation to Read in a Foreign Language." Reading in a Foreign Language. 14.2 (2002). Retrieved on March 7th, 2011 from website : <http://nflrc.hawaii.edu/rfl>
- Gardner, R.C. Social Psychology and Second Language Learning: the Role of Attitudes and Motivation. London: Ontario Arnold, 1985.

- Garner, R. Metacognition and reading comprehension. Norwood, NJ: Ablex, 1987. In Dimitris Anastasiou & Eleni Griva. "Awareness of reading strategy use and reading comprehension among poor and good readers." Elementary Education Online, 8.2 (2009): 283-297. Retrieved April 5th from website: <http://ilkogretim-online.org.tr>
- Gaskill, P. J., & Murphy, K. P. "Effects of a memory strategy on second graders' performance and self-efficacy." Contemporary Educational Psychology, 29 (2004): 27-49. Faye Antoniou¹ and Elmar Souvignier. "Strategy Instruction in Reading Comprehension: An Intervention Study for Students with Learning Disabilities." Learning Disabilities: A Contemporary Journal, by LDW5.1 (2007): 41-57. Retrieved on February 6th, 2011, from <http://faculty.rcoe.appstate.edu/koppenhaverd>
- Gaskins, I.W. "Classroom applications of cognitive science: Teaching poor readers how to learn, think, and problem solve." In K. McGilly (Ed.), Classroom lessons. 129-154. Cambridge, MA: MIT Press, 1994.
- Gerald G. Duffy. Explaining Reading: A Resource for Teaching Concepts, Skills, and Strategies. New York: The Guilford Press, 2009.
- Gordon, C. J., & Pearson, P. D. "The effects of instruction in metacomprehension and inferencing in children's comprehension abilities", Technical Report. 277. Urbana-Champaign: University of Illinois, Center for the Study of Reading, 1983. In TRI (Texas Reading Initiative). "Research-Based Content Area Reading Instruction." Texas : Texas Education Agency Austin, Texas 78701-1494. Original Publication Number GE01 105 02. (2002).
- Graham, S., & Harris, K. "Self-regulation and writing: Where do we go from here?", Contemporary Educational Psychology, 22 (2005): 102-114. Faye Antoniou¹ and Elmar Souvignier. "Strategy Instruction in Reading Comprehension: An Intervention Study for Students with Learning Disabilities." Learning Disabilities: A Contemporary Journal, by LDW5.1 (2007): 41-57. Retrieved on February 6th, 2011, from <http://faculty.rcoe.appstate.edu/koppenhaverd>

- Green, J. & Oxford, R. "A closer look at learning strategies, L2 proficiency and gender." TESOL Quarterly, 29 (1995): 261-297. In Bialystok, E. "L2 Learning Strategies: Learning strategies questionnaire." Retrieved February 18th, 2011, from website: http://homepage.ntlworld.com/101imon.c/SLA/L2_learning_strategies.htm
- Gronlund, N.E., Measurement and Evaluation in Teaching. (fourth edition). New York: CollierMacmillan, 1981. In Louis Cohen, Lawrence Manion and Keith Morrison. Research Methods in Education. (Sixth edition). London: RoutledgeFalmer, 2007.
- Guthrie, J. T., Wigfield, A., & Perencevich, K. C. (Eds.). Motivating reading comprehension: Concept-Oriented Reading Instruction. Mahwah, NJ: Erlbaum, 2004. In John T. Guthrie et al., Impacts of Comprehensive Reading Instruction on Diverse Outcomes of Low-Achieving and High-Achieving Readers. University of Maryland. Retrieved on February 10th, 2011 in: http://www.cori.umd.edu/research-publications/2008_guthrie_mcrae_et_al.pdf
- Halliday, M.A.K. Spoken and Written Language. Oxford, England : Oxford University Press, 1985. In Carol Wade Fetters. An Exploration of Strategy-Based Reading Instruction Using Expository Text in Grades 2-5. Diss. Louisiana state University, August, 2010.
- Harvey Anamaria. « The Role of Motivational Settings », 1984. In Pat Wilcox Peterson. ESP in Practice : Models and Challenges for Teachers. Washongton, D.C : English Language Programs Division, Bureau of Educational and Cultural Affairs, US Information Agency, 1986.
- Hutchinson & Waters. English for Specific Purposes: A Learner-centered approach. Cambridge: Cambridge University Press, 1987.
- Hyde Arthur. Comprehending Math: Adapting Reading Strategies to Teach Mathematics K-6. Portsmouth, N.H: Heinemann, 2006.
- Hyland, K. "Specificity revisited: How far should we go?" English for Specific Purposes, 21.4 (2002): 385-395. In Abdelfatteh Harrabi. "Tunisian science and technology students' perceptions of ESP courses: a step towards a program

design.”English for Specific Purposes World, 29.9 (2010). Retrieved December 19th 2010 from website: www.esp-world.info/Articles_29/Science.pdf

Irvin, J. Developmental tasks of early adolescence: How adult awareness can reduce at-risk behavior. The Clearing House. 222-225, 1996.

Janette Kettmann Klingner, Sharon Vaughn and Jeanne Shay Schumm. “Collaborative strategic reading during social studies in heterogeneous fourth-grade classrooms.”The Elementary School Journal.99.1 (1998): 3-20. Retrieved February 16th, 2011 from: www.buddies.org/articles/Collabor.pdf

Jim Scrivener. Learning Teaching. UK: Macmillan Books for Teachers, 2009.

John S. Hedgcock & Dana R. Ferris. Teaching Readers of English : Students, Texts, and Contexts. New York : Routledge, 2009.

Jordan, R.R. “English for Academic Purposes (EAP).”Language Teaching, 22.3 (1997): 127-136. In Sarah Benesch. Critical English for Academic Purposes : Theory, Politics, and Practice. New York : Routledge. (2009).

Karen D. Wood & William E. Blanton. Literacy Instruction for Adolescents: Research-Based Practice. New York: The Guilford Press, 2009.

Karen Tankersley. The Threads of Reading: Strategies for Literacy Development. Alexandria, USA: ASCD, 2009.

Katherine Wiesolek Kuta. Reading and Writing to Learn: Strategies across the Curriculum. USA: Libraries Unlimited, 2008.

Ken Hyland. English for Academic Purposes: An advanced resource book. New York: Routledge, 2006.

Kerlinger, F.N. Foundations of Behavioral Research. New York : Holt, Rinehart & Winston, 1970. In Louis Cohen, Lawrence Manion and Keith Morrison. Research Methods in Education. (Fifth edition). London: RoutledgeFalmer, 2000.

King, R. All Things Bright and Beautiful. Chichester: John Wiley, 1979. In Louis Cohen, Lawrence Manion and Keith Morrison. Research Methods in Education. (Fifth edition). London: RoutledgeFalmer, 2000.

Kit-ling Lau & David W. Chan. "Reading strategy use and Motivation among Chinese good and poor readers in Hong Kong." Journal of Research in Reading. 26.2 (2003): 177–190. Retrieved In www.onlinelibrary.wiley.com/doi, on April 7th, 2011.

