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University of Adrar  
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**MEETING ENGLISH LANGUAGE NEEDS  
OF CIVIL ENGINEERING STUDENTS  
AT THE UNIVERSITY OF ADRAR**

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# DEDICATION

To those who make the ultimate sacrifice  
so that to enable others to learn and grasp the light of knowledge,

I dedicate this humble work.

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## ABSTRACT

The present thesis is concerned with teaching ESP courses to civil engineering students at Adrar University. This choice was motivated by the economic reasons that the Province of Adrar is facing vis-à-vis job opportunities offered to civil engineers. The overall aim of this study is threefold: to investigate students' academic and professional needs, to examine their deficiencies, and to study their Pedagogical Needs so as to bring appropriate English to this specific community. Triangulation of methods is used so that to get reliable data. The analysis of the students' present situation is carried out through questionnaire surveys and a diagnostic test, but the analysis of the target situation is done through interviews only because of the limited number of participants. Pedagogical Needs are investigated by using a questionnaire survey with teachers, semi-structured interviews with field managers, and classroom observation with the students, in addition to a text analysis of a sample of three books from different sub-branches of civil engineering (Geotechnics, Civil Engineering Structure, and Construction Materials). The main findings show that students' performance is low in a considerable number of language items, and they lack also interest in learning English despite being aware of its importance. In academic life, graduate students need basic reading skills so as to apprehend technical vocabulary and short English written texts. In professional life, subject matter teachers need to develop listening and speaking skills so as to participate in international conferences; they also need to enhance reading and writing abilities in order to craft articles. In English speaking companies, professionals need sound listening and speaking skills so that to accomplish everyday tasks and attend meetings while dealing with reports and emails requires good reading and writing competencies. On the basis of the findings, recommendations are suggested concerning the administrative regulations, the ESP practitioner's mission, the students' role, and the syllabus design. Finally, a sample unit of a course is elaborated and future perspectives of this project are highlighted.

**Kew Terms:** ESP, Needs Analysis, Syllabus Design, Civil Engineering

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## **LIST OF ABBREVIATIONS**

BE: Bachelor of Engineering  
CCC: Consolidated Contractors Company  
CE: civil engineering  
CLT: Communicative Language Teaching  
CNP: Communicative Needs Processor  
CTMs: central tendency measures  
EAP: English for Academic Purposes  
EFL: English as a Foreign Language  
EGP: English for General Purposes  
ELT: English Language Teaching  
EOP: English for Occupational Purposes  
ESL: English as a Second Language  
ESP: English for Specific Purposes  
EST: English for Science and Technology  
GDF: Gaz de France  
GTG: Groupement Touat Gaz  
HRMs: Human Resources Managers  
JMP: Journey Management Plan  
LGP: Language for General Purposes  
LMD: License Master Doctorate  
LNOP: Language for no Obvious Purposes  
NA: Needs Analysis  
PNA: Pedagogic Needs Analysis  
PSA: Present Situation Analysis  
TD: Travaux Dirigées  
TP: Travaux Pratiques  
TR: Tecnicas Reunidas  
TSA: Target Situation Analysis  
Ved: Past participle form of the verb  
Ving: Verb in the ing form

# **General Introduction**

## 1. Introduction

Since the outset of the second half of the 20<sup>th</sup> century, the English language has become an internationally recognized lingua franca of communication, business, science, and technology. This omnipresence has given momentum to English Language Teaching in many countries in the world, however, with different sorts of status. It is the first language in some countries, the second one in others, and a foreign language in a third group. Kachru and Smith (2008) classify them into circles when they study the differences and the relationships between them. They use the term *inner circle* to refer to the first set of countries, *outer circle* to the second, and *expanding circle* to the last one. The main differences between these groups stem from the role that this language plays in instruction and communication (Kachru and Smith, 2008).

As far as English for Academic Purposes (EAP) is concerned, Dudley-Evans and St John (1998) use the medium of instruction as a key parameter so as to study academic settings and find that there are two situations which correspond to English as a Foreign Language (EFL) contexts: situations where English is the medium of instruction of scientific subjects and situations where it is just a language module without any clear use. The Algerian situation seems to be part of the second case to the extent that some researchers (Slougui, 2009) argue that English is learned only for future possible doctoral studies or professional careers.

French is the second language and the primary medium of teaching a great deal of scientific fields in Algeria. Yet, in order to pursue the technological development and align with the international standards, English was adopted as a foreign language during the seventies of the last century (Lakehal-Ayat-Benmati, 2008); hence, courses in General English were implemented into middle and secondary schools, and ESP courses were introduced into universities. Pupils study English for seven years: four years at middle school and three years at secondary school, which enables them to continue in the Department of English. However, in other departments including that of science and technology, English is a simple language course taught once a week so long as specialized teachers are available. This situation has led the English module to be neglected, without any definite courses, and left students disinterested.

Adrar University is not an exception; the ESP course, other than the Department of English, is considered as an optional module in the majority of the departments including that of science and technology to which the field of civil engineering (CE) belongs. Students

are presumably required to be able to read English written texts related to their field whereas, there are neither specialized ESP teachers nor predetermined courses which consider their specific needs.

## **2. Background of the Study**

Since 2003 Boumerdés earthquake, the Algerian authorities have given careful attention to civil engineers and their trainings as their role has become prominent, especially in avoiding the risks related to the Building Industry. The latter has been growing by leaps and bounds in the Province of Adrar: more than 515 private and public enterprises employing over 8000 workers, (Direction du Logement de la Wilaya d'Adrar, 2019), 71 designing offices hiring hundreds of engineers (Le Conseil National de l'Ordre des Architectes, 2018). The total funds invested just during the current five years has exceeded 250 billion dinars, stated a chief executive in the Treasury of Adrar. Chinese, Turkish, French, Spanish, and German companies have become interested to invest in the local market due to the increasing demand for accommodation. This open market has fostered the status of English as a primary medium of communication among the technical staff of these foreign companies.

