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THE CASE OF M1 STUDENTS OF CHEMISTRY

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DEDICATION

This work would not have been possible without the loving support of so many people. I find myself overwhelmed in offering them all my thanks in dedicating this work to them. The following is not a hierarchy since each person made his/her own unique contribution and none could stand above the others in that regard.

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ABSTRACT

This present study is conducted to point out the role of vocabulary in improving the reading comprehension level of Master students of chemistry at the University of Laghouat. Our work is an attempt to diagnose the problematic areas that led to the reading comprehension difficulties. Consequently, we have tried to identify the causes behind their appearance in the first place, where we have actually found that these problems are due to the students' lack of vocabulary in both General English and English for Science and Technology that is why they have the poor level in English.

In fact, we thought that vocabulary knowledge represents one critical cause of comprehension problems for science learners who study in a foreign language. In the light of this, we have hypothesized that if the students of chemistry have good vocabulary knowledge; they will comprehend better when they read chemistry texts in English. To test out this hypothesis, we conducted a research in which we used two research tools, a questionnaire and a structured interview.

Such a problematic requires a research design, fundamentally, based on three chapters. Chapter one presents an overview of some issues concerning EST, reading, and vocabulary. It also provide the reader with a broad description of the target situation under investigation. Chapter two is rather reserved to the methodological approach being adopted in this study. Its main focus is on the description of research design and procedure used for both processes, namely data collection and data analysis, and with the analysis and interpretation of the main findings. In the last chapter, the researcher attempts at providing new perspectives for ESP teaching in hope to promote the ESP teaching methodology for an EFL background, and thus, open the doors for further research in this particular scope of interests.

LIST OF ABBREVIATIONS

CALLA: Cognitive Academic Language Learning Approach

EAP: English for Academic Purposes

EFL: English as a Foreign Language

ESL: English as a Second Language

ESP: English for Specific Purposes

EST: English for Science and Technology

ETR: Experience-Text Relationship

F: Female

FL: Foreign Language

FTT: Full Time Teacher

M: Male

M1: Master One

MS: Middle School

N: Number

N.N.S: Non-Native Speakers

PSNA: present situation needs analysis

RA: Rural Area

RTA: Reciprocal Teaching Approach

S: Student

T: Teacher

TALO: Text as a Linguistic Object

TAVI: Text as a Vehicle for Information

TSI: Transactional Strategy Instruction

TSNA: Target situation needs analysis

UA: Urban Area

Ys: Years

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General introduction

General introduction

The rapid advances in technology led to rapid advances in the language of technology, or English for Science and Technology (EST). This kind of English is vital not only in scientific and technological activities but also in universities, which, increasingly, find themselves responsible for providing EST-related English skills to a huge population of science and technology students. EST, then, has made significant contributions to both academic and professional fields. It has become, thus, of great importance for EST learners to attain information in science and technology and to be familiar with different updates which they may need during their education. This motivates a good number of students to learn English in order to get access to different written in English. The availability of a large body of scientific documents and references written in English facilitates for students the retrieval of information from various written sources which they could benefit to update academic research and develop in their field of study.

Algeria is one of the many countries that have given much importance to the learning of English in order to arrive at developments in different scientific fields. Thus, the English language learning became a compulsory task for many students. Graduate and postgraduate students are required to read and comprehend written documents written in English in relation to their field of study. Consequently, reading scientific texts seems to be the greatest requirement for students in most educational settings where English is taught and used for specific purposes.

Indeed, the relationship between vocabulary knowledge and reading comprehension has been greatly discussed in the reading research. reading research findings showed that there is a strong correlation between vocabulary knowledge and reading comprehension. This relationship seems logical: to get meaning from what they read, students need both a great deal of words in their vocabularies and the ability to use various strategies to establish the meanings of new words when they encounter them. Students with limited vocabulary knowledge often face comprehension problems wich will cause them a cycle of frustration and failure that continues throughout their studies. Conversely, students with a large vocabulary knowledge are usually good readers. In other words, the importance of having sufficient vocabulary, which is considered to be the main obstacle for reading comprehension, is clear.

At the department of technology, University of Ammar Thelidji, the decision makers emphasize the importance of English to students of chemistry, of our interest in the present study, in that these students need to be able to collect information pertaining to their subject matter in English books, magazines, journals, etc. However, the department of technology, like the other departments, receives students who have very low level in English ; the course is taught by teachers who have never received any adequate pedagogical training for the teaching of English for specific purposes, a complete absence of official programs, lack of coordination between the different teachers of English, and no prior analysis of the students' needs. Furthermore, the teacher is free to teach whatever he judges related and the course is devoted to teach grammar and syntax and possibly conduct some discussions in general interest under the thought of improving students' structural and communicative needs. Consequently, the problem chemistry students encounter when reading scientific texts in English is their inability to understand what they read. In other words, the problem that has been scrutinized is that first year master students of chemistry can not read successfully in English and content area vocabulary words often become barriers to the comprehension of scientific documents. This is partly related to the absence of a serious undertaking in the teaching of the English vocabulary which is taught without clearly assigned objectives and methodology.

The present study aims at identifying the major factors that have a bearing on the reading achievements of chemistry students, and how does vocabulary knowledge affect their reading comprehension. It is an attempt at answering a question that relates to university students' performance on reading comprehension in English for Specific Purposes context. The objectives of the investigation can be expressed in the following research questions:

Research question one:

What is the relationship between the students' reading level and their vocabulary level?

Research question two:

To what extent does vocabulary instruction affect reading comprehension?

These questions can be expressed in terms of the following two research hypotheses:

Hypothesis one:

Students' reading problems may be rooted to their poor vocabulary in English.

Hypothesis two:

Students' difficulties in reading in English may result from the inadequate vocabulary instruction methods.

We set as a main concern of the present study to point out the role of vocabulary instruction in improving the reading comprehension level of first year Master (M1) students of chemistry at the Ammar Thelidji University while reading chemistry texts in English. Identifying vocabulary in scientific texts is one way in which we can enhance the reading comprehension to science students. So, showing how vocabulary can contribute to their comprehension of scientific texts is very beneficial to ameliorate their level in reading scientific literature. In other words, to improve their ability to understand scientific texts in English, students of chemistry should first be able to recognize vocabulary in order to understand its function in the overall meaning of the text.

The present study is not an experiment in which variables must be isolated, controlled and manipulated. It is a descriptive study, which implies dealing with real and authentic rather than laboratory setting .Hopefully, the fact of the absence of artificiality in our research proceedings might add to the findings' credibility.

To answer the research questions and to test the hypotheses, a combination of two research methods has been used in this research. These two methods involve a students'

questionnaire and a teachers' structured interview. The aim was to find out both students' and teachers' views concerning reading comprehension problems.

As for the samples of the study there are two samples .The first one consists of one group of thirteen first year Master students of chemistry at the department of technology and the second consists of three teachers that have been taught at the department of technology. We have decided to work with these students for the following reasons:

1. They have already studied English before: at License level. Consequently, they are supposed to be sufficiently proficient at least in General English

2. These students have certain background knowledge about English; they know the elements of the language such as basic grammatical rules and vocabulary.
3. The choice of master degree students was not a random one; it was motivated by the fact that after this year students will prepare a dissertation in their field of specialty and have to read extensively, and that most of the documentation is written in English.

This dissertation consists of three chapters. Chapter one is theoretical framework. It will tackle, first, some theoretical issues about ESP and the emergence of EST when the focus was shifted from special languages of specialism to specific purposes in learning English. In addition, we will discuss the discourse approaches to analyze scientific discourse in order to see their usefulness to Non-Native Speakers (NNS) science learners in decoding scientific texts. The chapter will also discuss some basic features of texts in science in particular. Moreover, we will highlight some comprehension problems science students generally face in reading foreign language texts. Besides, The teaching/learning situation under which the study has been implemented is introduced. Second, this chapter will also explain reading, definition of reading, aims of reading, reading comprehension, factors affecting comprehensions, and the correlation between vocabulary and reading comprehension. Finally, the chapter will shed light on issues regarding vocabulary, definition of vocabulary, kinds of vocabulary, vocabulary instruction and an overview of vocabulary instruction strategies.

In chapter two the methodological design of the study will be explained in detail. After that, the chapter will provide the statistical analysis of data gathered from students' questionnaire and teachers' structured interview.

Chapter three will tackle the research implications by suggesting some operational guidelines in the form of suggestions which will contribute to enhance the learners' reading performance and assist them in developing their reading abilities, and discussing the research suggestions for further research.

The study's findings will lead to recommendations as to what is needed for positive change to happen. It is hoped that our recommendations would serve to improve the academic level of chemistry students. The study's findings are also expected to provide insight to central issues to chemistry students. More specifically, we aim at increasing the awareness concerning the important role vocabulary plays in ESP contexts. The study will also lead to reconsidering the students' needs as a priority when designing courses. This is expected to help them gain effective, useful, and sufficient background in the realm of their studies.

To sum up, vocabulary is one important aspect in learning a foreign language. Limited vocabulary will cause limited understanding in terms of speaking, reading, listening, and writing. One reason teachers are concerned about teaching vocabulary is to facilitate the comprehension of a text that students will be assigned to read. If students do not know the meaning of many of the words that they will encounter in a text, their comprehension of that selection is likely to be compromised

Chapter One

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1.1Introduction

The following chapter is an overview of EST, reading ,and vocabulary. It sets out to highlight the theoretical foundations of the above mentioned points. It is divided into four parts: The first one concerns EST. It is an opening part tackles some theoretical issues about ESP and the emergence of EST when the focus was shifted from special languages of specialism to specific purposes in learning English. In addition, we will discuss the discourse approaches to analyze scientific discourse in order to see their usefulness to Non-Native Speakers science learners in decoding scientific texts. The part will also discuss some basic features of texts in science in particular. At the end, we will highlight some comprehension problems science students generally face in reading Foreign Language texts/discourses.

The second part of this chapter is a detailed discussion about reading is dealt with. At the beginning, a definition of reading is provided. Then, it deals with reading comprehension and the factors affecting comprehension with a special emphasis to the correlation between vocabulary knowledge and reading comprehension.

Next, the third part of the review is concerned with vocabulary. In order to understand a language, the learner needs to understand the definition of vocabulary first. Then, some practical tips about vocabulary teaching in ESP context are provided. These practical tips consist of a set of activities to help teachers teach both scientific and general vocabulary in ESP situation.

Finally, a short description of the teaching/learning process at Ammar Thelidji University, including the partners: teachers and students, the curriculum and the teaching methodology, is discussed.

1.2. English for Science and Technology: An Overview

Over the past few years, there has been a revolt against the traditional English teaching practices where *"all the learners were served up with literature regardless of their aims, needs, or interests"* (McDonough, 1984: 4). The discontent of learners and teachers has led to the emergence of a new approach to language teaching. In this approach, the course design is largely based on the learners' specific needs,

Notions like 'register', 'special language', and 'restricted repertoire' that describe specialist, scientific, and technical vocabulary related to different disciplines are emerged as a result to the serious revolutionary shift towards investigating the linguistic features of scientific language varieties .

Thus, the emergence of English for Specific Purposes (ESP) was just a natural expansion and a awareness of this new trend in teaching English for identifiable purposes and specific needs.