Kothari, C.R. Research Methodology: Methods & Techniques. India: New Age International Publishers, 2004.

Krashen, S. & Brown, C.L. « What is Academic Language Proficiency ? Singapore Tertiary English Teachers Society (STETS).» Language and Communication Review, 6.1 (2007): 1-4. In Debra L. Cook Hirai et al. Academic Language/Literacy Strategies for Adolescents : A « How To » Manual for Educators. New York : Routledge, Taylor & Francis, 2010.

Kristin Lems et al. Teaching Reading to English Language Learners: Insights from Linguistics. New York: The Guilford Press, 2010.

Kurland, D. (2002). "Dan Kurland's www.criticalreading.com." Retrieved February, 2011, from <http://www.criticalreading.com>

Lee Gunderson. ESL (ELL) Literacy Instruction : A Guidebook to Theory and Practice. New York : Routledge, 2009.

Lenski, S., & Nierstheimer, S. "Strategy instruction from a sociocognitive perspective." Reading Psychology, 23 (2002) :127–143. In Tenaha O'Reilly & Danielle S. McNamara. "The Impact of Science Knowledge, Reading Skill, and Reading Strategy Knowledge on More Traditional "High- takes" Measures of High School Students' Science Achievement." American Educational Research Journal. 44.1 (2007): 161–196. Retrieved on April 7th, 2011 from website : <http://aerj.aera.net>

Linda J. Dorn & Carla Soffos. Teaching for Deep Comprehension : A Reading Workshop Approach. New York : Stenhouse Publishers, 2005.

Lou Denti & Gilbert Guerin. Effective Practice for Adolescents with Reading and Literacy Challenge. New York : Routledge, 2008.

- Louis Cohen, Lawrence Manion and Keith Morrison. Research Methods in Education. (Fifth edition). London: RoutledgeFalmer, 2000.
- Louis Cohen, Lawrence Manion and Keith Morrison. Research Methods in Education. (Sixth edition). London: RoutledgeFalmer, 2007.
- Margaret G. McKeown & Linda Kucan. Bringing Reading Research to Life. New York: The Guilford Press, 2010.
- Mastropieri, M. A., & Scruggs, T. E. "Best practice in promoting reading comprehension in students with learning disabilities." Remedial and Special Education, 18.4 (1997): 197–213.
- McDonough, S. "Strategy and Skill in Learning a Foreign Language", Arnold, 1995. In Bialystok, E. "L2 Learning Strategies: Learning strategies questionnaire." Retrieved February 18th, 2011, from website: http://homepage.ntlworld.com/104imon.c/SLA/L2_learning_strategies.htm
- McLaughlin, Maureen & Allen, Mary Beth. From Guided Comprehension: A Teaching Model for Grades 3–8I. International Reading Association, 2002. In "Research-Based Reading Comprehension Instruction: Focus on Reading Strategies", Retrieved in www.perfectionlearning.com, January 6th, 2011.
- Meece, J. L. "The classroom context and students' motivational goals", 1991. In M. Kay Alderman. Motivation for Achievement : Possibilities for Teaching & Learning. Mahwah, New Jersey : Lawrence Erlbaum Associates, Inc., 2004.
- Megan W. Stuhlman, Bridget K. Hamre, Jason T. Downer, & Robert C. Pianta. "A Practitioner's Guide to Conducting Classroom Observations: What the Research Tells Us about Choosing and Using Observational Systems." University of Virginia, 2009. Retrieved February 14th, 2011 ; from : <http://www.wtgrantfdn.org>
- Michael, H. Long. Second Language Needs Analysis. Cambridge: Cambridge University Press. 73-74, 2005.
- Midgley, C. Kaplan, A., & Middleton, M. "Performance-approach goals: Good for what, for whom, under what circumstances, and at what cost?" Journal of Educational Psychology, 93 (2001): 77-86. In M. Kay Alderman. Motivation for

Achievement : Possibilities for Teaching & Learning. Mahwah, New Jersey :
Lawrence Erlbaum Associates, Inc., 2004.

Miguel F. Ruiz-Garido et al. English for Professional and Academic Purposes.
Amsterdam-New York: Editions Rodopi B.V, 2010.

Morgan, P. & Fuchs, D. Is there a bidirectional relationship between children's reading skills and reading motivation? Exceptional Children, 165-183, 2007. In John T. Guthrie et al. Impacts of Comprehensive Reading Instruction on Diverse Outcomes of Low-Achieving and High-Achieving Readers. University of Maryland. Retrieved on February 10th, 2011 from:
http://www.cori.umd.edu/research-publications/2008_guthrie_mcrae_etal.pdf

Mori, S. The Relationship between motivation and the amount of out-of class reading.
Diss. Temple University, 2002. In Setsuko Mori. "Redefining Motivation to Read in a Foreign Language." Reading in a Foreign Language. 14.2. (2002). Retrieved on March 7th, 2011 from website : <http://nflrc.hawaii.edu/rfl>

Morrison, K.R.B. Planning and Accomplishing School-centred Evaluation. Norfolk:
Peter Francis Publishers, 1993. In Louis Cohen, Lawrence Manion and Keith Morrison. Research Methods in Education, (Sixth edition). London:
RoutledgeFalmer, 2007.

Debra L. Cook Hirai et al. Academic Language/Literacy Strategies for Adolescents : A « How To » Manual for Educators. New York : Routledge, Taylor & Francis, 2010.

Neufeld, P. "Comprehension instruction in content area classes." The Reading Teacher, 59 (2005): 302-311. In Julie Beyer. "Strategies for Helping Struggling Readers Comprehend Expository Text." SPED 644 (2007). Retrieved February 6th, 2011 from website
www.lynchburg.edu/Documents/GraduateStudies/Journal/beyerJ.doc

Neuman, S. B. "Enhancing children's comprehension through previewing." National Reading Conference Yearbook, 37(1988): 219–224. In Glencoe & McGraw-Hill. How Jamestown Reading Navigator Supports Research-Based Instruction for

Struggling Adolescent Readers : Comprehension. New York, NY: Interactive Educational Systems Design, Inc. 2004.

Niebuhr, K. "The effect of motivation on the relationship of school climate, family environment, and student characteristics to academic achievement", Report No. EA 027467. East Lansing, MI: National center for Research on Teacher Learning, 1995. In Sheri Coates Broussard. "The Relationship between Classroom Motivation and Academic Achievement in First and Third Grades." Diss. Louisiana State University, December, 2002.

Norbert Pachler & Kit Field. Learning to Teach Modern Foreign Languages in the Secondary School. New York : Routledge Falmer, 2001.

NRC (National Research Council). How People Learn : Brain, mind, experience and school. Committee on Developments in the Science of Learning, Commission on Behavioral and Social Sciences and Education. Washington, DC : National Academy Press, 2000.

O'Malley, J.M. & Chamot. Learning Strategies in Second Language Acquisition. Cambridge: University Press. In YANG Xiao-ling. Motivation and Reading Strategies. Dec. 2006, Volume 3, No.12 (Serial No.36) Sino-US English Teaching, USA. Retrieved in www.openpdf.com, on 14th March 2011.