Adrar University CE graduates who are supposed to benefit from the job opportunities offered by foreign companies are not industry ready since they are not fluent enough in English as affirmed the Human Resources Manager at *Samsung Engineering Company*. The managers of the Turkish company *MBD Insaat* brought their own technical staff from elsewhere as they were dissatisfied with the English of their local interviewees. To overcome this communicative handicap, the Chinese based company *Shijaizhang* hires translators instead. On the other hand, in public construction services, training programmes abroad are organised on a yearly basis, but unfamiliarity with English remains an obstacle as stressed the Human Resources Manager at the Department of Housing and Public Equipment (Direction du Logement et des Equipements Publics). Furthermore, the situation of CE teachers and researchers is not better; the problem of English has always been an impediment to scientific production. The majority of them rely either on translators or literacy brokers (Makhloufi & Bouhania, 2018) that prevents them from attending international conferences held in English. So far, there has not been enough scientific examination of this issue and research in the field of English for CE in particular is rather quite missing.

### **3. Statement of the Problem**

The course of English for CE at Adrar University, like many universities in Algeria, is in its best cases, taken as an academic subject taught once a week for one hour and half, but subject modules are exclusively French-based. Because of the lack of ESP teachers, the English course is often given by whoever can fill in. Sometimes, some teachers of the subject matter volunteer to do the task, and in the majority of the cases teachers of General English do the job as part-times. Besides, there is no clear official syllabus except blurred guidelines mentioned in the document referred to as the *canvas*. For this reason, teachers in charge always try to develop their own language materials to fill in this gap. Subject matter teachers tend to give CE vocabulary-based courses; however, teachers of English prefer to give courses of General English. Thus, neither of the two tendencies actually considers the real needs of the learners; which makes them disinterested in learning English.

### **4. Purpose of the Study**

The main objective of this study is to determine and fulfil the academic and professional needs of CE students at Adrar University. This study explores first the current situation of the learners and the actual status of the course. Then, it investigates the necessities of the target situation related to the academic and professional contexts. Afterwards, it determines students' learning needs. The overall aim behind this is to

- determine precisely the language skills needed,
- frame a general outline of a syllabus,
- create a data bank of CE vocabulary,
- and elaborate appropriate language courses.

### **5. Research Questions**

In order to achieve the purpose of the study, the aforementioned statement of the problem is translated into the three following questions:

1. What are the students' views about CE and the English Language?
2. What are the specific students' needs concerning academic life and future professional career?
3. What kind of syllabus and language materials would be appropriate to meet the students' needs?

## **6. Research Hypotheses**

On the basis of the previous questions, the subsequent hypotheses are set as follows:

1. Civil Engineering is an interesting field of study, and job opportunities beckon students to study it. Besides, English is the medium for science and technology and its importance for this field is undeniable.

2. In academic life, graduate students need basic reading skills so that to comprehend technical vocabulary and short English written texts. In professional life, university teachers and professionals working for foreign companies need to have a sound level in the four language skills.

3. An eclectic syllabus that considers students' academic needs as a short-term goal and their future professional needs as a long-term objective can help both boost students' interest in learning English and facilitate the ESP teacher's role in attaining course aims.

## **7. Structure of the Thesis**

The present thesis develops in five chapters. The first one details the theoretical aspects underpinning the topic of investigation; the second covers the methodological aspect. The third chapter is concerned with the examination of the Present Situation Analysis (PSA). The following one has more to do with the Pedagogic Needs (PN) and Target Situation Analysis (TSA). The last chapter interprets the findings into a syllabus and a sample unit of the course of English.

Chapter One sheds some light on the literature review related to this study. Four fundamental parts can be distinguished in this regard. The first part sets ESP in the EFL and ESL contexts by defining some basic concepts. The second part is concerned with Needs Analysis theory. The third has more to do with course design whereas, the last one tackles students' assessment and evaluation.

Chapter Two reviews the methodological aspect of the present thesis. It recounts particularly the various approaches to research methodology in addition to the overall design underlying this study. This part also describes the sample of informants and justifies data collection methods and techniques adopted. Furthermore, a recount of the data collection process and piloting operation is presented. Moreover, special attention is paid to the diagnostic testing for its specific importance to the study.

Chapter Three analyses the results obtained from investigating the students' present situation. It determines students' needs in terms of wants and lacks by using both



questionnaire surveys and diagnostic tests respectively. The criterion related validity of this test is checked before the interpretation of test results.

Chapter Four deals with the prerequisites of the learning context and Target Situation Analysis (TSA). Learning needs are carefully detailed including the CE profile, educational information, and learning environment. However, the target contexts are interpreted in terms of tasks, activities, and a given level of performance that teachers and professionals ought to manifest.

The last chapter concludes the findings by articulating the necessities of the target situation with students' lacks at the present situation without neglecting learning needs. This combination formulates the overall outline underlying the English syllabus. Thus, the latter is developed into a set of recommendations and reforms concerning the status of the English course, elements of the course design, and teaching methods and materials.

# Chapter One

## 1.1 Introduction

Being an international medium of communication and knowledge transfer, the English language and its specific teaching and learning have gained momentum worldwide and in almost all fields as well as a great deal of aspects of human life. Algeria, of course, is not an exception; ESP courses have been introduced at tertiary levels so as to meet specific learners' needs and technical requirements. However, research in English for Civil Engineering is rather quite modest.

Correspondingly, this introductory chapter sets the literature review related to the topic of investigation. It consists of four main parts; each of which deals with a given aspect of English for Specific Purposes (ESP). Basic concepts are defined, major perspectives are tackled, and elementary theories and approaches are presented.

The first part examines ESP as a specific case in the sphere of English language Teaching (ELT). The influence of the different domains of using English is explored via the various types of ESP among which English for Science and Technology (EST) is of paramount importance. The second one examines thoroughly the theory of Needs Analysis; the third considers few course design approaches and steps. The last part highlights the aspect of students' assessment in the ESP enterprise.

## 1.2 English for Specific Purposes

The activity of ESP is part of the general context of English Language Teaching (ELT). However, it establishes itself as a separate and valid activity concerned with preparing learners for using English either for working or studying (Johns & Dudley-Evans, 1991). To understand what ESP really means the term *English for Specific Purposes* is broken down into three entities: *English* + (*for*) *Specific* + *purposes*, and each of which has its own specific conceptual meanings and interpretations.