As a new means to serve particular needs, ESP has rapidly extended throughout the world. The two features 'international in scope, specific in purpose' become parts of its essence that describe precisely and concisely its very nature (Johns & Duddley, 1991).

1.2.1 English from 'Special' to 'Specific'

According to Mackay and Mountford (1978), language learners in general need English as a means for either furthering their specialist education, academic purpose, or for performing a social working role. In this regard, they argue that:

> *ESP is generally used to refer to the teaching of English for a clearly utilitarian purpose. This purpose is usually defined with reference to some academic and occupational requirements* (Mackay & Mountford, 1978: 2).

The utilitarian purpose refers mainly to what the learner wants precisely from learning English. As a result, recognizing learners' utilitarian purpose becomes the guiding element in ESP teaching . Hutchinson and Waters (1987: 8) stated : *"tell me what you need English for and I will tell you the English that you need"*

The fact that students at the tertiary level need no more to study English as a general course, but rather would desire to deepen their English language knowledge to suit their particular needs resulted in the shift toward narrowing down 'register' to 'sub-registers'. The rising awareness of learners that they no longer learn the language for its own sake provided the foundation for a new vision towards learners' needs by ESP practitioners, that is to think of English as a means to an end and not an end in itself. This comes from the fact that English can be learnt as either a 'subject' or a 'service'. According to McDonough (1984) the former refers to learning English for its own sake; while the latter is concerned with learning English to serve particular utilitarian purposes defined by learners' needs in certain conditions. According to him identifying these purposes is the essence of teaching ESP.

In fact, a given repertoire, which is directly linked to his specialist field of study, but not a whole language is what an ESP learner needs. In this milieu, the meaning of the word 'special' was generally close to the phrase 'special language' which means a 'restricted repertoire', as Mackay and Mountford (1978) put it,

> *the only practical way in which we can understand the notion of special language is a restricted repertoire of words and expressions selected from the whole language because that restricted repertoire covers every requirement within a well-defined context, task, or vocation.* (Mackay & Mountford, 1978: 4)

As a matter of fact, this restricted repertoire is a conclusion of a primitive selection and reduction of language items to isolate languages of specialism suitable to learners' needs.

The word ‘special’ alone does not arise confusion. Confusion, however, comes over the two notions of ‘special language’ and ‘specialized aim’. The two notions appear related, but in fact they are completely different notions. According to Mackay & Mountford (1978), the first one refers to the aforementioned ‘restricted repertoire’, the other one has to do with the ‘specific purpose’ for which learners learn a language, not the nature of the language they learn

The meaning of the word ‘special’ in ESP has nothing to do with restricted language or the specific jargon learners learn but rather ought to be on the purpose for which they actually learn English. Mackay and Mountford (1978) summed up this view as follows:

> *the emphasis of the word ‘special’ then, in English for special purposes should be firmly placed upon the purpose of the learner learning the language, not on the language he is learning* (Mackay & Mountford,1978: 5-6).

That is why the word ‘specific’ in ‘English for Specific Purposes’ emphasizes directly the learner’s purpose from learning English.

1.2.2 The Emergence of EST

The many specific purposes of learners have led to the recognition of diverse varieties of ESP. Three major areas express the most common categorization of ESP: English for Academic Purposes (EAP), English for Occupational Purposes (EOP), and English for Science and Technology (EST).

In the first branch, according to Kennedy & Bolitho (1984), ESP is taught within educational settings where students need English for their studies. More specifically, learning EAP *“demands not only knowledge of English lexicon and grammar in general, but also the knowledge of subject specific content and the linguistic conventions of the specific field of study”* (Kurodo, 2003: 20).

In the second branch, ESP is related to the teaching of English to students who need it for occupational requirements such as communicating with work-staff or reading work-related journals, manuals, and pamphlets (Kennedy & Bolitho, 1984). The last branch of ESP is EST. As its name suggests, it reveals a greater focus on the language of science and technology than the other types. This branch is directly associated with scientific English,.

Kennedy & Bolitho (1984) again state that:

> *much of the demands for ESP have come from scientists and technologists who need to learn English for a number of purposes connected with their specialism. It is natural; therefore, that English for science and technology should be an important aspect of ESP proposed by Strevens (1977).* (Kennedy & Bolitho, 1984: 6)

It is important, henceforth, to note that EST has played a 'driving force' for theoretical innovation in ESP for a long time.

lately, as the world witnesses a huge movement of development in science and technology, EST has gained a great attention from researchers. To cope with this, students of science need a language that helps them access to the best databases available in scientific literature. EST is that variety of ESP, which ensures best this accessibility.

Consequently, the EST syllabus should permit learners of science to:

• Get information by reading and understanding different text types in science and technology in English.
• Present information related to science and technology at an suitable level in written or spoken English.
• Think critically and give points of view on issues in relation to science and technology.

Following this, we can say that EST covers a large area from general sciences such as physics, chemistry, biology, mathematics and environmental education to various technologies.

1.2.3 Discourse Analysis of Scientific Texts

In its brief history, EST has followed a range of approaches to text analysis. Each approach is concerned with the analysis of a specific characteristic of EST texts that is thought to be helpful to non-native learners in acquiring knowledge about the nature of EST texts., These approaches are summarized in the early register analysis, Trimble's rhetorical analysis in 1985, the functional/ notional approach connected with the textbooks, and to the today's dominant approach named genre analysis.

Some serious questions about the specific demands required to deal with the conventional rhetoric of science are raised while teaching scientific English to non native speakers (N.N.S). The early attempts to teach scientific English focused only on the recognition and selection of lexical and grammatical items, which proved to be futile to F.L science learners.

As a remedy to this situation, a variety of approaches to discourse analysis come to existence. They supply learners with a framework where learners can spot and analyze the inter and intra components of texts as they are presented by natives. This discourse knowledge guides learners to read as efficiently as possible scientific English, and enables them to understand the conventional organization and presentation of a particular discourse in a understandable and patterned way.

Transphrastic (or phrase-linking) approach and communication-oriented approach are two main approaches to discourse analysis distinguished by Weise (1979). The former is concerned with analyzing the interlinking semantic elements within texts (thematic semantic coherence) whereas the central concern of the latter is based on the communicative functional role of a text. Widdowson (1974) also identifies three approaches to the analysis of scientific discourse: text approach, textualization approach, and discoursal approach. Among these approaches, because the second one is concerned with analyzing the relationship between linguistic forms and their rhetorical functions within discourse, it seems to be the most helpful for reading comprehension. Trimble (1985) presented another famous discourse-based approach for analyzing scientific discourse. His rhetorical approach highlights the importance of the explicit teaching of the

rhetorical organization of texts to non-native students to make reading comprehension more efficient for them. This approach will discussed in details in the following section.

To sum up, discourse analysis approaches provide materials developers with practical and useful information pertaining to textual characteristics of each field, and therefore they can build materials that have a rhetorical foundation. Besides, knowing the features of discourse provides teachers with systematic knowledge of the ways of describing texts; and as a result, they can make their students aware of the features of specific discourses. This discourse-based knowledge will not only influence the students understanding but also their speed of perception (Yorkey, 1970; Wright, 1987). That is, once the student is outfitted with the knowledge of how writers construct their writings in science, they can easily locate the information they need as quickly as possible.

1.2.4 EST Rhetorical Approach to Analyzing Scientific Discourse:

When talking about the scientific English discourse, we can notice that certain rhetorical characteristics are more noticeable than others. Trimble (1985) stated that these characteristics are the silent elements which distinguish the scientific discourse from other forms of written English discourse. The identification of these characteristics helped him in developing classroom materials.

Aiming at teaching science learners reading, and secondarily, writing in scientific English, these materials were taught to non-native students in science or technical fields. Trimble's approach is known as 'the rhetorical approach'. In this approach the scientific text is analyzed according to three rhetorical concepts:

- The nature of EST paragraph.
- The most commonly used rhetorical functions in written EST discourse.
- The most commonly used rhetorical techniques in written EST discourse.

According to Trimble (1985), the most important element in teaching EST discourse is the concept of paragraph. It is considered to be the fundamental discourse

component for the analysis of EST discourse because he considered the paragraph as a suitable container of information in which we can see a range of pieces of information connected in a patterned way. In the same respect, he defined EST paragraph as:

> *a unit of written English discourse that presents the reader with a selected amount of information on a given area of a subject. This information is so organized by the writer that the rhetorical concepts chosen and the relationships between these concepts are the most fundamental for both the rhetorical purpose of the paragraph and for the level of the reader; that is, the reader's position in respect to the subject matter under discussion-beginner, expert, etc*. (Trimble, 1985: 14-15)

Since Trimble (1985) believes that any scientific discourse is found to accomplish a certain role, the rhetorical functions are the basis of his approach. According to him, each rhetorical function supplies readers with different sort and with different quantity of information. That is why he defined them as *"a name for what a given unit of the discourse is trying to do"* (Trimble, 1985: 12). He distinguishes five rhetorical functions that he considered the most common ones in written EST discourse. These rhetorical functions include description, definition, classification, instruction, and visual-verbal relationship.

Concerning 'rhetorical techniques' or 'cohesive ties', the last concept in Trimble's approach, They refers to those elements that attach together the information in a piece of discourse. Trimble (1985) defined 'rhetorical techniques' as:

> *a name either for the frame into which writers fit their information or for the way in which the items of information chosen relate to one another or to the main subject of the given unit of discourse"* (Trimble, 1985: 12).

Trimble showed the difference between two types of techniques. The first one is called 'natural order' which refers to those that are imposed by the nature of the material

and includes space order, time order, and cause/effect. In contrast, 'Logical order' is those techniques that are imposed by the writer's choice and include order of importance, comparison/contrast, exemplification, and analogy. Each technique whether natural or logical is chosen as a vehicle for making information explicit and clear for the reader. The reader will be able to decide the rhetorical functions by writers chosen to present their major items of information if he is able to recognize and evaluate the relationships that exist between the pieces of information and between the units that compose the total discourse.

To conclude , Trimble's investigation into the organization of information in science and technology discourse showed that some rhetorical structures are conventionally more apparent in these types of texts than in others. In practical way, he offered the above-mentioned concepts where each concept is *"capable of being isolated and studied separately"* (Trimble, 1985: 69). Additionally, this careful analysis comes from his belief that teaching these elements directly to non-native students in technical field is very practical in supporting their reading abilities.

1.2. 5 Scientific Texts

1.2.5.1 The text as a vehicle for information

According to Johns and Davies (1983), reading texts are classified into two distinct types: TALO (Text as a Linguistic Object) and TAVI (Text as a Vehicle for Information). Texts that have been written as illustrational models for syntactic structures, functions/notions, and lexis are considered as TALO.

TAVI, on the other hand, refers to those unmodified texts that intend to convey information from writers to readers, especially in regard to learners' subject matter. In the context of this present study, the text is looked upon as a vehicle for information and not as a linguistic object. For learners, a text is regarded as a means for obtaining information related to their fields of study where they can develop their background knowledge.