OECD. PISA 2009 Results: Learning to Learn. Student Engagement, Strategies & Practices. (Vol III). <http://dx.doi.org/17.1797>. Retrieved April 4th 2011. (2010).

Olson, C.B. & Land, R. "A cognitive Strategies Approach to Reading and Writing Instruction for English Language Learners in Secondary School." Research in the Teaching of English, 41.3 (2007): 269-303. In Kristin Lems et al. Teaching Reading to English Language Learners: Insights from Linguistics. New York: The Guilford Press, 2010.

O'Malley, J.M. & Chamot, A.U. "Learning Strategies in Second Language Acquisition", CUP, 1990. In Bialystok, E. "L2 Learning Strategies: Learning strategies questionnaire." Retrieved February 18th, 2011, from website: http://homepage.ntlworld.com/106imon.c/SLA/L2_learning_strategies.htm

Oxford, R. L. Language learning styles and strategies. NY: Newbury House/Harper and Row, 1991. In M. Celce-Murcia (Ed.), *Teaching English as a second or foreign language* (3rd ed, 359-366). Boston: Heinle & Heinle/Thompson International. In Andrew D. Cohen & Susan J. Weaver. "Styles and Strategies-Based Instruction: A Teachers' Guide." CARLA Working Paper Series. A rewritten version of Paper #7. University of Minnesota, May, 2005.

Oxford, R. L. Language learning strategies. NY: Newbury House/Harper and Row, 1990. In Andrew D. Cohen & Susan J. Weaver. "Styles and Strategies-Based Instruction: A Teachers' Guide." CARLA Working Paper Series. A rewritten version of Paper #7. University of Minnesota, May, 2005.

Oxford, R.L. Language Learning Strategies, Newbury House, 1990. In Bialystok, E. "L2 Learning Strategies: Learning strategies questionnaire." Retrieved February 18th, 2011, from website:http://homepage.ntlworld.com/vivian.c/SLA/L2_learning_strategies.htm

Palinscar, A.S. & Brown, A.L. Reciprocal Teaching of Comprehension-fostering and Comprehension-monitoring activities. *Cognition and Instruction*, 1(2), 1984. In Debra L. Cook Hirai et al. Academic Language/Literacy Strategies for Adolescents : A « How To » Manual for Educators. New York : Routledge, Taylor & Francis, 2010.

Paris, S. G., Wasik, B. A., and Turner, J. C. "The development of strategic readers", 1990. In R. Barr, M. L. Kamil, P. Mosenthal, and P. D. Pearson (Eds.), Handbook of reading research (Vol. II: 609-640). Mahwah, NJ: Lawrence A. Erlbaum. In Frey Nancy. "How to Build Great Readers." Retrieved on March 7th 2011 from http://findarticles.com/p/articles/mi_qa3666/is_200605/ai_n17184866/.

Pearson, P. D. & Dole, J. A. "Explicit comprehension instruction: A review of research and a new conceptualization of learning." Elementary School Journal, 88 (1987): 151-165. In Andrew D. Cohen & Susan J. Weaver. "Styles and Strategies-Based Instruction: A Teachers' Guide." CARLA Working Paper Series. A rewritten version of Paper #7. University of Minnesota, May, 2005.

Pearson, P. D. "A Context for Instructional Research and Reading Comprehension.", (Technical Report No. 230). Urbana, Illinois: University of Illinois Center for the Study of Reading, 1982. In Carroll Fetters et al. "An Exploration of Strategy-Based Reading Instruction Using Expository Science Texts in the Elementary Grades." Studies in Literature & Language. 2.2 (2011): 113-126. Retrieved on March 10th, 2011 from website: www.cscanada.org

Pearson, P. D., and N. K. Duke. Comprehension instruction in the primary grades. New York: Guilford, 2002. In Danny Brassell & Timothy Rasinski. Comprehension that Works : Taking Students Beyond Ordinary Understanding to Deep Comprehension. Huntington, CA : Shell Education, 80-85, 2008.

Peter Master & Donna M. Brinton. New Ways in English for Specific Purposes. Maryland, USA : Teachers of English to Speakers of Other Languages, Inc. 1998.

Ralph Levinson. Teaching Science. London: The Open University, 2005.

Rhoda Koenig. Learning for Keeps: Teaching the Strategies for Creating Independent Learners. Alexandria, Virginia: ASCD, 2010.

Richard A. McKay et al. Improving Undergraduate Instruction in Science, Technology, and Mathematics : Report of a Workshop. NRC (National Research Council). Washington, DC : The National Academies Press, 2003.

Richard D. Lambert & Elana Shohamy. Language Policy and Pedagogy : Essays in Honour of A. Ronald Walton. Philadelphia, Amsterdam : John Benjamins B.V. 2000.

Robert W. Cole. Educating Everyday's Children: Diverse Teaching Strategies for Diverse Learners. Alexandria, Virginia, USA: the Association for Supervision and Curriculum Development (ASCD), 2008.

Rosenshine, B. The case for explicit, teacher-led, cognitive strategy instruction. Paper presented at the annual meeting of the American Educational Research Association, Chicago, (1997, March 24–28). Retrieved March 8, 2009, from <http://epaa.asu.edu/barak/barakl.html>. In Rhoda Koenig. Learning for Keeps:

Teaching the Strategies for Creating Independent Learners. Alexandria, Virginia: ASCD. (2010).

Ryan, M. R. & Deci, E. L. "Intrinsic and extrinsic motivations: Classic definitions and new directions." Contemporary Educational Psychology, 25 (2000): 54-67. In Sheri Coates Broussard. "The Relationship between Classroom Motivation and Academic Achievement in First and Third Grades." Diss. Louisiana State University, December, 2002.

Sarah Benesch. Critical English for Academic Purposes : Theory, Politics, and Practice. New York : Routledge, 2009.

Schunk, D. H. & Zimmerman, B. J. "Self-regulation and learning." In W. M. Reynolds & G. E. Miller (Eds.), Handbook of psychology: Educational psychology, (Vol. 7: 59-78). Hoboken, NJ: John Wiley & Sons, Inc., 2003. In Faye Antoniou¹ and Elmar Souvignier. "Strategy Instruction in Reading Comprehension: An Intervention Study for Students with Learning Disabilities." Learning Disabilities: A Contemporary Journal 5.1 (2007): 41-57, by LDW. Retrieved on February 6th, 2011, from: <http://faculty.rcoe.appstate.edu/koppenhaverd/>

Shelley O'Hara. Improving Your Study Skills : Study Smart. Study Less. Canada : Wiley, 2005.

Sjostrom, C. L. & Hare, V. C. "Teaching high school students to identify main ideas in expository text." Journal of Educational Research, 78.2 (1984): 114–118. In Glencoe & McGraw-Hill. How Jamestown Reading Navigator Supports Research-Based Instruction for Struggling Adolescent Readers : Comprehension. New York, NY: Interactive Educational Systems Design, Inc. 2004.