### A) English

The West Germanic language that was first spoken in early medieval England (English language, 2018) is now no longer the property of the countries in which it is considered the first official language. This reality was fostered shortly after the end of World War Two when English assumed the role of an international language. Since then, the use and influence of English has extended to almost all the international sphere and a big deal of aspects of human life. Being what it is now in terms of diversity, existence, and influence

leads some researchers to state that this lingua franca can be better understood if it is tackled through its role, status, and the purposes it serves in non-native speakers' contexts (Kachru, 2011).

Having said this, it is insightful to study some crucial views to the classification of English language varieties. Therefore, the term variety is generally used to refer to registers of language use, such as English in banking, English in medicine, and English in academic settings. (Basturkmen, 2008). However, an important geographically based classification is provided by Kachru and Smith (2008). According to them, there are at least three types of English varieties worldwide: the first types are used in countries in which English is the primary language of the majority of the population, for instance, the United States, Britain, and Australia. Kachru and Smith use the term *the inner circle* to refer to this category of countries. The second types are attested in multilingual countries where English is used as an additional intra-national and international medium of communication such as in India, Nigeria, and Singapore. These countries are part of what is referred to as *the outer circle*. The third types of varieties are those used in countries in which English is taken as a foreign language; for instance, the countries formerly colonized by France such as North-Africa, Mali, and Niger. The last group is called *the expanding circle* because English is in dispute with French in this region (Kachru & Smith, 2008).

These language varieties have different forms, functions, and literary creativities. Therefore, Kachru uses the term *World Englishes* to refer to all of them (2011). Yet, these last have serious implications on English Language Teaching as, for example, to what English is aimed for. Though the competing standards are still American and British English, some voices are striving for a new perspective toward incorporating the World Englishes paradigm into the academic practices (Kachru, 2011).

As far as ELT is concerned, another perspective to English is provided that considers the role it plays in academic contexts. In this way, Dudley-Evans and St John (1998) take the medium of instruction in educational settings of tertiary level institutions as a key parameter. Thus, they come up with four types of situations in which ESP is taught. First, in English-speaking countries such as the United States and the United Kingdom, all courses are run in English. Second, in former British colonies, English is the second language (ESL) and the official medium of instruction in some African and South Asian countries such as Zimbabwe and Singapore. However, in EFL countries there are two other situations; in the first one of them, scientific fields are taught in English such as medicine and engineering

whereas, in the second one all subjects are taught in the national language and English has no official use. Though, the Algerian context seems to resemble the latter to a great extent, the linguistic status of English has been swinging between the third and fourth situations.

Since the independence of Algeria, the status of English has been ceaselessly changing. Therefore, it was as a second language during the colonial era. Then, it was recognized as a foreign language just after 1962. In the early 1970s, Algerian authorities took a stance of more openness toward foreign languages' teaching and learning; hence, several foreign languages were adopted and implemented into the educational system. However, only English remained as a foreign language and its courses were introduced into tertiary education (Lakehal-Ayat –Benmati, 2008). In 1993, English was upgraded to become the first foreign language and was supposed to be taught starting from primary school grades instead of French (Rezig, 2011). But this project did not proceed as planned and English has been downgraded to its initial status as a second foreign language since 2002. Just two years after, the Ministry of Higher education introduced the “LMD system” as issued in the Executive Decree 04-371 of November. Although ESP courses are taught in almost all tertiary level fields, English is used as a medium of instruction only in the Department of English.

### **B) Specific**

Roughly speaking, the term *specific* in the literature of ESP is most of the time contrasted with its opposite *general*. In other terms, English for Specific Purposes (ESP) is always compared to English for General Purposes (EGP) as discussed, for example, in the comparison made by Hutchinson and Waters (1987). However, the term *specific* itself raises more questions than it answers.

Basically, the term *specific* implies that there is a certain ability to determine both what is included and what is excluded. But several questions at this level need to be answered (Benedictine et al., 2015):

- On what basis should language descriptions be made (functions, topics, disciplines, genres, target situations)?
- How much specific do ESP designers need to be? And about what?
- To what extent can specific be generalized?

Ann Johns (2006) links specificity to the teaching and learning situations on the ground that each group of learners has unique features. And, it is these characteristics which dictate the type of syllabuses, classroom activities, students' assessment and evaluation system to adopt. Dudley-Evans and St John (1998) see that specific individuals need specific courses to meet their specific needs. This, according to them, can be only achieved by using authentic language materials.

Tom Hutchinson and Alan Waters (1987) go even further beyond the specific language materials and the surface features of the target situation when they differentiate between *the end* and *the means*. The end refers to what learners ought to do with language in the target situation, and the means is what learners require in order to reach that level. Hence, they suggest to investigate the underlying competence behind and bring it to the classroom (Swales, 1985).

### C) Purposes

Any foreign language teaching and learning in general is goal or purpose driven (Widdowson, 1983). That is, there are certain goals and aims behind to achieve. Some field experts see that those purposes can best be described as broad or sometimes even not obvious as in the cases of *Language for General Purposes* (LGP), or *Language for no Obvious Purposes* (LNOP) (Trace et al., 2015). However, Widdowson (1983) sees that the difference between purposes in LSP and ESP lies only on the way they are defined. In this regard, he states that the term *purpose* in ESP is "the eventual practical use to which the language will be put in achieving occupational and academic aims" (1983, p. 6).

In this respect, three main features are attributed to the term *purposes*. Firstly, being a training concept, that is, purposes in ESP are clearly defined tasks for which learners seek to have the necessary competence to cope with. Secondly, aims are essentially eventual and practical. These features lead to the third characteristic which is descriptiveness. In other terms, the course design relies heavily on the description of the tasks and communicative situations.

ESP teachers and course designers need to find detailed answers for important questions related to the term *purposes* (Benedictine et al., 2015):

- Whose purposes are to be considered?
- Who can determine these purposes?

- Who decides on the purposes?
- How immediate are these purposes? That is, are they short term purposes or long term ones?

In order to answer these questions and get well-defined purposes ESP specialists rely on both: what is called *Needs Analysis* (NA) and *Register Analysis*. Thus, the contextual investigation of needs and purposes involves all the categories of people related to the teaching and learning environment.

So, what does the combination *English (for) + Specific + Purposes* stand for?