1.2.5.2 The Scientific Text

The scientific text is any particular realization of scientific discourse presented in a form of a text. The EST text is only one example of scientific texts. Widdowson (1984) defined the scientific text as a particular realization of a worldwide mode of communication since it contains non-verbal devices such as tables, graphs, and diagrams, which are considered as a neutral form of communication in regard to any language.

Additionally, Widdowson (1979) distinguishes three types of scientific discourse: 'science as a discipline', 'science as a subject', and 'science as a topic of interest'. In the first, the scientific discourse/text is directed to peers where there is some assumed-shared knowledge. In the second, the discourse is intended to be used by teachers to science students. These discourses aim to expose students to some fundamental concepts in science that is why they are usually found in textbooks. The last kind is usually found in newspapers or popular journals produced by journalists to laymen. It is characterized by the use of common language and some sub-technical terms, known as the language of vulgarization, when tackling scientific topics in general.

Walsh (1982) pointes out three complementary components of the scientific text while he focused on scientific texts in 'science as a subject': the linguistic, the rhetorical, and the conceptual. Vocabulary and syntax shape the linguistic component (text language). Vocabulary refers to both and to the sub-technical. The frequently used specialist vocabulary is definite to each area, whereas the sub-technical is *"widely used in scientific and technical areas but yet exclusive to none"* (Walsh, 1982:24). In the same context, syntax refers to either the most prevailing structures used in scientific texts than in others such as 'the passive voice' or to those syntactic structures which belong to no discipline.

The conventional rhetoric of texts in science or the way the information is organized and presented to a reader is the main concern of rhetorical component of scientific texts (text style). In this respect, Selinker (1972) and Trimble (1985) (as cited in Walsh, 1982) conducted some studies where they have shown that knowing the rhetorical organization of texts plays a part in promoting learners' comprehension of scientific texts. Besides, the reader's reading ability and his competency in mastering the language is very

essential in building the rhetoric of scientific texts because it directs the writer to favor one way over the other.

Walsh (1982) stated that the difficulty in understanding the conceptual part of a text will certainly lead to linguistic difficulties and sometimes and vice versa . Most of the time, failure in understanding the linguistic or the rhetorical aspects of a text, particularly for non-native science learners, is what prevents the students from obtaining the essence of the text. In other words, getting the conceptual aspect of the text. As a matter of fact, concepts are usually recognized through using language, so failing to understand the linguistic elements of a text will undoubtedly break down the intended meanings of these concepts.

1.2.5.3 Difficulties in Reading Scientific Texts

Numerous factors can lead to difficulties in reading scientific texts. Text organization and lack of the specific vocabulary are just few factors. If these two factors are coupled with lack of ability in the foreign language, of course, things will be more serious for students to hold. Reading scientific texts in a foreign language complicates the situation to learn for science learners who find themselves overwhelmed by obstacles on both sides. On the one hand, they have to comprehend the new concepts in their field of study. On the other hand, they have to identify the fundamental elements in the foreign language system that is used as the means of presentation. Moreover, they have to be conscious of the conventional rhetoric of science, including knowing the language, knowing the new concepts in their field, and knowing the rhetoric of scientific texts, in order to cover all the aspects that help them comprehend effectively. Wiggin (1977) reports that:

> *many foreign students lack the ability or training to understand the implicit messages that result from an interaction of syntax and rhetoric* (Wiggin,1977:4).

This is functional to students who study English as their subject matter. In this study, the students of chemistry are unfortunately unable even to comprehend the ‘explicit’

messages. It is so not because they do not study English; but as we understood from them, it is because they did not study English as it should be, either as GE or as EST.

In order to read successfully in English, students need knowledge of how the English language is presented in scientific writing. This includes:

• Knowing the language itself, and the knowledge of the grammatical structure and vocabulary, which are normally found under the umbrella of GE.
• Knowing how these features of language are presented in scientific milieu. This can be found under the heading of EST.

1.3 Reading

1.3.1 Definition of Reading

It would seem unessential to ask the question of what reading really is because of the fact that to date nobody has been able to define reading thoroughly. As Urquhart and Weir (1998) said,

> *We all know what reading is. And many of us have suffered, at some time or the other, from the type of bore who stops any argument or discussion with 'Ah, it depends on what you mean by…' So it is with some reluctance that we begin this part with an attempt to define reading, to say what we mean by the term. Our excuse is that people do use the term in different ways, and that while this may be permissible when everybody is conscious of the differences, on occasions it can cause real confusion and difficulty.* (Urquhart & Weir, 1998: 13)

According to Walter R. Hill (1979:14), *reading is what the reader does to get the meaning he needs from textual sources.* Meanwhile, Guy L. Bond and Eva Bond Wagner

(1969) explained the meaning of reading as the process of acquiring author's meaning, and of interpreting, evaluating, and effecting upon those meanings. F. Dubin (1969) explained the meaning of reading as primarily a cognitive process, which means that the brain does most of the work.

Definitions of reading can generally be placed across a range of two opposite views, the fist one focuses on the process of reading and the second focuses on the result of that process, or the product.

According Taylor and Taylor (1983), the process view to reading is primarily a decoding process involving four signposts of letter and word recognition, sentence reading, story reading and reading for its own sake. On the other hand, according to Spink (1989), the reading process involves the perception of words, the understanding of text, a reflection to what is read and a combination of previous and novel ideas.

Constructing meaning from written texts is the heart of reading according to the 'product' point of view. This view refers to comprehension which requires the coordination of a number of consistent sources of information and the active interaction among:

1. The reader's existing knowledge;
2. The information recommended by the text being read; and
3. The context of the reading situation (Anderson et al., 1985; Wixson, Peters, Weber, &Roeber, 1987)

Deriving meaning from print is a complex system which requires the following skills and abilities:

1. To comprehend how phonemes, or speech sounds, are associated to print;
2. To decipher unknown words;
3. To read easily;
4. Enough background information and vocabulary to promote reading comprehension;

5. The development of suitable active strategies to construct meaning from print, and
6. The development and continuation of a motivation to read.

Comprehension, therefore, is an active mental process that a reader does. This process involves the author's ideas being integrated in the reader's surroundings and the final attempt to discover his or her own ideas, to modify them, to fit new ideas into the organization of his or her thinking, and to make new ideas, the reader is involved in a stable process of concept development (Farr and Roser, 1977).

Henceforth, and referring to the two above views, and for the rationale of the study, we can end with an operational definition of reading as follows: Reading is an interactive process between a reader and a text leading to comprehension.

1.3.2 Reading Comprehension

In this study, we want to focus on reading that is accompanied by understanding and comprehending a portion of written language. In general, reading comprehension is seen as the capability of the reader to answer a sum of direct questions that usually follow certain texts, and which include the similar words that are found in the text. However, some studies revealed that the central purpose from reading is in reality more to comprehend what to read than to just answer questions (Widdowson, 1979; Nuttal, 1982; Smith, 1982). Despite this, the questions are in fact necessary elements for understanding because they work as means to assess one's capability to understand. For this reason, many researchers thought it is likely more useful if questions are put before reading the text to render the reading both 'purposeful' and more 'meaningful' (Harr- Augustein et al, 1982). In a similar context, Smith (1982, p.166) indicates that *"the twin foundation of reading are to be able to ask specific questions (make predictions) in the first place, and to know how and where to look at print so that there is at least a chance of getting these questions answered."*

Being competent to understand is an vital element in good reading because it points out the ability of the reader to paraphrase, synthesize the content, answer questions about materials, guess and infer, and of course comprehend the main ideas and facts. In this

respect, reading comprehension as an aspect of language learning is defined as a “careful reading” (McConkie, 1973). That is, reading is not only understanding the material in hands and being able to answer the questions following it, but it is also learning by heart the information optained from the text to be used afterward as a learner's background knowledge in a particular topic.

According to Perason and Johnson (1978) reading comprehension is defined as “any reader’s interaction with the text”. Comprehension, then, is a result of a successful contact between a reader and a writer throughout the text. It is apparent that one facet of interaction is establishing the logical connections between ideas in a text. According to Perason and Johnson (1978), readers cannot comprehend a text unless they have understood these connections between ideas in a text. This helps the learners paraphrasing the obtained ideas in another style,. In this respect, inferences are seen as vital acts in grasping the meaning: readers will be able to make inferences on the conceptual and structural gaps in the text, if they are able to discover the associations between ideas in a text and the logical connectors that show them. Foss and Haykes (1978) claim that if the four: syntactic, semantic, discourse, and pragmatic are not taken into consideration during the reading comprehension task, it will certainly lead to short-term retention and memorization.

To sum up; when we read, we should be able to remember information later on. What we can remember and how much we can remember depends on many factors:

1. Being able to select of the main points from what we have read. Being able to draw general conclusions, look for key words and phrases, and differentiate between fact and opinion.

2. Being able to deduce, infer, and interpret the information. That is to say, readers should be able to read both along and between the lines. In other words, we should be able to distinguish between denotative meaning and connotative meaning.

3. Being able to relate what is read to prior knowledge and experience. This happens by evaluating and discussing what is read with others.

Much of the reading activity takes place, in any case, quite involuntarily or unconsciously, but being aware of what we need to do should help us to do it more efficiently.

1.3.3 Factors Affecting Reading Comprehension

Students with an excellent reading comprehension level can read accurately and effectively. By reading the selected material, they can obtain the maximum information from the text with the minimum of misunderstanding. Conversely, not all students have good reading comprehension level. There are some factors which affect their comprehension in reading. The factors are discussed below**:**

1. **The Purpose of Reading**

The students purpose of reading can focuses the students' attention and helps them understand the text. Donoghue (2009) states that putting a specific purpose of reading zill result in stronger reading comprehension. That is to say, the purpose of reading affects the students' comprehension of the text. According to him, having a purpose for reading the text will help the students focus their attention to the text. It is clear that the purpose of reading must be prior to reading. The task of teachers is to help the students construct their purpose for reading

2. **Students' Interest in Reading**

Students curiosity about a subject will help them acquire a high interest in reading the text to look for information and find out answers to satisfy their curiosity. It is apparent that reading interest will influence the students' comprehension of the text. Their interest in reading is strong enough to qualify them as eager readers (Donoghue, 2009).

3. The Quality of the Reading Material

The quality of the reading material can influence the students' reading comprehension. Lenz (2005) sees that if the text is well structured, the students will understand the text without difficulty. In other hand, the students will find many difficulties, if the text is inadequately structured.

4. The Students' Background Knowledge

The students' background knowledge can influence their reading comprehension. Readers who do not have background knowledge about the topic of the text or the text type will face troubles in comprehending the text (Lenz, 2005). Therefore, the students should be introduced to the text types early and review them as often as possible. Activating the students' background knowledge is also needed prior to reading the text.

5. The Quality of the Instruction

The quality of instruction can influence the students' reading comprehension. The quality of the instruction is the task of the instructors themselves. According to Donoghue (2009), good instructors engage the students creatively on the reading activity. They can inspire the students in the reading lesson. The quality of the instruction encourages the students to be active readers, and it gives a positive impact to the students' reading comprehension.

6. The Students' Linguistic and Discourse Knowledge

Readers must have a wide range of capacities and abilities to succeed in their reading comprehension activity. These include a variety types of knowledge including linguistic knowledge and discourse knowledge. The above mentioned types of knowledge are interrelated. Snow (2002) states that both lack of linguistic knowledge and the lack of discourse knowledge will cause failure in understanding the words or sentences in the text.