Snider, V. E. "Reading comprehension performance of adolescents with learning disabilities." Learning Disability Quarterly, 12 (1989): 87–96. In TRI (Texas Reading Initiative). "Research-Based Content Area Reading Instruction." Texas: Texas Education Agency Austin, 2002. Retrieved January 8th, 2011 from; <http://buildingrti.utexas.org/PDF/redbk4.pdf>.

Soler, V. « Analyzing adjectives in scientific discourse : An exploratory study with educational applications for Spanish speakers at advanced university

level.»English for Specific Purposes, 21.2 (2002) : 145-165. In Abdelfatteh Harrabi. “Tunisian science and technology students’ perceptions of ESP courses: a step towards a program design.”English for Specific Purposes World, 29.9 (2010). Retrieved December 19th 2010 from website: www.esp-world.info/Articles_29/Science.pdf

Stella Cottrell. Critical Thinking Skills : Developing Effective Analysis and Argument. China : Palgrave Macmillan, 2005.

Stephanie McNachie & Antony R. Petrosky. Content Matters: Disciplinary Literacy Approach to Improving Student Learning. Pittsburg: Jossey Bass, 2010.

Stevens, R. J. “Effects of strategy training on the identification of the main idea of expository passages.”Journal of Educational Psychology, 80.1 (1988): 21–26. In Glencoe & McGraw-Hill. How Jamestown Reading Navigator Supports Research-Based Instruction for Struggling Adolescent Readers : Comprehension. New York, NY : Interactive Educational Systems Design, Inc.2004.

Swales, J. M. Genre analysis: English in academic and research settings. Cambridge: Cambridge University Press, 1990. In Abdelfatteh Harrabi. “Tunisian science and technology students’ perceptions of ESP courses: a step towards a program design.”English for Specific Purposes World, 29.9 (2010). Retrieved December 19th 2010 from website: www.esp-world.info/Articles_29/Science.pdf

---, J. M.,Research genres: Exploration and applications. Cambridge:Cambridge University Press, 2004. In Abdelfatteh Harrabi. “Tunisian science and technology students’ perceptions of ESP courses: a step towards a program design.”English for Specific Purposes World, 29.9 (2010). Retrieved December 19th 2010 from website: www.esp-world.info/Articles_29/Science.pdf

---, Writing “writing scientific English.” In R. Mackay & A. Mountford (Eds.) English for specific purposes(43-55). London: Longman Group Ltd. 1978.In Abdelfatteh Harrabi. “Tunisian science and technology students’ perceptions of ESP courses: a step towards a program design.”English for Specific Purposes World, 29.9 (2010). Retrieved December 19th 2010 from website: www.esp-world.info/Articles_29/Science.pdf

- Taylor, B. & Yesseldyke, J.E. Effective Instruction for Struggling Readers K-6. NY: Teachers College Press, 2007. In Carol Wade Fetters. An Exploration of Strategy-Based Reading Instruction using Expository Science Text in Grades 2-5. Diss. Louisiana State University, August, 2010.
- Tedd Glyn et al. Supporting Students with Literacy Difficulties: A Responsive Approach. Berkshire, England: Open University Press, 2006.
- Tony Dudley-Evans & Maggie Jo St John. Developments in English for Specific Purposes. Cambridge : Cambridge University Press, 1998.
- Trelease, J. The Read Aloud Handbook. New York : Penguin, 2001. In Debra L. Cook Hirai et al. Academic Language/Literacy Strategies for Adolescents : A « How To » Manual for Educators. New York : Routledge, Taylor & Francis, 2010.
- Vacca, R. T.,& Vacca, J. A., Content Area Reading (7th ed.). Boston, MA: Allyn & Bacon, 2002. In Carol Fetters et al. “An Exploration of Strategy-Based Reading Instruction Using Expository Science Texts in the Elementary Grades.”Studies in Literature & Language. 2.2 (2011): 113-126. Retrieved on March 10th, 2011 from website: www.cscanada.org
- Van Gelder, T. Critical thinking on the Web. Retrieved February, 2011, from <http://www.austhink.org/critical/>
- VanderBos, G. R. (Ed.). American Psychological Association dictionary of psychology. Washington, DC: American Psychological Association, 2007.
- Wayne, C. Booth, Gregory, G. Colomb & Joseph, M. Williams. The Craft of Research. Chicago : The University of Chicago Press ; (2003).
- Weaver, C. Teaching grammar in context. Portsmouth, NH: Boynton/Cook. 148-163, 1996. In Rhoda Koenig. Learning for Keeps: Teaching the Strategies for Creating Independent Learners. Alexandria, Virginia: ASCD, 2010.
- Wilson**, P. T., & Anderson, R. C., What they don't know will hurt them: The role of prior knowledge incomprehension. In J. Orasanu (Ed.), Reading comprehension: From research to practice (pp. 31–48). Hillsdale, NJ: Lawrence Erlbaum, (1986). In Tenaha O'Reilly & Danielle S. McNamara. The Impact of Science Knowledge, Reading Skill, and Reading Strategy Knowledge on More Traditional “High-

takes”Measures of High School Students’ Science Achievement. American Educational Research Journal. March 2007, Vol. 44, No. 1, pp. 161–196 . AERA, (2007). Retrieved on April 7th, 2011 from website : <http://aerj.aera.net>

Wolcott, H. F. “Posturing in qualitative research.” In M. LeCompte, W. L. Millroy and J. Preissle (eds.) The Handbook of Qualitative Research in Education. London: Academic Press, (1992): 3–52. In Louis Cohen, Lawrence Manion and Keith Morrison. Research Methods in Education, (Fifth edition). London: RoutledgeFalmer, 2000.

Wolters, C. A., Yu, S., & Pintrich, P. R. “The relation between goal orientation and students’ motivational beliefs and self-regulated learning.” Learning and Individual Differences, 8 (1996): 211-238. In M. Kay Alderman. Motivation for Achievement : Possibilities for Teaching & Learning. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc., 2004.

Wu Weiyang. “Gender Differences in Using Reading Strategies.” CELEA Journal (Bimonthly), 29.6 (2006). Retrieved in [www.openpdf.com/ebook/ gender-differences](http://www.openpdf.com/ebook/gender-differences). On march 6th. 2011.

Yang, N. “The relationship between EFL learner’s beliefs and learning strategy use.” System, 27 (1999): 515-535. In Jirapa Abhakorn. “Situational influences on EFL and ESL learners’ beliefs and strategies use.” Retrieved January 2010, from: Jirapa.Abhakorn@ncl.ac.uk

Yu Yuanfang. “A Study of foreign Language Learning Motivation and Achievement: From a Perspective of Sociocultural Theory.” CELEA Journal (monthly). 32 (2009). Retrieved February 6th, 2011, from : http://www_celea.org.cn/teic/85/85-87.pdf

Zoubir-Shaw, S. & Oxford, R.L. Gender Differences in Language Learning Strategy Use in University-level Introductory French Classes. In Klee, C.A. (Ed). Boston: Heinle. 181-213, 1995.

Appendix (1) : Classroom Observed Lesson One (Teaching/Learning Material)

The Passive

The first two readings in this unit contain the following sentences:

"These [instructions] **are** permanently **remembered** by the machine and **cannot be altered** or **added to**."