### 1.2.1 Definitions of ESP

One of the most important definitions of ESP is provided by Widdowson who sees that "ESP is a training operation which seeks to provide learners with a restricted competence to enable them to cope with certain clearly defined tasks." (1983, p. 6)

In an attempt to determine ESP through its features Strevens (as cited in Dudley-Evans & St. John, 1998) distinguishes between four absolute characteristics and two variable features; however, Dudley-Evans and St. John (1998) in their extended definition set out three absolute characteristics and five variable ones.

#### A) Absolute Characteristics:

- ESP is designed to meet specific needs of the learners;
- ESP makes use of the underlying methodology and activities of the disciplines it serves;
- ESP is centred on the language (grammar, lexis, and register), skills, discourse and genres appropriate for these activities;

#### B) Variable Characteristics:

- ESP may be related or designed for specific disciplines;
- ESP may use, in specific teaching situations, a different methodology from that of general English;
- ESP is likely to be designed for adult learners, either at tertiary level institution or in a professional work situation. It could, however, be based for learners at secondary school level;
- ESP is generally designed for intermediate or advanced students;

- Most ESP courses assume basic knowledge of the language system, but it can be used with beginners.

Defining ESP in terms of its characteristics shows the extent to which it is difficult to have a very precise literal meaning. Additionally, the large number of variable characteristics compared to absolute characteristics shows that ESP varies enormously in terms of domains, teaching methodologies, age groups, and students' levels.

The three absolute characteristics show that ESP is by excellence a learner centred approach to language teaching concerned with the very specific discipline.

Some features in the variable characteristics are also common in General English language teaching which means that the line between General English courses and ESP courses is blurred and more difficult if not impossible to determine.

In this regard Hutchinson and Waters say

ESP must be seen as an approach not as a product. ESP is not a particular kind of language or methodology, nor does-it consist of a particular type of teaching material. Understood properly, it is an approach to language learning, which is based on learner need. The foundation of all ESP is the simple question: Why does this learner need to learn a foreign language? (1987, p. 19)

### 1.2.2 Types of ESP

ESP, being purposes-driven and embracing an “ever -diversifying and expanding range of purposes” according to Belcher (2006, p. 134) , puts the language domain of use in the heart of interest of any ESP course. This feature leads to an important number of sets of courses or syllabuses; each of which concerns itself with a particular state, for example, studying, working (doctor, engineer, lawyer), or domain of use (technology, business, and tourism). As a result, there might be as many ESP types as the sum of all the possibilities available, for instance, English for Science and Technology, English for Medical studies, English for doctors, English for nurses, etc.

This state of ESP has led to many controversial perspectives to the subdivision of ESP tree. However, there is an overall agreement over a number of distinctive types of ESP. English for Academic Purposes (EAP) and English for Occupational Purposes (EOP) are two dominant branches in ESP since English is primarily needed either for undertaking



studies or fulfilling job-requirements. Another type of subdivision considers the profession as a reference; hence, one can find English for Architects, English for Air-traffic Controllers, English for Technicians, etc. A further distribution of ESP takes into account the field or domain of use and results into the following sub-branches: English for Science and Technology, English for Social Sciences, English for Business and Economics (Hutchinson & Waters, 1987).

### **1.2.2.1 English for Academic Purposes (EAP)**

The term *academic* in the acronym EAP stands, by definition, to all that is concerned with the activity of teaching and learning. In other terms, EAP is a branch within the realm of specific purposes English teaching and learning which paves the way for students to study, teach, and undertake research. In that, Howard sees that EAP "may be defined as English language instruction designed to provide for academic study needs within educational institutions" (Howard R. , 1997, p. 24).

Hamp-Lyons sees that EAP is more than just a teaching approach. By providing a thorough definition he adds that

English for academic purposes (EAP) is not only a teaching approach. It is also a branch of applied linguistics consisting of a significant body of research into effective teaching and assessment approaches, methods of analysis of the academic language needs of students, analysis of the linguistic and discursal structures of academic texts, and analysis of the textual practices of academics. (2001, p. 126)

### **1.2.2.2 English for Occupational Purposes (EOP)**

Specific purposes English teaching and learning may also be job-oriented in the sense that the language might be learned just for the sake of improving particular occupational language skills. This kind, of courses, is often referred to as *English for Occupational Purposes* (EOP) as opposed to English for Academic Purposes. According to Kim

EOP particularly concerns with adult language acquisition as well as with aspects of general training for adult learners; the purpose of EOP training is to enhance workplace performance, with special attention to how adults learn a language to communicate better in job-related contexts. (2008, p. 2)

This definition states three main features related to EOP: being concerned with a specific category of people (adults) is the first one, dedicated for workplace context is the second, and aiming to enhance workers' performance is the third.

### 1.2.2.3 EAP Versus EOP

Despite the fact that the classification EAP versus EOP is widely used in the ESP literature there is no clear cut distinction between the two categories. For instance, "people can work and study simultaneously" (1987, p. 16) as it is stated by Hutchinson and Waters. Moreover, some study and job-related skills may share a great deal of similarities according to Blue, and in this sense he provides a list of professional tasks and study activities which need the same key elements of language skills (Blue, 2001).

Another crucial point which can either bridge and widen or limit and cut the common ground between the two categories is the degree of specificity of the related courses. This issue is highlighted by Basturkmen when he uses the term wide- and narrow-angled ESP courses (2010). In this regard, narrow-angled courses can be identified as those courses which are designed specifically either for very special academic activities or professional tasks only. However, wide-angled course designer may look for more common ground between the two extremes in terms of tasks and activities to meet the requirements of a particular learning situation. Hence, in this last case an EAP course might be designed for academic purposes as short term goals and, at the same time, for professional purposes as long term objectives.