7. The Students' Vocabulary Knowledge

To understand the text, readers must have a rich vocabulary knowledge because vocabulary knowledge influence the students' reading comprehension. Students often do not succeed to understand the text because the lack of their vocabulary knowledge. It means that sufficient vocabulary knowledge is needed to get comprehension in reading. Snow (2002)

8. The Students' Knowledge of Reading Strategies

knowledge of specific comprehension strategies in reading is very important to the reader to get comprehension. Snow (2002). stated that students with good knowledge of reading strategies will get good reading comprehension, whereas those who do not have the knowledge will find difficulties to reach reading comprehension. It is evident, then, that the students' knowledge of reading strategies influence their reading comprehension.

1.3.4 The Correlation between Vocabulary Knowledge and Reading Comprehension

Educational research revealed that there is a strong correlation between word knowledge and reading comprehension. Students who do not expand their vocabulary knowledge will have problems in reading comprehension. Vocabulary knowledge is essential because it covers all the words we must know to have access to background knowledge, express our ideas and communicate effectively, and learn about new concepts. Moreover, Students' vocabulary knowledge has to do greatly with academic success because students who have a good vocabulary knowledge can comprehend new ideas and concepts more easily than students with limited vocabulary knowledge. (Chall & Jacobs, 2003)

Vocabulary knowledge is indispensable to reading comprehension because it determines the extent to which students will be able to comprehend the texts they read. Comprehension is not just identifying words and detecting their meanings. However, if a great deal of words in the selected material are not known to the student, comprehension will be difficult if not impossible. In the same context, vocabulary experts stated that knowing between 90 and 95 percent of the words in a text is required for an adequate reading comprehension. (Hirsch, 2003). Furthermore, knowing at least 90 percent of the words makes the reader capable to get the main idea from the reading and deduce correctly the meaning of many unfamiliar words. Conversely, readers who do not recognize at least 90 percent of the words will not only have difficulty comprehending the text, but they will miss out on the opportunity to acquire new words.

To sum up, for reading comprehension to be successful students must be equipped with a good foundation of vocabulary knowledge. Vocabulary helps student both obtain the intended information to further their background knowledge and get the main idea of the selected text. With a limited vocabulary, student will not only suffer to comprehend but also waste a great deal of time struggling with unknown words.

1.4 Vocabulary

1.4.1Definition of Vocabulary

Learning vocabulary is one of the most important language aspects when learning a language. Good vocabulary mastery is vital for learners of any foreign language. Foreign language learners will speak easily and correctly, write easily, or comprehend what he / she reads or hears if he or she has sufficient vocabulary and has the capacity to use it correctly. Vocabulary is very important in learning English language because the English vocabulary is very huge and varies as well. As a result, it is extremely fundamental for English teachers to help their students master vocabulary.

Generally, vocabulary is understanding words and word meanings. However, vocabulary is more complex than this definition suggests. First, words come in two forms: oral and print. Oral vocabulary consists of the words that we know and use in listening and speaking. Print vocabulary, on the other hand, includes those words that we recognize and use in reading and writing. S. H. Burton (1982) said: *"Without a large vocabulary, it is impossible to use English language precisely and vividly".*

According to Collier (1971), when a student has mastered the basic grammatical patterns of language, his next task is to master its vocabulary, or at least that of its vocabulary that he needs.

Schmitt, N., & McCarthy, M. (1997) defined vocabulary as follows:

> *Vocabulary is a basis of a language: it is very important to be mastered first. We cannot speak well and understand written materials if we do not master it. (* Schmitt, N., & McCarthy, M.1997:40)

According to Longman Dictionary of Contemporary English (1987:1177):

> *vocabulary means all the words that someone know, or the words that are typically used when talking about particular subject or a list of words with the explanations of their meanings in a book for learning foreign language.*

Webster (2003) has three definitions of vocabulary as follows:

1. A list or collection of words and phrases usually alphabetically arranged and explained or defined.
2. A list or collection of terms or codes available for use.
3. A sum or stock of word employed by a language group, individual or work or in a field knowledge.

According to A.S. Hornby in Oxford Advanced Learner's Dictionary of Current English (1987), vocabulary is:

1. Total number of words which (with rules for combining them) make up a language.
2. (Range of) words known to, or used by, a person, in a trade, profession, etc.

Webster's New World College Dictionary (2002) defines vocabulary as a list of words and, often, phrases, abbreviations, inflectional form, etc, usually arranged in alphabetical order and defined or otherwise identified, as in a dictionary or glossary.

Vocabulary is considered as the most important part in learning a language. It is not possible for the students to read, write and speak a foreign language without having enough vocabulary knowledge. Learning new vocabulary does not only mean memorizing the form of the word but also understand its meaning and being able to use it in similar contexts.

1.5 Description of the Learning Context at Ammar Thelidji University

1.5.1 The English Language in Algeria

The English language in Algeria corresponds to the post Second World War period. At that time, Algeria was under the dominance of France and it was one of its important colonies. Educational issues was planned according to the political decisions and objectives dictated by France. As a result, French colonial authorities decided the teaching of English. Basically, French teachers were teaching English, and the same teaching methods practiced in the French metropolis were used as. Learners attending secondary schools in Algeria were thus being familiarized with this new language which was being welcomed at that time.

After the independence, the situation of teaching foreign languages in Algeria witnessed many changes. Additionally, other foreign languages were introduced and English kept. In that time, various factors led to the disappearance of other foreign languages and English remained, after French, the only foreign language taught. In the late 1960s, the Algerian authorities started building universities and creating different institutes and departments in arts, science and technology. From that time, English exists in any curriculum taught at university, and some departments involve its use more than others. This is the case of the department of technology where the specificity and the requirements of this particular discipline emphasize the importance of the English language. These demands and requirements have resulted in the development of one aspect of English language teaching, namely ESP. Within this approach, it is proposed that any ESP course should follow a strategy of prearranged objectives based on needs analysis which aims to identify what students needs the foreign language for.

1.5.2 ESP at the Department of Technology

Due to the importance of English for Science and Technology in education, master one students of chemistry at the university of Laghouat are required to attend an EST course whose main objective is to allow them have access to the scientific information and to develop accuracy and speed in reading of scientific materials.

The students are given the occasion to be familiar with different forms and qualities of scientific knowledge. Then, they read and analyze the selected texts. The rational for giving the above mentioned is to:

1. Help learners develop their vocabulary and discover the terminology of different scientific domains.
2. Familiarize learners with different rhetorical functions of scientific English.
3. Help them develop key techniques that could be used while reading texts.
4. Encourage their interest in the topics dealt with and most notably being in touch with the existing updates in the science and technology field .

Regardless of the above outcomes of the course, it is important to mention that in real grounds ESP at the department of technology is considered as a secondary course .This is proven by the fact that curriculum developers gave no particular consideration to English for specific purposes and did not provide specifications for the course content and methodology. Moreover, informal interviews with the teaching staff showed that there are no proposed or imposed programs of English subject by the administration; therefore, the teacher is free to teach whatever he/she judges appropriate depending on the internet as a main source for the preparation of any lesson plan. The teachers we have met reported that most of the content presented in their classes is extracted from the net or some non-relayed documentation that they may find in the library, and content transmission is via some selected texts of chemistry. Concerning testing, the examination procedure used is generally assigning students texts with question based on them at the end of the text. This procedure has not been changed for many years. In this respect we can say that both students and teachers feel confident with this method rather than with other techniques such as multiple choice questions or essay writing In addition, the absence of co-operation between the English language Kennedy and Bolitho (1984: 13) stated :

> *A further aspect concerns the role of the subject teachers, since any decision to use an ESP approach relating to a specific subject will inevitably demand some degree of co-operation between language teachers and subject specialists".* Kennedy and Bolitho (1984: 13)

English language teachers, who are just specialists in the field of chemistry, are not experienced at all to carry out the teaching of English for specific purposes. Their experience with English comes from the fact that they were abroad and graduated from English language speaking countries. Thus, Hutchinson and Waters (1987: 160) state that: *"ESP teachers need to arm themselves with a sound knowledge of both theoretical and practical developments in ELT in order to be able to make the range of decisions they are called upon to make".* The problem is that no prearranged objectives are defined in the teaching of English, and students' needs are not taken into account at all. As a result, the students fail in their attempt to acquire the basic knowledge of both the English language and the chemistry in which they are specializing.

Besides, the time allocated to the English course - one session a week - is really insufficient. In fact, learners learn under the pressure of time constraints and the teacher faces a difficulty in giving efficient criticism and assessment on their performance. This has an unpleasant effect on students-teachers relationship, and due to the luck of time, students lose their interest and their motivation decreases accordingly. Hence, these obstacles should be taken into account for better achievements.

1.6 Conclusion

This theoretical chapter has discussed three essential points in the research work. First, we have spotlighted some theoretical issues about the emergence of ESP/EST as language practices to meet the critical needs of students in learning English for specific purposes. We have also seen the shift from special languages towards specific purposes suitable in specific domains. In addition, we have discussed the analysis of EST texts from discourse approaches points of view where we have exposed their effectiveness in providing a careful description of the nature of EST texts to science learners. At the end, we have highlighted one prominent discourse-based analysis named the rhetorical approach that is considered of great importance to non-native learners in facilitating their reading comprehension in scientific English

Second, we have seen reading in a foreign language. Focusing on reading comprehension, we have shown its significance to scientific learners and how to read for the aim of comprehending. We have presented the factors that affect reading comprehension. We have also pointed out to the role of vocabulary knowledge to reading comprehension, and how lacking vocabulary knowledge can obstruct comprehension.

After that, since the focus of this study is on vocabulary, we have tried to show its importance to reading and how it is useful in promoting the comprehension of a text. We have described vocabulary in a detailed fashion presenting tangible examples about how to teach vocabulary in ESP setting.

Last but not least, a short description of the learning /teaching situation is presented. It dealt with some issues concerning the status of the English language in general and ESP in particular at the department of technology; the teaching methodology employed there, and the time allocated to the English course.

Chapter Two

Chapter Two

Research Methodology Design and Data Analysis

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2.1 Introduction

This chapter is devoted to the practical part of our research. It describes in some details how we conducted our study and the tools we used to check whether our students really have problems with reading comprehension.

On the other hand, we will try to verify to what extent vocabulary instruction will be helpful to overcome these problems and promote the students' performance. For this reason, we designed a formal questionnaire and a structured interview as means to collect data from our sample of interest. We will also provide the analysis and discussion of the results obtained in the study.

2.2 Choice of the Method

A descriptive research is conducted because we see that investigating the actual state of students' needs and views concerning vocabulary instruction would be more suitable than making intervention based on some assumptions. Moreover, in this type of study, the people being studied are unaware so they act naturally or as they normally do in everyday situations. This will help greatly to establishing the validity and reliability of the research. Furthermore, it is less time consuming than quantitative experiments which require huge amount of time and effort and this will not help especially while there are urgent situations. Moreover, the researcher can collect a large amount of data for detailed studying. Finally, as it is used to describe and not to make any decisions, it is easier to start the research with it; and it can identify further area of study.