"The computer **is instructed** to distinguish two kinds of numbers. . . . It **is** also **told** how to multiply. . . ."

The words in bold type are verbs in the *passive* form. The form of the passive is **be + PAST PARTICIPLE** or **MODAL + be + PAST PARTICIPLE**. Notice that adverbs, such as *permanently* and *also*, appear between **be** and the **past participle**. How is the form of passive sentences different from the form of active sentences? When is the passive form used?

FORM: The object of an active sentence becomes the subject of a passive sentence. The subject of an active sentence follows the preposition *by* in the passive sentence; it is called the **agent** in the passive sentence. The two sentence forms have essentially the same meaning.

For example,

Active: The machine permanently **remembers** these instructions.

Passive: These instructions **are** permanently **remembered** *by* the machine.

Often, the *by*-phrase is not used in a passive sentence. This is because the exact agent is not known or is not important. These examples show the unnecessary agent in parentheses:

These instructions **cannot be altered** or **added to** (by people).

The computer **is instructed** (by someone) to distinguish two kinds of numbers.

It **is** also **told** (by a programmer) how to multiply.

What are the active forms of these sentences?

Exercise 1

Change the active sentence to the passive. Use the by-phrase only if it is necessary. Identify the sentences that cannot be changed to the passive because the verb is intransitive. Remember that in the form **be + PAST PARTICIPLE**, the verb *be* can have any tense—present, past, future, progressive, etc. In the form with modals, the past passive form is **MODAL + have been + PAST PARTICIPLE**.

Example 1

Active: George *was preparing* the holiday dinner.

Passive: The holiday dinner *was being prepared* by George.

Example 2

Active: Someone *should have told* the students about the exam today.

Passive: The students *should have been told* about the exam today.

1. Some day, Roger's children **will run** the neighborhood hardware store.
2. All people **must obey** traffic laws.
3. Everyone **had eaten** breakfast before ten o'clock.

Appendix (2) : Classroom Observed Lesson Two (Reading Material)

Amar Telidji University / Electrical Engineering Department 2010/2011

Subject : English / Information Technology

Before reading the text on the following page, match each word with the correct definition:

- | | |
|---------------------------|--------------------------------------------------------------------------------------------|
| 1 mainframe | a the set of software that controls a computer system |
| 2 mouse | b a very small piece of silicon carrying a complex electrical circuit |
| 3 icon | c a big computer system used for large-scale operations |
| 4 operating system | d the physical portion of a computer system |
| 5 software | e a device moved by hand to indicate position on the screen |
| 6 hardware | f a visual symbol used in a menu instead of natural language |
| 7 microchip | g data, programs, etc., not forming part of a computer, but used when operating it. |

Answer these questions about the text.

- 1 How many mainframes did IBM think it was possible to sell in 1952?
- 2 How many PCs have now been sold?
- 3 Who paid for the initial research into PCs?
- 4 Which company later used the results of this research to develop their operating system?
- 5 What are command-based operating systems?
- 6 DR/DOS is an acronym. What does it stand for?
- 7 Since the invention of the IBM PC, many of its features have been improved. Which of the following features does the text *not* mention in this respect?
 - a memory
 - b speed
 - c size
 - d cost
- 8 Give three examples from the text of how the availability of computers has 'in all probability changed the world for ever'.

Using the line references given, look back in the text and find words that have a similar meaning to:

- 1 international (lines 10–15)
- 2 contested (lines 15–20)
- 3 errors (lines 25–30)
- 4 paid for (lines 25–30)
- 5 buy (lines 45–50)
- 6 first (lines 60–65)
- 7 recommendation (lines 65–70)
- 8 improved (lines 75–80)

Now read the text and decide on a suitable title for it.

In 1952, a major computing company took a decision to get out of the business of making mainframe computers. They believed that there was only a market for four mainframes in the whole world. That company was IBM. The following year they reversed their decision.

In 1980, IBM decided that there was a market for 250,000 PCs, so they set up a special team to develop the first IBM PC. It went on sale in 1981 and set a world-wide standard for IBM-compatibility which, over the next ten years, was only seriously challenged by one other company, Apple Computers. Since then, over seventy million PCs made by IBM and other manufacturers have been sold. Over this period, PCs have become commodity items. Since IBM made the design non-proprietary, anyone can make them.

The history of the multi-billion dollar PC industry has been one of mistakes. Xerox Corporation funded the initial research on personal computers in their Palo Alto laboratory in California. However, the company failed to capitalize on this work, and the ideas that they put together went into the operating system developed for Apple's computers. This was a graphical interface: using a mouse, the user clicks on icons which represent the function to be performed.

The first IBM PC was developed using existing available electrical components. With IBM's badge on the box it became the standard machine for large corporations to purchase. When IBM were looking for an operating system, they went initially to Digital Research, who were market leaders in command-based operating systems (these are operating systems in which the users type in commands to perform a function). When the collaboration between IBM and Digital Research failed, IBM turned to Bill Gates, then

25 years old, to write their operating system.

Bill Gates founded Microsoft on the basis of the development of MS/DOS, the initial operating system for the IBM PC. Digital Research have continued to develop their operating system, DR/DOS, and it is considered by many people to be a better product than Microsoft's. However, without an endorsement from IBM, it has become a minor player in the market. Novell, the leaders in PC networking, now own Digital Research, so things may change.

The original IBM PC had a minimum of 16K of memory, but this could be upgraded to 512K if necessary, and ran with a processor speed of 4.77MHz. Ten years later, in 1991, IBM were making PCs with 16Mb of memory, expandable to 64Mb, running with a processor speed of 33MHz. The cost of buying the hardware has come down considerably as the machines have become commodity items. Large companies are considering running major applications on PCs, something which, ten years ago, no one would have believed possible of a PC. In contrast, many computers in people's homes are just used to play computer games.

The widespread availability of computers has in all probability changed the world for ever. The microchip technology which made the PC possible has put chips not only into computers, but also into washing-machines and cars. Some books may never be published in paper form, but may only be made available as part of public databases. Networks of computers are already being used to make information available on a world-wide scale.

Appendix (3) : Classroom Observed Lesson Three (Reading Material)

1. What's a wind turbine? How does it work? How is it similar to a windmill?
2. How is a wind turbine similar to an electric fan? How are they different?
3. Is wind power used widely around the world? Why or why not?
4. Can you name other sources of energy that are used by power plants to produce electricity?
5. What are the advantages and disadvantages of wind power over other sources of energy?
6. How can the disadvantages be overcome?

Wind Power for Pennies

A Lightweight Wind Turbine Is Finally
on the Horizon—and It Might Just Be the
Breakthrough Needed to
Give Fuels a Run for Their Money

Peter Fairley
from *Technology Review*

The newest wind turbine standing at Rocky Flats in Colorado, the U.S. Department of Energy's **proving ground** for wind power technologies, looks much like any other apparatus for capturing energy from wind: a boxy turbine sits atop a steel tower that sprouts



on the horizon (idiom):
going to happen soon

give fuels a run for their money (idiom):
give them strong competition (*a run for one's money*)

proving ground (idiom):
a place for testing new devices or theories

two propeller blades stretching a combined 40 meters—almost half the length of a football field. Wind rushes by, blades rotate, and electricity flows. But there's a key difference. This prototype has flexible, hinged blades; in strong winds, they bend back slightly while spinning. The bending is barely perceptible to a casual observer, but it's a radical departure from how existing wind turbines work—and it just may change the fate of wind power.