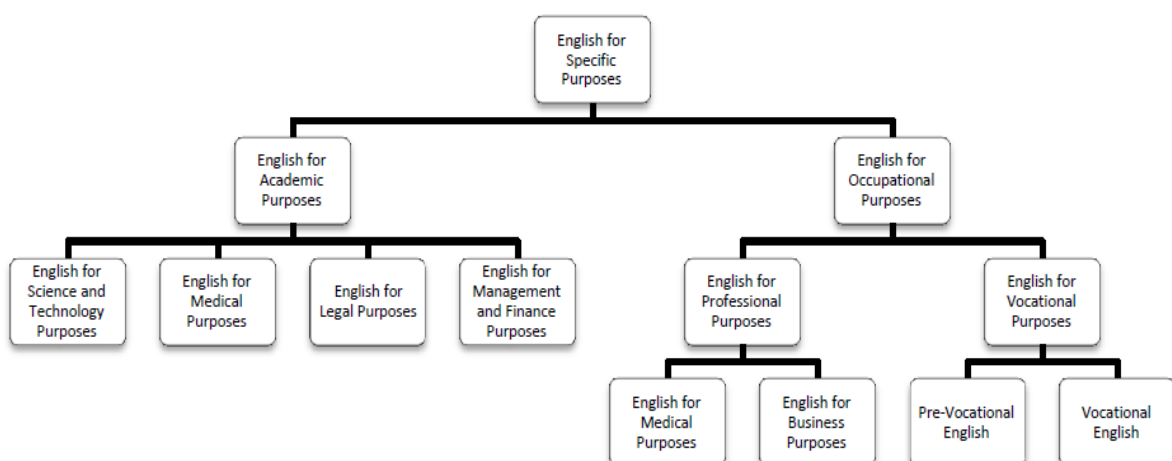


Figure 1.1. ESP classification adapted from Dudley-Evans and St John (1998, p. 6)

### 1.2.3 English for Science and Technology as a sub-branch of ESP

Being the oldest branch of ESP; *English for Science and Technology* has long been used to track the history of ESP (Johns & Dudley-Evans, 1991; Hirvela, 2013). Some scholars consider it as a sub-branch of EAP concerned with science and engineering students (Dudley-Evans T. , 2001). Hutchinson and waters (1987) see that EST is one of the three major branches of ESP, that is, in addition to English for Business and Economics (EBE), and English for Social Sciences (ESS).

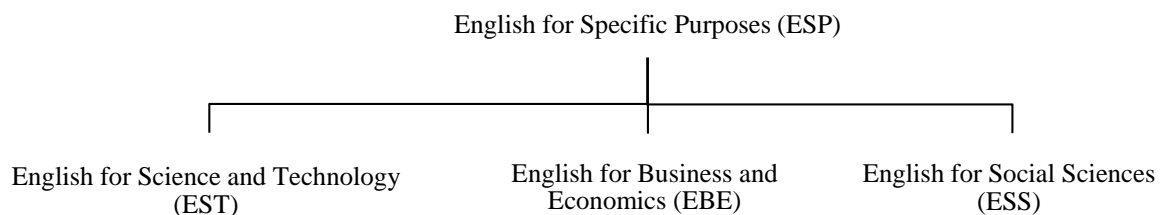


Figure 1.2. The subcategories of ESP adapted from Hutchinson and Waters (1987)

However, according to Swales (1985) EST can be subcategorized in terms of subject matter as shown in figure 1.3.

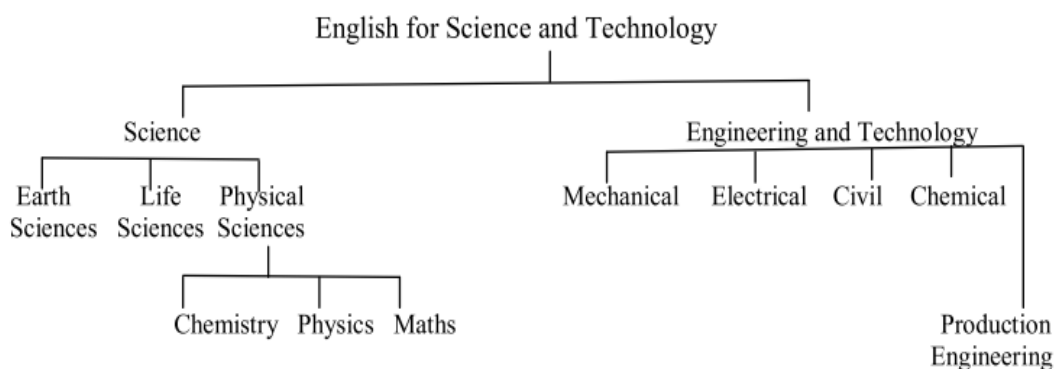


Figure 1.3. The subcategories of EST (Swales, 1985, p. xi)

### 1.2.4 English for Civil Engineering

The assumption underlying this categorization is that each discipline or rather subject matter has its own specific professional English, and academic research in Engineering English has attracted too much interest since the outset of ESP after the Second World War especially during the 1960's. Douglas (2000) affirms that each field has its intrinsic lexical, semantic, syntactic and even phonological features of language. The discipline related

people are seen as being a sort of a community of very specific language users. Hence, they represent a *knowledge community*, that is, these communities, according to Begoña Soneira "...bring together the knowledge of a given discipline thanks to their history and spreading activities; they have acquired certain identifying features and at the same time are responsible for the creation of a distinct way of expression" (2015, p. 8) .

### 1.2.5 Learning context

Generally speaking, learning English in a context where it is used as a *second language* differs to some extent from a context in which it is a *foreign language* (Johns A. , 2006). Differences are due to several reasons but what matters most is how to cultivate and optimize the context of learning.

Ideally, the pedagogical context in EST should reflect the authentic world and enables students to write and speak the specific language of the target situation. This tenet means that all or, at least, the main actors in the pedagogical environment should be taken into account, that is, teachers, students, politicians so that "to make ESP take root, grow, bear fruit and propagate in the local soil"( Holliday as cited in West, 1994, p. 11). In this regard, the sociolinguistic perspective provides a valuable means to describe the non-native English contexts. The sociolinguistic profile used can be generally based on the following questions: "*Who? Said what? To whom? When? Where? For what purpose?*" The answers of these enquiries constitute a ground for the EST practitioner to develop the language learning context.

EST courses, being particularly specific, have led some linguists to suggest several approaches and strategies to optimize the learning context. The latter should consider the specificity of learners, subject teachers, and the subject matter itself. (Benedictine et al., 2015).

### 1.2.6 Methodology in ESP classes

Unlike ELT, the discipline of ESP makes use of the underlying methodology and activities of the disciplines it serves (Dudley-Evans & John, 1998). This added-value leads Robinson to state two distinctive features of ESP methodology: ESP teachers can base students' activities on their discipline, and they can derive tasks from real authentic students' target needs (Basturkmen, 2008). In other terms, ESP brings tasks-related domains to the forefront of the English language classroom (Huhta, Vogt, Johnson, & Tulkki, 2014).