2.3 Samples of the Study

This study is conducted in the department of technology at the University of Laghouat. The research population represents the "first year Master students of chemistry".

In the general introduction, we have mentioned the reasons behind choosing this particular level, i.e., first year M1 where we have stated in particular the following reasons:

4. They have already studied English before: at License level. Consequently, they are supposed to be sufficiently proficient at least in General English

5. These students have certain background knowledge about English; they know the elements of the language such as basic grammatical rules and vocabulary.

6. The choice of master degree students was not a random one; it was motivated by the fact that after this year students will prepare a dissertation in their field of specialty and have to read extensively, and that most of the documentation is written in English.

Sample One

The first year master (M1) students of chemistry at the department of technology at Ammar Thelidji university. They are thirteen student and most of them are females: they are 12 females which represents 92.31% of the whole sample. The rest of our sample is 01 male which represents 7.69% of the whole sample. This leads us to say that we almost have a homogeneous group. They have been studying the English language for one semester during the academic year 2010/2011, and their primary objective was to be able to read both literary and scientific texts and to make a summary.

Sample Two

The teachers of English at the department of technology (about 03 teachers).This may look small sample in practical terms; it, however, covers all the teachers who are in charge of the module of English. One of our teachers is teaching English to students of chemistry, but the other two teachers teaches English to student of other branches. The choice of these two teachers was not arbitrary, but because they will help us compare the data gathered. All the teachers were asked to act as if they are dealing with the same situation or problem.

2.4 Techniques of Data Collection

2.4.1 Students' Questionnaire

The questionnaire is intended to have an access to students' opinions and attitudes towards learning and reading in English. It is also used to know their performance in English, their reading situation and the difficulties they generally face in English. Additionally, it seeks to know their personal ways of solving problems of comprehension, and more importantly whether they are aware of the English vocabulary and its role to the overall meaning of the text. The questionnaire consists of fourteen closed questions of both a multiple choice type where students have to select one out of several answers, and some of the 'yes'/'no' type. The language of the questionnaire is simple to make it understood to the students. This types of questionnaires, which involve predetermined questions set out in a written form and presented in a very systematic way, are answered by ticking responses or writing in short answers. They are perhaps the most common method of data collection in FL research. Important considerations were taken into consideration in the preparation of questionnaires involve the construction of questions, types of response items.

The questionnaire can be the instrument that can serve as a means of gathering a considerable amount of data in a short period of time. It is not only easy to administer, but it provides a general view of the investigated problem which is difficult to obtain by other ways of investigation. It can be used easily when huge numbers of respondents must be reached .Questionnaires permit the gathering of consistent and appropriate data in a short time.

In this study the questionnaire (see the appendix I) is designed to collect data about the needs of the students during reading comprehension activity. First, it was administered on 13 students of chemistry at the department of technology which represents 100% of our sample. The questionnaire consists of a list of closed questions. The use of closed questions is to facilitate the task for the students to respond to the questions.

This questionnaire is useful in this case in the sense that it offers us the opportunity to discover students' needs. Besides, it gives us full information about how to help them better their reading comprehension skills.

2.4.1.1 Description of the Students' Questionnaire

Students' questionnaire was distributed and its purpose was explained. Thirteen form was distributed, and thirteen were returned, which means all the students responded to the questionnaire. We informed the respondents that the questionnaire was designed to investigate areas of difficulty they encounter in their English reading comprehension class, and to find out their needs in the reading skill.

The students were asked either to tick the appropriate answer for some questions, or to express their personal opinions for others. We tried to explain the difficult or ambiguous words. The students' identity was not asked for since they were not asked to write their names on the forms and this helped them to be objective and frank in answering the questions.

The questionnaire consists of eighteen item and was divided into four sections, each one of these sections served a different but a significant purpose:

Section one:

As a starting point, the first section aims to get general information about the respondents: their sex, their age, living place and the time of starting learning the English language.

Section two:

The main concern of this section was to find out the students' attitudes towards English in general. The first two questions were whether they attend English classes or not, and whether this attendance is obligatory or not. The third and the fourth questions were about the importance of English in their academic and professional lives. Finally, the students were asked about their English language teacher in order to have an idea about his level and background in English. This section ended up with a question about the necessity of learning the English language.

Section three:

In general, the major endeavor of this section was to find out whether the students read scientific documents written in English or no. First, they were asked about their points of view towards the reading skill. Then, they were asked if they ever read scientific documents written in English and the type of documents they need to read more in English. After that, to have a clear idea about the problems students face during their reading comprehension activity, students were asked whether they face problems when reading scientific documents or no and about the type of these problems.

Section four:

The primary goal of this section is to get a clear idea about the students' familiarity with the words they encounter while reading, and to see if the unfamiliar words constitute an obstacle to their comprehension. For more specificity, students were asked about the way they learn new words. Furthermore, student were given the opportunity to express their opinions and views concerning the best way they feel it is more effective to learn English vocabulary since they are directly influenced.

2.4.1.2Analysis of the Results

Before dealing in details with the eighteen questions that constitute the questionnaire addressed to chemistry students, it is essential to emphasise the fact that a certain number of students either have partly answered the questionnaire or have left parts of questions unanswered. Robinson (1991: 12) commented on this by saying: *"the disadvantage is that not many people will bother to fill it and return it."*

One can deduce with regard to the results which have been recorded that those students either have felt embarrassed to answer because of some particular points arisen for discussion or simply because they have not understood the questions. Yet, whenever it is the case, the real percentage of respondents in this situation will be enounced for each question individually as it comes. Finally, the tabulations of the results have been operated only on the questions which have been answered by the respondents.

Student	Age	Sex	Place of living (urban/rural)	First year in learning English
S 1	23	F	U A	M S
S 2	22	F	U A	MS
S 3	24	F	U A	M S
S 4	25	M	U A	M S
S 5	22	F	U A	M S
S 6	24	F	U A	M S
S 7	23	F	U A	M S
S 8	24	F	U A	M S
S 9	23	F	U A	M S
S 10	24	F	U A	M S
S 11	25	F	U A	M S
S 12	23	F	U A	M S
S 13	24	F	U A	M S

Table 2.1: Background information about the participants

The table above shows that 92.31% of our participants are females and only 7.69% are males. Their age ranges from 22 to 25. They are also urban-area inhabitants and started learning English in the middle school. We can conclude that our participants are almost homogeneous and share the same background in terms of sex, place of living,and education.

1. Do you attend English classes?

	N	%
Yes	**13**	**100**
No	**00**	**00**

Table 2.2: Classroom attendance

This is just an informative question about students' attendance of English language classes. All (100%) students said they attend regularly.

2. Attendance to these classes is:

	N	%
Obligatory	**13**	**100**
Not obligatory	**00**	**00**

Table 2.3: Obligation of attendance

This question complements the previous one; all (100%) students said that attendance to English language classes is obligatory .The English language course is compulsory and attendance is required of all the students.

3. To what extent do English courses satisfy your needs in your field of study?

	N	%
Completely	**09**	**69.23**
Partially	**04**	**30.77**
Not at all	**00**	**00**

Table 2.4: Students' attitudes towards the English course

This question rises a critical point of the investigation inquiry. Its aim was to make sure whether the students support or reject the statement made by others concerning the English course and the extent to which it satisfies their needs .The majority (69, 23%) of the students think that the English language satisfies their needs completely, and only (30, 77%) said partially .This leads us to conclude that the students are aware of the important status the English language has for academic purposes (EAP).

4. To be a well qualified engineer, you consider English as being :

	N	%
Necessary	**13**	**100**
Unnecessary	**00**	**00**

Table 2.5: The necessity for English.

This question complements the previous one. It has been devised in order to know the importance of English for this kind of learners. On the other hand, this question suggests that it is possible to get a full appreciation of the motivation of the students related to English learning. It aimed at finding out whether or not the students are really aware of the role the English language has in their field of specialty.

Table 3.5 indicates that 100% of the respondents think that English is necessary for their professional life, especially in the nowadays scientific world. Since a large proportion of students said that the English language is necessary, one can conclude that English is very important for their studies, and so their motivation remains higher. Undoubtedly, this motivation has to be taken into account in terms of specified needs expressed by the students.

5. Your English teacher's background is more literary than scientific:

	N	%
Yes	**13**	**100**
No	**00**	**00**

Table 2.6: The English teacher's background

The aim of this question is to get a clear idea about the English language teacher and to see to what extent the teacher's level is adequate to meet the necessities of the scientific topics presented in the English language classes. All the students said that their teacher's background is suitable to the scientific topics presented in the class.

6. The English language teacher is not familiar with the scientific topics taught in English classes:

		%
Yes	**13**	**100**
No	**00**	**00**

Table 2.7: The English teacher's familiarity with scientefic topics

This question correlates with the previous one, its aim was to gauge the English language teacher's familiarity with the scientific topics dealt with in the class. This is because that all the teachers at the department of technology are subject-matter teachers. The table above reports that (100%) of the students stated that their teacher is familiar with the scientific topics presented in the class .

7. According to you, the reading skill is:

	N	%
Very important	**06**	**46.2**
Important	**07**	**53,8**
Not important	**00**	**00**

Table 2.8: The importance of the reading skill.

In this question the writer felt it was also important to know the students' opinions about the reading skill, and how they would classify it. Six (53, 8 %) students think that the reading skill is very important and seven (46, 2%) think that it is important .It can be said that a great number of the students agree on the importance of the reading skill. In fact, the reading skills are and will be the main skills that students of chemistry in Algeria need, as far as communicative skills are concerned.

8. Do you have to read scientific documents written in English in order to accomplish your academic tasks?

	N	%
Yes	**13**	**100**
No	**00**	**00**

Table 2.9: Reading scientific documents

This question is based on the assumption that the availability of publications written in English, and most of the world's scientific knowledge is available in English. Consequently, Students from various countries in various branches of their fields of study have to read in English in order to accomplish their academic tasks. All (100) of the students said that they have to read scientific documents. They also showed a positive attitude towards reading scientific publications written in English.

9. The type of documents you read most in the English course are:

(More than one answer is possible)

	N	%
Selected texts	**13**	**100**
Articles	**00**	**00**
Books	**00**	**00**

Table 2.10: The type of documents to read.

This question seeks information about the teaching materials in use. On the basis of the results shown in table 2.10, we notice that 100% of the respondents said they deal with selected texts .This indicates that the only teaching materials used in the English classes are selected texts.

10. Do you face any difficulties when reading scientific documents written in English?

	N	%
Yes	**13**	**100**
No	**00**	**00**

Table 2.11: Frequency of reading difficulties

This is just an informative question aiming at finding out whether or not students face difficulties when reading in English. All (100 %) of the students said "yes", and this gives us a clear idea about the students' level in reading comprehension activity. Based on the results above, we can say that students are struggling readers.

11.The difficulties that you face when reading scientific documents are related to:

	N	%
Vocabulary	**13**	**100**
Grammar	**02**	**15.40**
Spelling	**03**	**23.10**

Table 2.12: Most problematic areas for students

This question seeks to identify the students' areas of weakness when reading scientific documents written in English where we find that vocabulary proves to be the most challenging difficulty students confront. All (100%) of the students declare that vocabulary is one of the critical problems they face during reading. Two (15.40 %) referred their problems to grammar and three (23.10%) to spelling. This weakness in vocabulary is

due to either students' background in the previous stages of their schooling or to the lack of serious undertaking of vocabulary at university.