Indeed, the success of the prototype at Rocky Flats comes at a crucial moment in the evolution of wind power. Wind-driven generators are still a niche technology—producing less than one percent of U.S. electricity. But last year, 1,700 megawatts' worth of new wind capacity was installed in the United States—enough to power 500,000 houses—nearly doubling the nation's wind power capacity. And more is on the way. Manufacturers have reduced the cost of heavy-duty wind turbines fourfold since 1980, and these gargantuan machines are now reliable and efficient enough to be built offshore. An 80-turbine, \$240 million wind farm under construction off the Danish coast will be the world's largest, and developers are beginning to colonize German, Dutch and British waters, too. In North America, speculators envision massive offshore wind farms near British Columbia and Nantucket, MA.

But there is still **a black cloud** hovering over this seemingly sunny scenario. Wind turbines remain expensive to build—often prohibitively so. On average, it costs about \$1 million per megawatt to construct a wind turbine farm, compared to about \$600,000 per megawatt for a conventional gas-fired power plant; in the economic calculations of power companies, the fact that wind is free doesn't close this gap. In short, the price of building wind power must come down if it's ever to be more than a niche technology.

a black cloud
a sign of mis-
bad luck

And that's where the prototype at Rocky Flats comes in. The flexibility in its blades will enable the turbine to be 40 percent lighter than today's industry standard but just as capable of surviving destructive storms. And that lighter weight could mean machines that are 20 to 25 percent cheaper than today's large turbines.

Earlier efforts at lighter designs were universal failures—disabled or destroyed, some within weeks, by the wind itself. Given these failures, wind experts are understandably cautious about the latest shot at a lightweight design. But most agree that lightweight wind turbines, if they work, will change the economic equation. "The question would become, 'How do you get the transmission capacity built fast enough to keep up with growth,'" says Ward Marshall, a wind power developer at Columbus, OH-based American Electric Power who is on the board of directors of the American Wind Energy Association, a trade group. "You'd have plenty of folks willing to sign up."

And, say experts, the Rocky Flats prototype—designed by Wind Turbine of Bellevue, WA—is the best hope in years for a lightweight design that will finally succeed. “I can say pretty unequivocally that this is a dramatic step in lightweight [wind turbine] technology,” says Bob Thresher, director of the National Wind Technology Center at Rocky Flats. “Nobody else has built a machine that flexible and made it work.”

I. Show your understanding of the reading. Based on the reading, choose the best answer to complete these sentences.

1. The new wind turbine being tested at Rocky Flats looks like _____.
 - a. a normal wind turbine
 - b. a football field
 - c. a jet airplane turbine

2. Since 1980, wind turbines have become four times _____.
 - a. more efficient
 - b. less expensive
 - c. smaller

3. The most important innovation of the new wind turbine is _____.
 - a. flexible, hinged blades that face away from the wind
 - b. 2 blades instead of the traditional 3
 - c. greater height than that of existing turbines

4. According to the article, the new turbines would cost less because of _____.
 - a. cheaper materials
 - b. lower weight
 - c. lower manufacturing cost

5. Early light-weight wind turbines _____.
 - a. were successful in Denmark
 - b. were used offshore
 - c. all failed

6. The new wind turbine prototype was designed by _____.
 - a. the United States Department of Energy
 - b. the National Wind Technology Center, a government agency
 - c. Wind Turbine, a company in Bellevue, Washington

7. Early American designs failed because they were _____.
- too simple
 - too high-tech
 - too expensive
8. Danish designs were successful because the wind turbines were _____.
- supported by strong, heavy structures
 - designed using advanced aerodynamics
 - constructed from new materials
9. Two important technological advances that made modern turbine designs possible are _____.
- power electronics devices and computer modeling
 - computer modeling and weather forecasting
 - weather forecasting and manufacturing
10. Since the early 1980s, the power production of a single wind turbine has _____.
- not increased significantly
 - increased four times
 - increased 40 times
11. The new wind turbine could be installed on a higher tower than before, and could thus reach faster winds, because the tower would _____.
- be thicker and, therefore, stronger
 - be made of new stronger materials
 - support a lighter turbine
12. For wind power to become more widely accepted and used, it will be necessary _____.
- to store wind energy
 - to replace hydroelectric power plants
 - to build all wind turbines off shore

Appendix (4) : Classroom Observed Lesson Four (Reading Material)

READING COMPREHENSION

Text Messages & Emails

When computers first started to be used on a wide scale, some people predicted that we would spend so long staring at computer screens that we would end up forgetting how to talk to one another. But in fact, the rapid expansion of electronic communication in the 21st century has had the opposite effect. Rather than retreating into themselves, people are using new technology, in particular email and text messaging, to find more and more ways to expand their network of friends.

Jane Adams, 23, sends so many messages to her friends. She's known as the Text Queen. 'My friends and I take our phones out with us and send messages to other friends saying "**we**'re in this club and it's really good. Come and meet us," she said. It means we don't have to spend ages planning an evening out. You can just send the same message to everyone;

Text messaging and email also help Jane keep in touch with old schoolmates she would probably have lost contact with otherwise. She finds that it's easier to send a message saying 'Hi! thinking of you,' rather than having to write a long letter.

It seems these forms of communication have filled a gap, offering something that face to face conversation does not. Professor Pam Briggs, a psychologist at the University of Northumbria, believes **they** have become popular because they people an opportunity to present themselves in the way that they want to. 'People seem to really enjoy sending text messages and emails, she says. 'They can take their time planning their message. They prefer it to speaking on the phone to each other- maybe also because this way they can choose when they want to respond to someone.'

The fact that text messages are so quick and easy is big part of the attraction. Many people also find text messaging more informal than making a phone call or writing a letter, and therefore simpler to use. Ann Rose, who teaches at a London school, uses email and text messaging to keep in touch with students. 'I have always given my number out to students and told them to call me if they have any problems. But no one ever did. Now, they often email or text me with questions about their work. They don't find it difficult to keep in touch that way, whereas they might feel that a phone call is more of an interruption,' she said.

So is all good, Ann has identified one negative result of text messaging. 'The popularity of **this way of writing** among my students,' she says 'can cause a few difficulties as they have started using abbreviations such as '*ruok*' for 'are you okay? And '*thx*' for thanks"

COMPREHENSION:

1. What effect has been caused by the expansion of electronic communication?
2. Why is Jane Adams called the “Text Queen”?
3. In what ways are text messaging and e-mailing different from face to face conversation according to Pr Briggs?

TRUE/FALSE

1. Jane Adams and her friends find that txt messaging saves time in organising meetings.
2. Jane keeps contact with her old school friends thanks to email and text messaging.
3. Ann Rose used to receive phone calls from her students.