### 1.2.7 EST practitioners

When Swales (1985) uses the term *ESP practitioner* instead of *ESP teacher* he has in mind certain features which distinguish between the two concepts. Parallel to this view, Dudley Evans (Anthony, 1998) mentions five roles ESP practitioners have: a teacher, collaborator, course designer and materials developer, researcher and finally evaluator.

Unlike general language teachers EST practitioners, according to some applied linguists, should have at least some basic knowledge of the course-related subject content (Hutchinson & Waters, 1987). In this regard, Ewer stresses that the EST practitioner should acquire the outline knowledge of the related discipline. Johns and Dudley-Evans (1980) use the term *conceptual structure* to refer to the kind of knowledge that teachers need to know in order to fully understand the way language related subject is used. However, Abbott (1983) takes an opposite stance by claiming that seeking to grasp the subject matter is too time consuming for EST teachers. Hutchinson and Waters (1987), on the other hand, affirm that being open minded and keeping an interest in the subject matter is all that is needed for teachers to have. Ron Howard (1997) sees that it is sufficient for EST practitioners to have just an idea of the basic facts which may take only a couple of hours reading the subject teachers' notes or consulting a colleague. Also of great importance is a common ground of knowledge between the teacher and the learners to insure fruitful communication in the classroom (Hutchinson & Waters, 1987).

Having all this burden to carry, "ESP 'practitioner', needed special skills and was, in some sense, a 'special' teacher, someone at the forefront of their profession" (Howard R. , 1997, p. 115) argues Keith Richards. However, Strevens (as cited in Howard, 1997, p. 115) goes even further when he says "ESP requires superior teachers".

### 1.3 Needs Analysis

The term *Needs* in the realm of ESP is widely used; however, much of the time it is joined either to the term *Analysis* or the word *Assessment*.

*Analysis of needs* or NA was firstly used by Michael West, in India, in the 1920s. The aim, at that time, was to distinguish between two aspects of needs. The first one has to do with the target situation language requirement whereas, the second one has more to do with the learning ways to reach the target goal. After almost 50 years, this term reappeared again in ESP literature and was firmly established in the early 1970s (West, 1994).

The concept of NA has undergone careful scrutiny in ESP literature. Gupta stressed what Richard Berwick (1989) had already said by stating that NA is "a learning or performance gap between the current condition and the desired condition is called a need." (2007, p. 14).

This entails that there is a kind of dissatisfaction with a given situation as opposed to a desired one in terms of learning behaviour or performance (Richards J. , 1990). Another perspective to Needs Assessment is provided by Ken Hyland in his book *English for Academic Purposes*, who sees that

Needs Analysis refers to the techniques for collecting and assessing information relevant to course design: it is the means of establishing the how and what of a course. It is a continuous process, since we modify our teaching as we come to learn more about our students, and in this way it actually shades into evaluation – the means of establishing the effectiveness of a course. Needs is actually an umbrella term that embraces many aspects, incorporating learners' goals and backgrounds, their language proficiencies, their reasons for taking the course, their teaching and learning preferences, and the situations they will need to communicate in. Needs can involve what learners know, don't know or want to know, and can be collected and analyzed in a variety of ways. (2006, pp. 73,74)

Course designers see NA as the first stage in a course development process. Its importance in the field of ESP is highly recognized by numerous researchers and applied linguists (Hutchinson & Waters, 1987; West, 1994; Jordan, 1997). Indeed, Michael H. Long sets it clearly when he says "just as no medical intervention would be prescribed before a thorough diagnosis of what ails the patient, so no language teaching programme should be designed without a thorough Needs Analysis" (2005, p. 1).

For this reason, NA has been undergoing steady changes not only in terms of definition but also in terms of scope and focus (West, 1994). An overall view to NA can encompass the fundamental questions to answer, the steps involved, the methods used for collecting data, as well as some of the most important approaches.

### 1.3.1 Needs Analysis fundamental questions

Being a fact-finding enterprise, NA leads some scholars to consider a number of questions fundamental for any assessment of needs. Hutchinson and Waters suggest five questions whereas, Jordan (1997) lists seven sets of questions; each of which is concerned with a given aspect of syllabus design.