12. For you, most of the words that you encounter when reading scientific documents are :

	N	%
Familiar	**05**	**38,5**
Unfamiliar	**08**	**61,5**

Table 2.13: familiarity with words

The majority (61.5 %) of the students said they are not familiar with most content words while (35,5 %) said the opposite. These results push us to emphasize on vocabulary as a serious problem students face while reading. Besides, we can say that most of the students have a poor vocabulary knowledge.

13.Do the unknown words constitute a barrier to the comprehension of the scientific documents?

	N	%
Yes	**13**	**100**
No	**00**	**00**

Table 2.14: The effect of unknown words to comprehension

This question overlaps with the previous one where students reported their unfamiliarity with most of the words. The table above shows that all (100%) of the students said that unknown words cause a problem to the comprehension of selected text. This leads us to say that students' failure to recognize words and get meaning make them unable to achieve reading comprehension gains.

14. Most of the known words are:

	N	%
Technical words	**09**	**69.23**
Non-technical words	**04**	**30.77**

Table 2.15: The type of known words

This question aims at identifying the kind vocabulary the students have. Nine (69, 23 %) students state that most of the unknown words are technical words whereas four (30, 77) students said that most of the words are non-technical. The reason for this is that students acquire more technical vocabulary in their field of specialty because they used to attend other modules of specialty where they encounter a large number of technical words. As a result, we can say that students' knowledge of terminology in their field of study is rich.

15. To deepen the knowledge of already known words, new words should be learned :

	N	%
Explicitly	**10**	**92,3**
Implicitly	**03**	**23,7**

Table 2.16: Explicit versus implicit instruction

We can see from the table above that Ten (92, 3%) of the students favor explicit vocabulary instruction. Whereas the rest, three (23, 7%) students prefer implicit instruction.This situation leads us to conclude that students have a lack even in reading strategies that help them understand meaning and get information from the selected text. Again, we can also say that using selected texts only as a mean, do not support vocabulary development. The problem in this case is that students spend much time struggling with unknown words rather than acquiring new ones.

16. The way you learn new vocabulary in your English language course is via:

	N	%
Explicit instruction	**01**	**7.7**
Implicit instruction	**12**	**92.3**

Table 2.17: Vocabulary instruction methods

The majority (92, 3%) of students said that they learn new vocabulary implicitly through reading selected texts. The rest (7,7) of students said that they learn new vocabulary explicitly from the teacher's explanation of some specific words. As a result, we can say that the only method that is used to teach new words in English language classes is via implicit instruction.

17. Vocabulary learning/teaching in classroom is part of the curriculum.

	N	%
Yes	**00**	**00**
No	**13**	**100**

Table 2.18: Vocabulary and curriculum

All (100%) of the students said that vocabulary learning /teaching is not part of the curriculum. This leads us to the conclusion that vocabulary teaching is not taken seriously under any methodology. Moreover, no pedagogical applications were implemented and vocabulary acquisition was taken randomly without any strategy.

18. Do you think that the way vocabulary is taught in the classroom is efficient?

	N	%
Yes	**00**	**00**
No	**13**	**100**

Table 2.19: Efficiency of vocabulary teaching

This question was also asked to the teachers to see to what extent students are satisfied with the way they acquire vocabulary. All (100%) of the students report that the way vocabulary is taught in the classroom is not efficient.

2.4.2 Teachers' Structured Interview

Interviews are oral more like conversations. They are widely used when we want to explore people's views, attitudes, experience etc, profundity. The advantage of interviews is their flexibility. In other words, if the respondents encounter problems with the questions, the latter can be explained to them. Moreover, if the structure of the interview is adequately loose, sometimes unpredicted avenues of investigation can be explored.

The structured interviews are interviews that have a very rigid structure. A structured interview is approximately the same as a face-to- face administration of a questionnaire. It involves a set of simple and prearranged questions,. The choice of such an instrument is because:

First, it is addressed separately to members of the sample and the information is completed by the researcher himself; therefore, insuring that all the questions be answered.

Second, it provides an chance to question in detail certain areas of query and it allows better depth of response.

Finally, it enables a researcher to obtain information concerning feelings or emotions in relation to certain questions.

For all the above reason, the structured interview may be regarded as a dependable instrument especially when dealing with small sample.

2.3.2.1 Description of the Teachers' Interview

The structured interview (see the appendix 2) was conducted by the researcher himself. Its purpose is to accomplish the data gathered from students' questionnaire because the teacher is the responsible of the teaching/learning process. The purpose of the interview was explained to the teachers and the process was done by asking set of questions to each candidate on a one-on-one interview. It consists of thirteen items and it was divided into four sections:

Section one:

The first section seeks general information about the teachers at the department of technology: their degree and specialty, their experience in English language teaching, and finally they were asked whether they had any ESP training courses or no.

Section two:

The major goal of this section is to get a clear idea concerning students level in English and the way English language is taught to students of chemistry: students' weaknesses, their background, and their familiarity with the specific topics taught in English classes.

Moreover, teachers were asked whether they have special material designed for students of chemistry, and how they deal with listening, reading speaking and writing skills in terms of importance.

Section three:

In this section, teachers were asked about their use of scientific documents written in English; and the problems their students face during the reading of scientific documents written in English.

Section four:

The primary goal of this section is to gather useful information concerning:
Teachers' views about the way they teach vocabulary.
Teachers' views about the best way to teach vocabulary.
Teachers' views about the best way to make vocabulary instruction more effective.
Teachers' views about the best way to make the English course more useful and relevant to the students needs in their field of study.

2.3.2.2 Analysis of the Results

The structured interview has been administered to a sample of three English language teachers who have taught at the Department of tecnology. A certain number of items that have been proposed are expected to enhance, from the teacher's point of view, the appraisal of the students' needs analysis that we intend to conduct. This has resulted in thirteen questions as what follows:

Teacher	Status	Specialty	Years of experience in teaching English
T 1	FTT	Materials sciences	05 Ys
T 2	FTT	Materials sciences	05 Ys
T 3	FTT	Economics and science management	01 Ys

Table 2.20: Background information about teachers

Q1, Q2, and Q3: Status and qualifications:

The table above shows that all the respondents are full-time teachers. Moreover, the first two teachers are specialized in materials sciences with 05 years of experience in teaching English and the third one is specialized in economics and science management with 01 year of experience in teaching English. This will lead us to say that all the three teachers are not well pedagogically trained to be able to tackle ESP courses with confidence and proficiency.

4. **Did you have any ESP training courses?**

	N	%
Yes	**13**	**100**
No	**00**	**00**

Table 2.21: Teachers' ESP training

The three (three out of three) teachers we have interviewed said they did not have any ESP training courses. This gives us the assumption that English language teaching at the department of technology is not taken very seriously. Teachers are only masters of English and are not well-equipped, in terms of training, to teach ESP to students and to achieve the required skills. The results above enable us to say that all the future teaching problems could be easily related to the teachers training which needs a total reconsidering. Thus, Hutchinson and Waters (1987: 160) state that: *"ESP teachers need to arm themselves with a sound knowledge of both theoretical and practical developments in ELT in order to be able to make the range of decisions they are called upon to make*".

5. **Do you have any special material designed for students of chemistry?**

	N	%
Yes	**13**	**100**
No	**00**	**00**

Table 2.22: Specification of materials

All teachers (3 out of three) said they use only published textbooks. Therefore, it can be understood that they are not encouraged to produce their own teaching materials,

and so respond to the students needs more effectively. All teachers report that they rely entirely on the internet and some magazines and books. Again these results lead us to the fact that teaching conditions and practices is not adequate, which reflects itself negatively on the teaching /learning process.

6. Your students' background is more literary than scientific.

	N	%
Yes	**13**	**100**
No	**00**	**00**

Table 2.23: Students background

This question seeks information about students' level of English at university. This may help us getting clear idea about students' needs which is the basis of any ESP course. In addition, ESP practitioners should put in mind that General English (GE) is the platform of any ESP course.Thus, we cannot teach ESP to students whose GE is not good. All (3 out of three) respondents agreed on that students' level is not good enough.

7. Are the students familiar with the scientific topics taught in English language classes?

	N	%
Yes	**13**	**100**
No	**00**	**00**

Table 2.24: Students familiarity with scientific topics

This question aims at measuring students' familiarity with the scientific topics presented in the class. All (3 out of three) teachers said that their students are familiar with these topics because most of the content's words are technical and have been taught in other modules of their specialty. They added that the problem is with non-scientific words which they always try to explain using French or Arabic.

8. In which aspects of language do you think students are weak?

This question seeks to identify students' areas of weakness in learning English. The area of students 'weakness is dominated by vocabulary. The three teachers said that students struggle with limited poor vocabulary. Reading comprehension and grammar are also considered as areas of weakness. These weaknesses are due to the lack of adequate courses that meet students' needs or to the students' background in the English language in previous grades of their study. This reflects the general lack of interest and motivation.

9. How would you classify the following skills in terms of importance:

	Very important	Important	Not important
Listening			×
Speaking			×
Reading	×		
Writing		×	

Table 2.25: Relative importance of each skill

This question deals mainly with the relative importance of each English teaching skill. Concerning listening and speaking skills, all teachers ranked these skills as not

important. This is mainly because of the lack of teaching materials such as audio-visual aids which are the prime source of interest during listening or speaking activity.

The writing skill is considered as important but all teachers reported that student's level is not good enough to make them compose and write in English. Moreover, this skill is not taken into consideration while preparing any course.

For the reading skill, all the respondents agreed that this skill is very important as far as their students' needs are concerned. Their main reasons are, students are required to read a considerable number of textbooks and research articles written in English and most of the world's scientific and technical knowledge is written in English.

10. Do your students face any difficulties when dealing with scientific documents?

	N	%
Yes	**03**	**100**
No	**00**	**00**

Table 2.26: difficulties students face when reading

This question was also asked to the students in the questionnaire and the aim was to get further insights about students' difficulties when reading scientific textbooks. Two teachers (02out of 03) reported that vocabulary is the only difficulty students face when reading. They added, most of their students struggle with vocabulary so severely that it is impossible to successfully understand the selected text. But one (01 out of 03) reports that students difficulties are related to spelling because students are poor readers.

11. **Do the unfamiliar words constitute a barrier to the comprehension of the scientific documents?**

	N	%
Yes	**13**	**100**
No	**00**	**00**

Table 2.27: The effect of unfamiliar words

This question complements the previous one. Its aim was to emphasize on difficulties students encounter and to what extent the unknown or unfamiliar words prevent the comprehension of the selected texts. All the three teachers agreed on that unfamiliar words constitute an obstacle to comprehension.