SYNONYMS

1. to increase (pph1) :
2. a chance (pph 4) :

REFERENCE WORDS

1. We:
2. They:
3. This way of writing:

Appendix (5) : Classroom Observed Lesson (Reading Material)

LAGHOUAT UNIVERSITY (Amar Telidji)

Elect. Engineering: 3rd year LMD

ENGLISH :

Mobile Phones

A fierce debate has erupted following the British government's announcement that it is considering a ban on the use of mobile phones by all drivers. New legislation could outlaw the use of mobiles while at the wheel of any vehicle which has its engine running and that includes those stopped at traffic lights or in traffic jams.

Many drivers are unhappy. A mobile phone is useful if you are late for a meeting or an appointment. And chatting to a family member or friend passes the time, reduces your stress level and makes life more bearable if you are stuck in an endless tailback. It also greatly enhances your sense of security if you are out at night in unfamiliar surroundings. In short, losing the right to use a mobile phone while driving would be a blow to many sensible and responsible people.

The big question is : would such a measure save lives ? The answer is probably yes. Earlier this year, the Transport research Laboratory published the results of a detailed scientific study of reaction and stopping times of drivers in various states of distraction. Their findings were startling. It turned out that talking on a mobile is more dangerous than being just over the legal alcohol limit. Besides, hands-free kits are almost as bad because it is the conversation, rather than the handling of the phone that causes the distraction. Paper after paper added to the growing mountain of research support the idea that mobile phones and driving make a lethal* combination. A Canadian team reported that the risk of road accidents is higher in mobile phone users.

But there are some who argue the dangers of in-car mobile phones are exaggerated.

Other researchers have dismissed the proposals as unnecessary. They claim that existing driving laws are sufficient and that, in any case, there are many other in-car distractions that are equally dangerous.

But the fact is that a mobile phone, in the wrong place, at the wrong time, can kill. More than 30 countries have already banned using one while driving. The UK used to be a world leader in road safety and our road accident death rate is one of the lowest in Europe as a result.

The mobile phone ban will happen one day. This is as inevitable as the drink driving or the seat belt laws which were fiercely criticised at the time by many drivers,

politicians, and associations. They are all quiet low because the benefits of these regulations are beyond argument.

Sp, let parliament prepare a new law; banning mobiles while driving, and let's implement it quickly. I believe the potential victims and their loved ones would approve, don't you?

Read the text then answer the questions

Say true or false:

1. The British government has forbidden the use of phones while driving.
2. The Canadian team results confirmed those of the Transport Research laboratory.

Comprehension questions

1. What was surprising in the results of the study of the Transport Research Laboratory?
2. How practical can the mobile phone be? Give two examples.
3. What is the writer's attitude?
 - a. totally neutral
 - b. for (agrees with) the new legislation
 - c. against the government proposal.

D/ FIND IN THE TEXT SYNONYMS

1. in the driving seat = (paragraph 1):
2. caught in a traffic jam = (paragraph 2):

A/ MATCH THE WRDS THAT GO TOGETHER TO MAKE APPROPRIATE COLLOCATIONS

1. population	a. target
2. tourist	b. code
3. family	c. growth
4. water	d. trade
	e. weapon

1. ____ 2. ____ 3. ____ 4. ____ .

Appendix (6) : Motivation to Read Survey

February,2011

Students' Motivation for Content-based Reading Questionnaire

(For Science and Engineering 3rd Year LMD Students)

Dear STUDENTS

This is a questionnaire that aims to evaluate science and engineering students' motivation to read scientific material. This is not a test, so you don't even have to write your name on it. I am interested in your personal opinion. Please do give your answers sincerely to help in the success of this investigation. Thank you very much in advance for your time and cooperation .

Yours Faithfully ,

Mustapha GASMI

Magister Candidate

Amar Telidji University, Laghouat

Department of ENGLISH

mustaphagasmi@hotmail.com

Please answer all questions as completely as possible

Gender/.....

Stream/.....

E-mail/.....

Please read the following statements and indicate the extent to which you agree or disagree.

Part One: (A)

1. **Science and Engineering students need to practice reading.**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

2. **Science and engineering students need to be active readers because they love learning English.**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

3. **Science and engineering students need to be active readers because of the scientific documentation published in English.**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

4. **I am a good reader (in English).**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

5. **I feel confident about reading.**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

Part One: (B)

6. **I like to read in English.**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

7. **I like to read in English and read for pleasure.**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

8. **I only read assigned material.**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

9. **I read material that is not required for class.**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

10. **I like reading scientific documentation published in English.**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

11. **I am interested in reading technical reports.**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

12. **I am interested in reading work manuals**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

13. **I am interested in reading texts related to scientific domains.**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

Part Three:

14. **I would like to be an active reader.**

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

15. I would like to have a better comprehension of technical writing.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

16. I would like to improve my knowledge in my field of study

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

17. I would like to improve my vocabulary

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

18. I think that reading in English is critical in my career.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

19. English is important to me; it helps me gain knowledge.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

20. Reading in English is a key to academic success.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

Thanks again for your time and cooperation .

Appendix (7) : Reading Strategies Survey

February,2011

Strategy-based Content-area Deep Reading

(For Science and Engineering 3rd Year LMD Students)

Dear STUDENTS

I am preparing for a Magister Degree at Amar Telidji University, Department of English. The research I am conducting is entitled '*Towards Academic Achievement through Content-area Critical Reading: The Case of Science and Engineering 3rd Year LMD Students*'. To fulfill the purpose of the study, I have designed a questionnaire that aims to evaluate science and engineering students' ability to read scientific material critically, and analyze students' English language needs in terms of critical reading to enhance academic achievement. This is not a test, so you don't even have to write your name on it. I am interested in your personal opinion. Please do give your answers sincerely to help in the success of this investigation. Thank you very much in advance for your time and cooperation .

Yours Faithfully ,

Mustapha GASMI

Magister Candidate

Amar Telidji University, Laghouat

Department of ENGLISH

mustaphagasm@hotmail.com

Please answer all questions as completely as possible

Gender/.....

BAC Stream/.....

E-mail/.....

Please read the following statements and indicate the extent to which you agree or disagree.

Part One: Strategy One: Planning for reading / Questions 1-7

1. When reading in English, I always have a purpose?			
Strongly Agree	Agree	Disagree	Strongly Disagree
2. I read in order to understand the author's point of view or purpose.			
Strongly Agree	Agree	Disagree	Strongly Disagree
3. I read academic texts to identify main ideas & supporting details.			
Strongly Agree	Agree	Disagree	Strongly Disagree
4. I read for understanding technical/academic vocabulary in professional contexts.			
Strongly Agree	Agree	Disagree	Strongly Disagree
5. I read for interpreting data in tables, charts & diagrams			
Strongly Agree	Agree	Disagree	Strongly Disagree
6. I read for summarizing texts.			
Strongly Agree	Agree	Disagree	Strongly Disagree
7. I read for analyzing and evaluating.			
Strongly Agree	Agree	Disagree	Strongly Disagree

Part Two: Pre-reading Strategies: Working inside/outside texts / Questions 8-13

8. Through titles and pictures, I can easily guess the topic of a text.			
Strongly Agree	Agree	Disagree	Strongly Disagree
9. I predict the main idea of the whole passage from its title or subtitles.			
Strongly Agree	Agree	Disagree	Strongly Disagree
10. I try to guess the main ideas of the text on the basis of pictures, charts or figures.			
Strongly Agree	Agree	Disagree	Strongly Disagree
11. I predict the main idea of the whole passage from key words.			