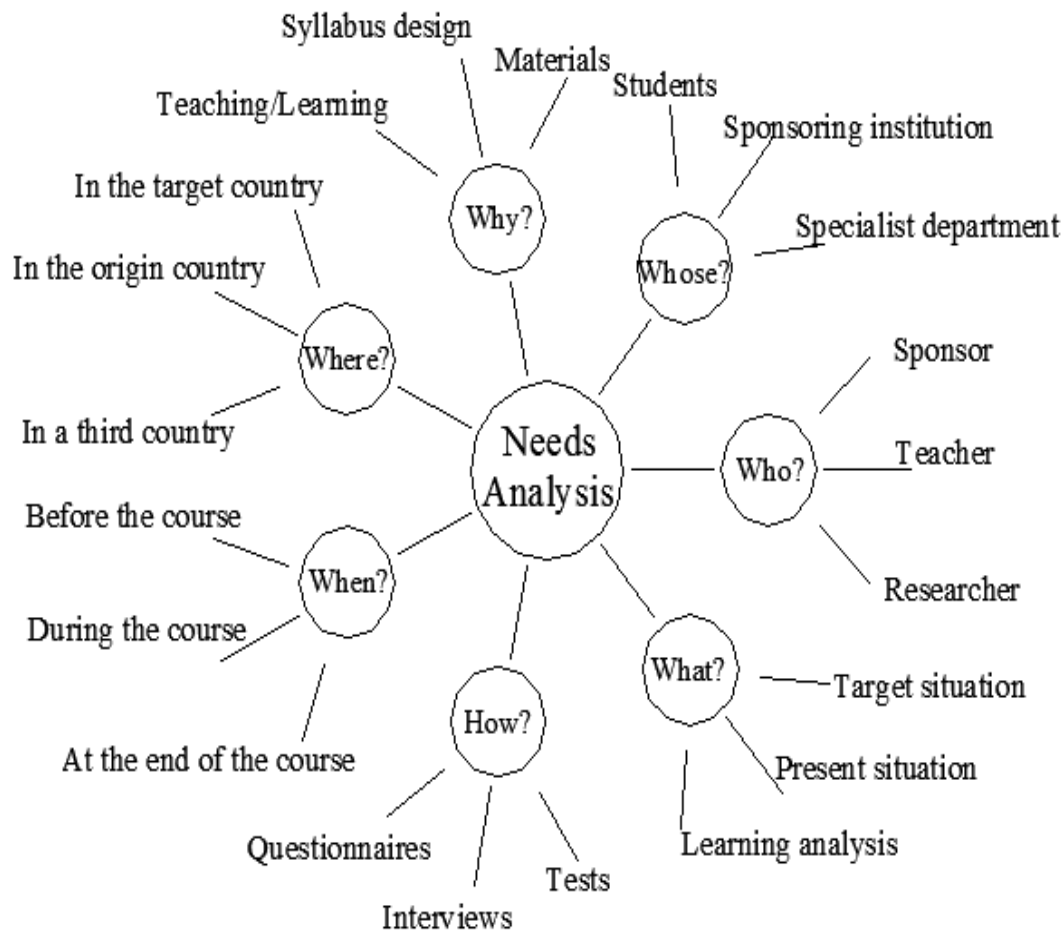


Figure 1.4. Fundamental questions in NA adapted from Jordan (1997)

### 1.3.2 Steps of Needs Analysis

Conducting a NA involves several steps and procedures (West, 1994). In this respect, Schutz and Derwing (as cited in West, 1994) state eight phases; however, Jordan lists a procedure of ten steps. Despite this, the most important step is always choosing the instrument of gathering data.

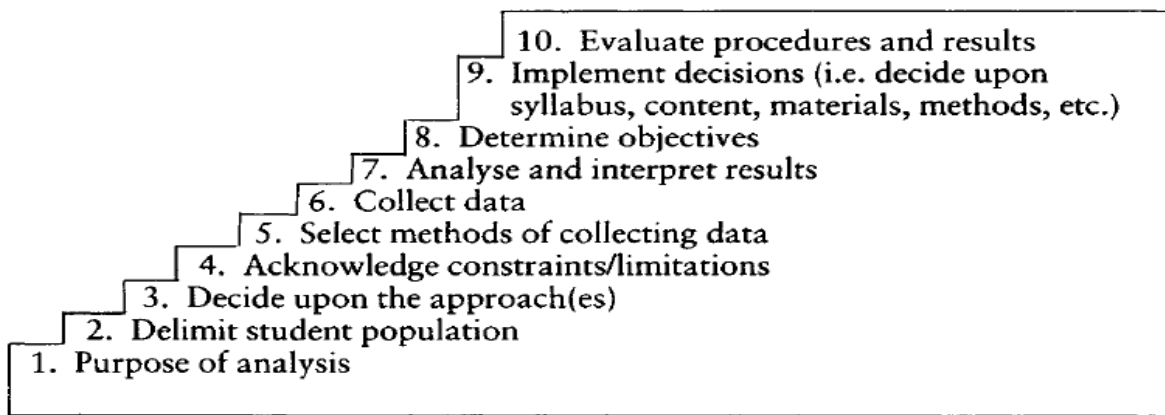


Figure 1.5. Steps of NA (Jordan, 1997; 23)

### 1.3.3 Methods of collecting data

As far as NA is concerned, data gathering instruments vary according to the kinds of information to be collected and the purpose of the NA (West, 1994). Jordan (1997) states 14 methods which employ various techniques that can be summarised in the following list: surveys, case studies, self- assessment, documentation, tests, questionnaires, forms/checklists, interviews, record-keeping and observation. Long (2005) provides a thorough analysis of these methods and clarifies their advantages and disadvantages. Decisions as to the most suitable instrument of collecting data to be used are made with regard to time, money, resources (Jordan, 1997), the scope, and the objective of each case of NA (West, 1994). Equally important, triangulation of data is highly recommended for the analysis of needs to be effective (Huhta, Vogt, Johnson, & Tulkki, 2014), that is, combining qualitative and quantitative methods simultaneously.

### 1.3.4 Approaches to Needs Analysis

During the 1960s, the term *needs* was narrowly translated as just a special language or register; Hence, some scholars emphasized that ESP courses should be based on description of registers (West, 1994). But the concept of NA as known today has undergone several stages of developments; each of which has introduced a particular aspect to the overall perspective.

#### 1.3.4.1 Target Situation Analysis

When Chambers used the term *Target Situation Analysis* (TSA) in his 1980's article, *A Re-Evaluation of NA in ESP*, for the first time, he defined it as “communication in the target situation” (p. 29). In other terms, what is required from learners to do with language in the future target situation (Paltridge & Starfield, 2013). In this case, communication needs



are objective and product-oriented data (Hyland, 2006). Hutchinson and Waters viewed that target needs can be better interpreted in terms of necessities, lacks, and wants (1987). For instance, what learners should know in order to communicate effectively is *necessities*, yet to do so they have a gap to bridge, or rather *lacks*, to make up. However, learners themselves have their own self perception of needs, i.e., *wants*.

During 1978, Munby introduced his model called *Communicative Needs Processor* (CNP) which was a landmark in the history of ESP to the degree that Hutchinson and Waters said that "with the development of the CNP it seemed as if ESP had come of age. The machinery for identifying the needs of any group of learners had been provided: all the course designers had to do was to operate it" (1987, p. 54). Correspondingly, they suggested a set of questions to facilitate the task of investigating the target situation for course designers (1987, p. 59).

#### **1.3.4.2 Present Situation Analysis**

In 1980, Richterich and Chancerel brought to light the concept *Present Situation Analysis* (PSA) for the first time (Songhori, 2008). If the TSA is concerned with the investigation of the future target situation communication needs, the PSA is concerned with the study of learner's present situation before the beginning of the language course.

The sources of information are the learners themselves, their teachers, the institution, the stakeholders, etc. Yet, the data drawn at this level can be *objective* needs or *subjective* needs (Brindley as cited in Nunan, 1998). Objective needs are those which can be diagnosed on the basis of the analysis of personal information about learners such as gender, age, proficiency, previous learning experiences. Subjective needs, on the other hand, are often self-perceived needs, wants, desires, expectations, or other psychological manifestations (Hyland, 2006).