12. **To deepen the knowledge of already known words, new words should be learned explicitly or implicitly.**

	N	%
Yes	**03**	**100**
No	**03**	**100**

Table 2.28: Explicit versus implicit instruction

The aim of this question is to find out teachers' point of views concerning vocabulary instruction methods. All teachers think that there is no clear direction regarding

the most effective way to teach vocabulary. They agreed that vocabulary should be taught both explicitly and implicitly. Besides, they refer vocabulary instruction choice to students' level and the type of vocabulary that exist in the selected text. Consequently, we can conclude that any vocabulary teaching method should get the students involved by making the vocabulary learning a thinking activity and providing multiple opportunities for them to the use of words.

13. **Do you have any suggestions for making the English course more effective and more relevant to the student's needs in their field of study?**

	N	%
Yes	**03**	**100**
No	**00**	**00**

Table 2.29: Teachers' suggestions

All the teachers felt it necessary to make some suggestions for making the English course more effective and useful to their students, as being students of scientific branches. Their greater emphasis was to increase the number of hours to enable students to be sufficiently exposed to the target language. They also believe that introducing a remedial course to satisfy their students' needs is the most important suggestion as far as ESP teaching/learning is concerned.

1.4.3 General Discussion of the Results

The major findings of the results above revealed that English language is considered as an important task that students of chemistry at the department of technology should take in order to accomplish their academic and professional careers. In addition, both students and teachers are aware that reading in English is very useful; this is due to the large sum of publications written in English.

Another finding is that vocabulary is one of the most important factors that influence comprehension. Both students and teachers agreed that vocabulary decide comprehension destiny; in other words, comprehension of any text is dependent on how students are familiar with text' content words and how rich students' vocabulary bank is. As a result vocabulary and background knowledge are apparent problem that students face when reading.

Besides, in finding a remedial solution to the problem of vocabulary, teachers think that a combination of several methods is the best solution .They see that there is no best method to teaching vocabulary. Students, on the other hand, felt that having an explicit or direct instruction will help them better acquire new vocabulary and deepen their vocabulary knowledge. They believe that direct instruction of specific word before reading is very useful to comprehend the text.

More importantly, both students and teachers see that vocabulary is not taken seriously and it is not part of the curriculum. This means that there is no methodology to teaching vocabulary in the classroom.

Furthermore, teachers emphasized on having a remedial course to make the English language course more useful and relevant to the students needs. Their suggest includes also increasing the number of hours to make students interaction with English more beneficial and help them better their level of English.

To sum up, the results being discussed in this chapter showed that ESP students have a very weak level in English and this prevents them from achieving good results in English .Then, vocabulary is an important factor to ESP that should receive a high care from teachers, as a principle parts of the teaching situation, and students as major elements of the teaching situation.

2.5 Conclusion

The main concern of this chapter is to test our hypothesis and arrive at comprehensive answers for the questions we have raised at the beginning of the present research. As a first step, we presented our sample of interest. Then, we dealt with the tools we have chosen for data collection. We used a formal questionnaire together with a structured interview as the more suitable means for our research situation. The results obtained revealed that EST students really face difficulties in their reading comrehension class. Furthermore, we found that one way to overcome these difficulties is to make the lessons more focused.

CHAPTER THREE

CHAPTER THREE

SUGGESTIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

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3.1 Introduction

On a practical level, the findings of the study helps gretly to determine instructional actions to be undertaken in this or similar teaching contexts. In fact, the classroom applications are considered to be the most important contribution of this study. Specific instruction should be included into the ESP reading course to make students' reading more successful and help the students succeed in environments where they will have to comprehend academic texts and read an wide amount of material in a short period of time. These are mainly vital in academic fields in which most students have scientific backgrounds and limited level in the linguistic competence. The present chapter seeks to suggest some operational procedures in a form of recommendations which may contribute to improve the learners' reading performance and support them in developing their reading abilities.

3.2 Teaching Methodology

3.2.1 Teacher Training

Putting too much concentration on the learner needs has led to the neglect of teacher needs, particularly in the case of teacher training courses. ESP teachers are isolated both from experts in their students' field and their colleagues in other institutions. They also have difficulties in receiving or sharing information in the field. Therefore, designing teacher training courses is the best solution to this problem. Teachers needs to complete the course effectively (course needs and study skills) and to operate in a full professional role (teaching needs and activities) must be considered .

A model of pre-service ESP teacher training course including both content-based and methodology learning is also advocated. The course involves giving trainees the occasion to evaluate teaching materials on the market, to design teaching materials and evaluate them in their classrooms; to assess the students needs in scientific fields and plan courses appropriate to their needs.

3.2.2 A Proposal for an ESP Curriculum

Both modern trends in language teaching and the finding of this study should be taken into account while designing the curriculum. It should, thus, be based on the following principles:

It should be a document that has an international objectives. It should provide students with a firm foundation of learning and open up universal professional opportunities to them.

It should take into consideration students' needs and societal expectations, and relevant to the intended situations in which ESP will work as specialty. Thus, being

conscious of students' needs is what distinguishes ESP from general English and makes the course more valuable to the learners.

3.2.3 Course Design

Course design which consists clear and specific course objectives should also be conducted. It should also ascertain a list of the skills to be developed either at the end of the course (general objectives), or in a short time (short-term objectives). ESP course design is the result of a active interaction between: the results of needs analysis, the course designers' approach to syllabus and methodology, existing materials, and contextual constraints including government attitude, status of English and the students' motivation

3.2.4 The Importance of Needs Analysis

The landmark of ESP is the learner and his needs. Certainly, only some studies have investigated the learners' needs of Algerian ESP students. We then propose that learners' target and present situation needs to be analyzed. Target situation needs analysis (TSNA) refers to the learners' needs at the end of the course; whereas present situation needs analysis (PSNA) seeks to set up what the learners are like at the beginning of the language course by investigating their points of strength and weakness.

Questionnaires, interviews, and direct observations are the most widely used tools to gather information about the students needs. They can also be supplemented ideally by a test administered prior to the ESP course.

3.3 Vocabulary Instruction

Lexical knowledge seems to be a requirement for the comprehension of the text. Laufer (1989) found that the lexical "threshold level" is 95%. In other words, if the student understands less than 95% of the text words, his/her comprehension of the

text will be insufficient. One of the research hypotheses tested in the present study that was statistically confirmed was related to the students limited vocabulary knowledge and lack of strategic techniques to deal with the unknown words .

For successful reading, learners must be equipped with a solid lexical knowledge in place, they must also process word quickly and automatically and approach new words strategically to learn content matter. The results of the study helps us to recommend the need for various ways both for acquiring new vocabulary and strategically handling unknown words in the text to reach the above mentioned goals. The first can be reached through extensive reading; whereas, the second need a systematic and efficient vocabulary instruction.

3.3.1 Establishing a vocabulary rich environment

A classroom environment concentrating on vocabulary is necessary in building a community of learners with a good vocabulary knowledge. In order to create such an environment, students will need to be aware of the importance of paying attention to words. Creating a vocabulary rich environment can be achieved through many ways such as encouraging students to use the target vocabulary words in the classroom where they share something about their lives, experience, etc. Students will receive praise for producing the target vocabulary words.

Making vocabulary as a part of the course is very needed, and this will guarantee that student vocabulary will get improved. In addition, adopting a combination of methods to teaching vocabulary will facilitate the acquisition of new words and help students enrich their vocabulary package.

3.3.2 Vocabulary Recognition Strategies

A number of strategies are involved in the classroom approaches to develop word recognition skills and cope with the vocabulary load of the texts. The latter involves ‘memory strategies’ to memorize the new vocabulary such as repetition, rehearsal, learning by heart, or ‘retrieval strategies’ to perform and review existing vocabulary such as word meaning recall, and matching words with similar meanings.

In addition to the above mentioned strategies, it is also recommended that in the course of instruction, students should be made aware of a the other strategies to knoz hoz to handle the unfamiliar words in the text such as using a dictionary, guessing techniaues, or choosing to disregard the unknown word if it does not affect text comprehension. This kind of direct vocabulary instruction can help students learn sufficient words to become better readers.

Last but not least, methods should be varied and combined according to the learner's individual needs and preferences because there is no best ;ethod to teach vocabulary.

3.4 Strategic Reading Instruction

Strategy training should be included into courses in order to help students monitor their reading processes and better their reading comprehension.

Strategic reading programme should be based on the examination of a number of variables including:

(i) existing use of strategies prior to instruction,

(ii) (ii) levels of English proficiency,

(iii) age of learners,

(iv) L1 background,

(v) quality of pre-test post-test measures,

and (vi) the length instruction Phakiti (2006).

3.4.1Models of Strategic Reading

Several models of strategic reading instruction have been developed to meet the learners' specific pedagogical needs. A selection of four of the most broadly used models is recommended below.

Reciprocal Teaching Approach (RTA) (Palincsar and Brown 1984). As its name suggests, RTA consists of the students and teachers taking turns in leading a dialogue about the use of strategies while reading a text. Reciprocal Teaching Approach is a comprehension-encouragement activity. RTA also utilizes a model of shifted responsibility with the teacher firstly modeling the kind of behavior which RTA sets out to establish, supporting learners as they adopt the strategies and giving feedback. Meanwhile, the sum of support is reduced step by step and one of the students is nominated the role of group leader. Thus, responsibility shifts over to students who will perform autonomously.

Experience-Text Relaltionship (ETR) (Au 1979). This model focuses on encouraging students to use their background knowledge while reading. The model is composed of three steps:

(i) E: Activating students' background knowledge about the topic of the text to be read by discussion prior to reading.

(ii) T: the task of the students is to read short parts of the text and ask questions on its content to make sure they comprehend what they read,

and (iii)R : relating the content of the text with the students' personal experiences and knowledge.

Transactional Strategy Instruction (TSI) (Pressley and Wharton Mc Donald 1997). In this model, *"learners who construct their own knowledge of subject areas rather than being 'taught' such knowledge has a greater ownership of the material"* (Allen 2003: 326). In this model, students read and talk. Thus, they exchange personal

understanding and individual responses to the passage. Such strategy instruction model emphasizes the reader communication with the text.

The Cognitive Academic Language Learning Approach (CALLA) (Chamot and O'Malley1990). Chamot and O'Malley stated that the distinction between successful and less-successful language learners is that the latter are able to select and coordinate strategies that are suitable to the task than understanding specific strategies. The model offers a five-stage instructional sequence that will help FL students learn more effectively. It involves preparation, presentation, practice, evaluation, and expansion.

Teachers are recommended to introduce such models in their classrooms in order to create variety in their class, enhance students' motivation and promote successful comprehension of texts, we recommend that

3.4.2 Role of the Teacher

The teacher can take a lot of roles in a strategic reading instruction class. The teacher can set up the general context and reading tasks for the students to practice content reading. He can also ascertain reading comprehension strategy training into regular classroom events in a natural and explicit way. S/he can also help students in their identification of current reading comprehension strategies. The role of the teacher is also enquiring about his/her students weaknesses by means of surveys, interviews, think-aloud protocols, face-to-face conversations, or through checklists. S/he can further provide constant supervision and individual counseling for students who face problems. Finally, by using the above mentioned techniques, the teacher can select the strategies required for academic reading.

3.5 Change in the Status of English Teaching

There is a general agreement that English is an international language for communication and for other purposes such as science and technology transmission.

The Department of technology is concerned by these new developments and changes. This perspective suggests that more concentration should be paid to the position of English teaching.