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

12. When predicting, I make use of what I know about the content.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

13. I grasp the gist of the reading material through quickly reading the first and the last paragraphs.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

Part Three: While-reading strategies: reading & rereading / Questions 14-26

14. When I read English articles and texts, I skip the words that are new to me.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

15. I guess the meaning of new words by analyzing their roots or prefixes or suffixes.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

16. I turn to dictionaries when coming across new words in the English reading.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

17. I do not bother with the grammatical structure of sentences while reading in English.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

18. I pause and analyze the structure of sentences when reading in English.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

19. I try to understand complicated sentences by analyzing their structure.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

20. I try to grasp the general idea of a sentence before going to read the next sentence.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

21. I can focus and find answers to my questions while reading.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

22. I try to interpret the writer's intention while reading in English.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

23. I try to find the author's reasons for his/her statements or beliefs.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

24. I take notes while reading and go over them after.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

25. I reread texts to build comprehension.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

26. I reread texts to check my understanding.

Appendix (8) : Classroom Observation Checklist Form

Amar Telidji University, Laghouat, Algeria

Faculty of Science and Engineering / Electrical Engineering Department

Subject: ENGLISH

Level & Group: _____

Date: _____

Number of Students: _____

Teacher: _____

Classroom Observation Checklist

Learning Environment

Room Setup	1	2	3	4	5	6
Flexible, moveable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inviting, clean	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safe and orderly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Evidence or Comments

Skill	
Sequence	
Topic	
Text Title	

Learning Objectives:

--

Visual Examples

	1	2	3	4	5	6
Graphic Organizers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flow Charts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Essential Questions <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Procedures and Guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Evidence or Comments

--

Print Materials

	1	2	3	4	5	6
Variety of Books	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Magazines/Newspapers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other Print Material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Evidence or Comments

--

Academic Performance

Teacher Engagement	1	2	3	4	5	6
Lecture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discussion Leader	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Modeling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monitoring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learning Groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Positive Reinforcement <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Independent Work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Evidence or Comments

Student Engagement 1 2 3 4 5 6

Student Talk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Active Engagement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of Manipulatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Writing/Sharing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allows for Choice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Real Life Connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reflects Core Content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Problem Solving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Experimental/Hands-on

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Evidence or Comments

Learning Strategies

1 2 3 4 5 6

Project-based	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Higher Level Questioning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Independent Inquiry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sustained Writing/Reading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Reading Strategies

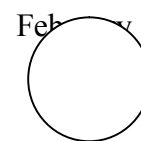
1 2 3 4 5 6

Being Purposeful <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Anticipating/Guessing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Higher Order Thinking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activating previous k.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evidence Finding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Summarizing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Observer's Signature: _____

Appendix (9) : Reading Comprehension Performance Test

Amar Telidji University- Laghouat
2011
Science & Engineering Faculty
Electrical Engineering Department
LMD – S 5/6
Subject: English
30



Duration: 1h

Reading Comprehension Proficiency Test

Read the following text carefully then do the activities.

Machines with Memories

Computers and calculators are a revolutionary development in the history of technology. They are fundamentally different from all other machines because they have a memory. The memory stores instructions and information.

In a calculator, the instructions are the various methods of arithmetic. These are permanently remembered by the machine and cannot be altered or added to. The information consists of the numbers keyed in.

A calculator requires an input unit to feed in numbers, a processing unit to make the calculation, and an output unit to display the result. A calculator also needs a memory unit to store the arithmetic instructions for the processing unit, and to hold the temporary results that occur during calculation.

1. The main idea of the text is expressed in :

- | | |
|--------------------------|---------------------------------------------|
| <input type="checkbox"/> | a) The first sentence of the last paragraph |
| <input type="checkbox"/> | b) The last sentence of the text. |
| <input type="checkbox"/> | c) The first sentence of the text. |

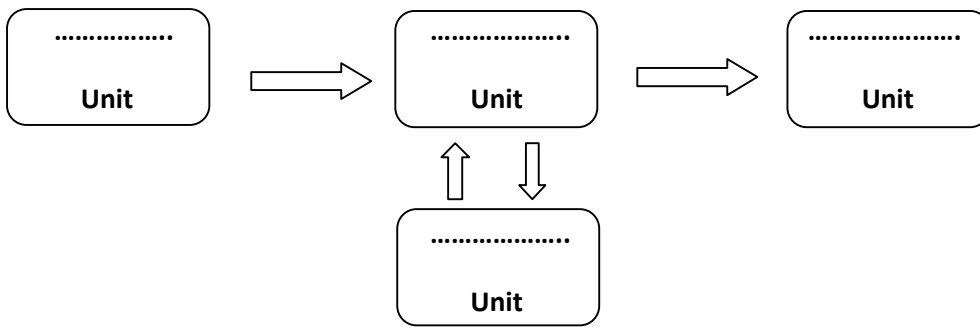
2. Computers and calculators differ from other machines because...

- | | |
|--------------------------|------------------------------|
| <input type="checkbox"/> | a) They can print words. |
| <input type="checkbox"/> | b) They have a memory. |
| <input type="checkbox"/> | c) They consume electricity. |

3. A calculator needs a memory so that it can

- | | |
|--------------------------|-----------------------------------|
| <input type="checkbox"/> | a) Store arithmetic instructions. |
| <input type="checkbox"/> | b) Make calculations. |
| <input type="checkbox"/> | c) Display data. |

4. Complete the following diagram : « Anatomy of a calculator »



5. In paragraph one, the writer shows a between computers and calculators.

- a) similarity.
- b) difference.
- c) Similarity and difference.

6. « A calculator also needs a memory unit to store the arithmetic instructions. » This sentence expresses :

- a) purpose.
- b) cause.
- c) consequence.

7. Read the following statements. Say whether they are « facts » or « opinions ». Write « F » for fact, and « O » for opinion :

- a) Calculators are machines.
- b) Computers are useful machines.
- c) It is good for pupils to use calculators.
- d) Computers and calculators have memories and store data.
- e) Machines can't replace man.

8. In the 16th century, Copernicus had the revolutionary idea that earth orbited the sun.

(In not more than 3 sentences, explain why computers are a revolutionary development in technology)

.....

.....
.....

9. People key in new information into a computer by pressing keys with numbers, letters and other symbols arranged in a keyboard.

(What other instruments have keys and keyboards ?)

.....
.....

10. Does the writer give his/her opinion about computers and calculators ? If yes, which sentence expresses his/her opinion ?

.....
.....

Thank you very much for your time Mr. M. Gasmi