3.5.1 The Role of the Institution

By proposing a set of guidelines or suggestions about what should be done during the English course, the institution the students study in can positively influence the English teaching/learning. The role of the institution can be summarised in many ways: providing facilities and offering a certain number of conditions (timetable, number and size of classrooms). In other words, the institution's contribution refers to the goals pursued by both language teachers and students in their activities.

3.5.2 Sufficient Time Allocated to the English Course

The total time allocated to the EFL course is a very crucial factor to remember when evaluation of the EFL course. Thus, 1h: 30 per week of teaching ESP is not enough in terms of students' needs and demands. This also means that student-teacher contact is limited and this must have an undesirable effect on students' attitudes towards the English language and their interest as a result.

Increasing the number of hours allocated to the English course will make the teacher-student contact more useful, and help interaction among all members of the teaching situation. This interaction makes teachers interact with, and learn more about their students in terms of need, lacks ,and necessities.

Moreover, students will be adequately exposed to English language, and this will make them familiar with the essentials of that language. Then, a proper communication between the student and the teacher will be established. This communication serves as a connection between the two, which provides a better atmosphere for a classroom environment and leads to a positive relationship.

Finally, by rising the number of hours, teachers will create a positive relationship with their students because teachers need to constantly keep an eye on the

student in order to be aware of any difficulties the student may face. Understanding the student's problems, fear, or confusion will give the teacher a better understanding about the student's learning difficulties. Once the teacher becomes aware of the problems, he or she will have more patience with the student, thus making the student feel secure or less confused when learning is taking place in the classroom.

3.5.3 Student's Environment Constraints

In the case of the chemistry student, the environmental aspect of his life should be taken into consideration. for instance, his socio-cultural background which interferes in his studies. In fact, it is difficult to make the chemistry student aware of the functional role of the English language in an environment which favours other languages rather than English. Furthermore, for political or ideological reasons, the practice of foreign languages is sometimes not easy task. Again, this problem has to be sincerely taken into account.

3.5.4 A Remedial Course in General English

Results of the present study led us to conclude that students' level is very weak. As a result, having an ESP course seems to be difficult to them. What makes English for General Purposes different from ESP is that the latter is concerned with students' needs. In this situation we felt that students need EGP more that ESP. Improving students' level in English will help them achieve academic success and make them able to do the ESP course in a very high level.

The English language teacher is a motivator and stimulator .He should support the students' expectations about reading and arise their interest to improve their reading comprehension. He should also motivate students to read more and more English literature to increase their vocabulary level.

Conclusion

The most helpful guidelines for a better learning/teaching of English for Specific Purposes setting where both teacher and students act as active participants in terms of needs analysis, course design, teacher training and reading strategy instruction are likely to be a long and an continuing process; one in which the teacher should be aware of the diversity of learner identities, makes the necessary changes to suit the students' interests and needs during the course.

GENERAL CONCLUSION

GENERAL CONCLUSION

The ability to read academic texts is considered as one of the most important skills that university students need to acquire. Although a large portion of time at university is spent working with written sources of information, a significant proportion of ESP students struggle with reading comprehension.

This study aimed to shed light on the comprehension difficulties that M1 chemistry students encounter when reading in their academic learning area, and depicting the repertoire of vocabulary instruction methods used in order to overcome their difficulties. In an attempt to locate the specific problematic areas that usually block their comprehension, we have asked a critical question of whether vocabulary knowledge affect comprehension. For this aim, we set up two hypotheses as follows: students' difficulties in reading in English may result from the inadequate vocabulary instruction methods; and students' reading problems may be rooted to their poor vocabulary in English.

Before putting our hypotheses into test, we have presented theoretical background about some issues that are relevant to reveal our purpose and to understand better the surrounding setting of our study. In Chapter One, we have discussed the most important aspects of EST and the scientific text. In addition, we have highlighted some of the reading difficulties that are generally linked with learning a science in a F.L situation. We started also with issues about vocabulary by giving some definitions to vocabulary, and vocabulary teaching in ESP context. Besides, definition of reading, types of reading, reading comprehension, factors affecting comprehensions and the correlation between vocabulary and reading are also explained. Our aim was to lay some background information relevant to the practical details of the present thesis.

In Chapter Two, our fieldwork, we have provided thorough description of the questionnaire and the structured interview. The aim of the questionnaire was to report students' difficulties and to see to what extent vocabulary affect their comprehension. The structured interview, on the other hand, aimed at finding out farther insights

about reading comprehension difficulties and the way vocabulary is taught in English classes

Then, we have analyzed the results in order to provide an accurate analysis that helps in obtaining valuable data. Last but not least, we have come out with the final conclusion that the main obstacle of comprehension is actually the poor level of chemistry students in English where we have found that they know little about the English. So, how they are supposed to understand the meaning of a text if they ignore the most of the words in that text.

The statistical analysis did produce conclusive evidence that 100% of the students face reading difficulties in English. In other words, the participants in the study have a low reading proficiency level in English. These results have come to support the statement raised in the general introduction that first year master chemistry students cannot read successfully in English. Moreover, the results have laid out a picture of the components of reading comprehension and clearly revealed the causal relationship between these factors, especially vocabulary knowledge.

The two hypotheses have been confirmed statistically. The first hypothesis confirmed that subjects' reading problems is rooted to their poor vocabulary level and most of their reading problems are related to their limited vocabulary. The second hypothesis also confirmed that student' difficulties in reading in English result from the inadequate vocabulary instruction methods. Students showed non-satisfaction of the way they learn new vocabulary .Moreover, depending on only implicit vocabulary teaching is not enough, a combination of different vocabulary instruction methods seems to be fruitful.

Putting the findings of both tools together, we have found that the results are in our favor and hence confirm our hypothesis. That is to say, these findings have described the students' low level in English, especially their weakness in understanding scientific English. It is this weakness which leads the students to fail in comprehending a scientific passage in English, and thus to answer the comprehension questions. Subsequently, there is no doubt that if these students have good

vocabulary, it would boost their comprehension level. This leads us to say that the low level of the students in GE is a major barrier that indeed prevents them from reading in scientific literature. Consequently, the English course should be reconsidered to include both GE and EST in order to provide the students with a comprehensive content that suits scientific students' needs.

On the light of the results obtained, some proposed pedagogical implications and operational guidelines in the form of recommendations to enhance the learners' reading performance and assist them in developing their reading abilities were proposed. The recommendations were grouped into a number of points involving the importance of needs analysis, the importance of syllabus and course design, the importance of teacher training, and finally the importance of strategic instruction and vocabulary teaching.

The present study has focused on the comprehension difficulties M1 chemistry students at Ammar Thelidji university face during reading academic texts in English for Specific Purposes contexts. A larger-scale study with more participants, more interview and questionnaire items would provide more data, and therefore a more reliable picture and determine whether the findings of the study could be extended to readers at different levels of language proficiency who read texts of different genre and carry out different reading tasks. Nevertheless, these findings indicate that comprehension difficulties vocabulary instruction is a topic that deserves attention in L2 reading research, and perhaps most importantly identifies some specific directions for further research.

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Appendices

Appendix 01

Student's Questionnaire.

Dear student,

I am a magister of English conducting a research entitled: Vocabulary Instruction in Reading Comprehension Classes. We will highly appreciate if you answer the questions frankly. This questionnaire is strictly confidential.

Personal Information:

Age: …….

Sex: **Male** ☐ **Female** ☐

Living place: **Urban area** ☐ **Rural area** ☐

You have been studying English since the:

Primary school ☐ **Secondary school** ☐ **High school** ☐

1. Do you attend English classes?

Yes ☐ No ☐

2. Attendance to these classes is:

Obligatory ☐ Not obligatory ☐

3. To what extent do English courses satisfy your needs in your field of study?

Completely ☐ Partially ☐ Not at all ☐

4. To be a well qualified engineer, you consider English as being :

Necessary ☐ Useful ☐ Unnecessary ☐

5. Your English language teacher's background is more literary than scientific:

Yes ☐ No ☐

6. The English language teacher is not familiar with the scientific topics taught in English classes.

Yes ☐ No ☐

7. According to you, the reading skill is:

Not important ☐ Important ☐ Very important ☐

8. Do you have to read scientific documents written in English in order to accomplish your academic tasks?

Yes ☐ No ☐

9. The type of documents you read most in the English course are:

(More than one answer is possible)

Selected texts	
Articles	
Books	

10. Do you face any difficulties when reading scientific documents?

Yes ☐ No ☐

11. The difficulties that you face when reading scientific documents are related to:

Vocabulary ☐ Grammar ☐ spelling ☐

Others:

……
……

12. For you, most of the words that you encounter when reading scientific documents are :

Familiar ☐ Unfamiliar ☐

13. Do the unknown words constitute a barrier to the comprehension of the scientific documents?

Yes ☐ No ☐

14. Most of the known words are:

Technical words ☐ Non-technical words ☐

15. To deepen the knowledge of already known words, new words should be learned :

Explicitly ☐ Implicitly ☐

16. The way you learn new vocabulary in your English language course is via :

Explicit instruction ☐ Implicit instruction ☐

17. Vocabulary learning/teaching in classroom is part of the curriculum.

Yes ☐ No ☐

18. Do you think that the way vocabulary is taught in the classroom is efficient?

Yes ☐ No ☐

Why?……

……

……

……

……

……

……

……..

……

……

……

Thank you.

Appendix 02

Teachers' Structured Interview

Dear teacher,

I am a magister student of English conducting a research entitled: Vocabulary Instruction in Reading Comprehension Classes. The purpose of this interview is to find out the correlation between vocabulary knowledge and reading comprehension. As you are directly involved in and influence the process of ESP teaching/learning, your opinion is highly appreciated.

Personal Information

1.Your status at the department of technology.

Full time teacher	**Part time teacher**

2. Your are specialized in:**…….**

3. Your experience in teaching English:**…….**

4. Did you have any ESP training courses?
5. Do you have any special material designed for students of chemistry?
6. Your students' background is more literary than scientific.
7. Are the students familiar with the scientific topics taught in English language classes?
8. In which aspects of language do you think students are weak?

9. How would you classify the following skills in terms of importance:

	Very important	**Important**	**Not important**
Listening			
Speaking			
Reading			
Writing			

10. Do your students face any difficulties when dealing with scientific documents?
11. Do the unfamiliar words constitute a barrier to the comprehension of the scientific documents?

12. To deepen the knowledge of already known words, new words should be learned explicitly or implicitly.
13. Do you have any suggestions for making the English course more effective and more relevant to the student's needs in their field of study?

RESUME

La présente étude est menée afin de souligner le rôle du vocabulaire dans l'amélioration du niveau de compréhension en lecture des étudiants de master de chimie à l'université de Laghouat. Notre travail est une tentative de diagnostiquer les zones problématiques qui ont conduit à des difficultés de compréhension en lecture. Par conséquent, nous avons essayé d'identifier les causes de leur apparition dans le premier lieu où nous avons effectivement constaté que ces problèmes sont dus à l'absence d'un vocabulaire riche à la fois en anglais général et anglais des sciences et de la technologie, c'est pourquoi ils ont le mauvais niveau en anglais.