The methods of gathering needs data are a mixture of qualitative and quantitative tools such as questionnaire surveys, interviews, and observation; the information provided should relate to teaching and learning views, resources, ability levels, etc. (Jordan, 1997).

#### **1.3.4.3 Pedagogic Needs Analysis**

Both TSA and PSA define what can be referred to as *the what of a syllabus*. On the other hand, moving from PSA, or let us call it the point *a*, to TSA, the point *b* for instance, is another stage. This last can be seen as *the how of a syllabus*. West (1994) is the first who

proposed the term *Pedagogic Needs Analysis* (PNA) to cover this stage. According to him, this term includes three elements of NA: *deficiency analysis*, *learning needs analysis*, and *means analysis*.

#### **1.3.4.4 Deficiency Analysis**

The term *deficiency* used by West (1994) refers to the assessment of the learning gap (Belcher, 2006) and equals the term *lacks* in Hutchinson and Waters (1987). In other terms, it is the necessities that the language learner lacks and forms the point of departure for any syllabus designer to bridge the learning gap (Basturkmen, 2010; Jordan, 1997).

#### **1.3.4.5 Strategy Analysis**

During the 1980's there was a growing recognition within the teaching profession that specification of the end products must also be accompanied by specifications of methodology, that is, indications on how to reach that end point (Jordan, 1997). Hence, this task was attributed to *Strategy Analysis* which encompasses not only the investigation of the preferred learning styles but also the suitable strategies and teaching methods (Benedictine et al., 2015; Kossakowska-Pisarek, 2017).

#### **1.3.4.6 Means Analysis**

As its name suggests, *Means Analysis* has to do with the social and contextual aspect of the learning environment (Holliday as cited in West, 1994). In other terms, this dimension of analysis examines matters of logistics and pedagogy that Munby's model neglects (West, 1994). It encompasses four main areas: classroom culture, staff profiles, institutional profile, and management assessment (Howard R. , 1997).

### **1.4 Syllabus Design**

The Latin word *syllabus* originally refers to *table of contents* in general (Rajae Nia, Abbaspour, & Zare, 2013); however, this term in the literature of language teaching has been awarded a very precise meaning especially when it is joined with the word *design*. Nunan sees that Syllabus Design is "the selection, sequencing, and justification of the content of the curriculum" (2001, p. 55).

Richards goes even further when he links syllabus design to curriculum development by saying "syllabus design is one aspect of curriculum development but is not identical with it. A syllabus is a specification of the content of a course of instruction and lists what will be taught and tested" (2001, p. 2).

In 1949, Tyler suggested four fundamental questions for a syllabus designer to answer. The first question has to do with the educational purposes, the second one is concerned with the instructional experiences and practices, the third is related to the relationship between teaching and learning, and the last one deals with the course evaluation (Howard J. , 2007).

### 1.4.1 Differences between curriculum and syllabus

Etymologically, the Latin-origin term *curriculum* refers, according to Nunan (1988), to all the planned procedures carried out by the institutions which govern the educational operation of programmes. According to this view, curricula are much wider than syllabuses which are narrow and very limited. As stated by Tyler in 1949, curricula encompass, in addition to syllabus design, teaching methodology, assessment and evaluation (Nunan, 2001). Graves (1996) determines accurately the relationship between the two concepts when she describes the curriculum as a general statement of the philosophy, purposes, design, and implementation of the whole teaching programme of language and the syllabus as a designation and sequencing of a course content.

### 1.4.2 Considerations in syllabus design

Jordan (1997) defines eight elements, involved in the teaching and learning operation, to take into account when writing any language materials. They can be grouped under three categories:

- People: students, and teachers.
- Resources: physical materials, time, and money, i.e., finance.
- Conceptual background: syllabus, and methodology.

When selecting and sequencing syllabus content, Harmer suggests a number of features to take into account upon which decisions are to be made for the inclusion or exclusion of a particular language item (Harmer, 2001).

- a) **Learnability:** It refers to the grading of content from the easier language items to the more complex ones. This feature is highly stressed in the Grammatical Approach to syllabus design.
- b) **Frequency:** This feature is grounded on empirical evidence on the assumption that the most important words and language items are the most frequent ones. Yet, despite the fact that key language items are not always so, this approach is widely used in creating language corpora and designing lexical syllabuses (Willis, 1990).

- c) **Coverage:** This concept has to do with the lexical items which have a wide scope of use in language or can express a large range of meanings (Wilkins, 1976).
- d) **Usefulness:** Reporting language skills and items that are more likely to be faced in real life and early learning situations are of great importance to learners.

### 1.4.3 Wide- and narrow-angled course designs

Basturkmen (2010) relates this concept with two parameters, that is, the course content and the target group of learners concerned. In other terms, the extent to which the course should be specific with regard to the target population. Wide-angled course designs are used when the course content is meant for "a more general group of learners" (2010, p. 53). For instance, courses of English for computer sciences are considered wide angled if the target group includes several subfields such as software programming, hardware designing, network, etc. On the other hand, narrow-angled courses are suitable in case the needs are limited (Dudley-Evans & John, 1998) and/or "designed for a very specific group of learners" (Basturkmen, 2010, p. 53).

### 1.4.4 Syllabus types

There is a wide variety of syllabuses within the literature of ESP (Hutchinson & Waters, 1987). Yet, when taking into account their perception to language teaching, learning, and presentation, syllabuses can be grouped under three main categories. Below is an overall perspective to those categories followed by the most widely used sorts of syllabuses.

#### 1.4.4.1 Analytic versus Synthetic Syllabuses

Basturkmen views that syllabuses can be grouped under two main types *Synthetic Syllabuses*, that is, "language is segmented into discrete linguistic items for presentation one at a time" or *Analytic Syllabuses* in which "language is presented as whole chunks at a time without linguistic control" (2006, p. 21). The synthetic view to language teaching sees the acquisition of language as a process, and the whole structure of language is constructed by the accumulation of the individual parts. On the other hand, the analytic perspective stresses the purpose or language competence for which the learners are taking the course, and on this basis the syllabus is designed (Wilkins, 1976).

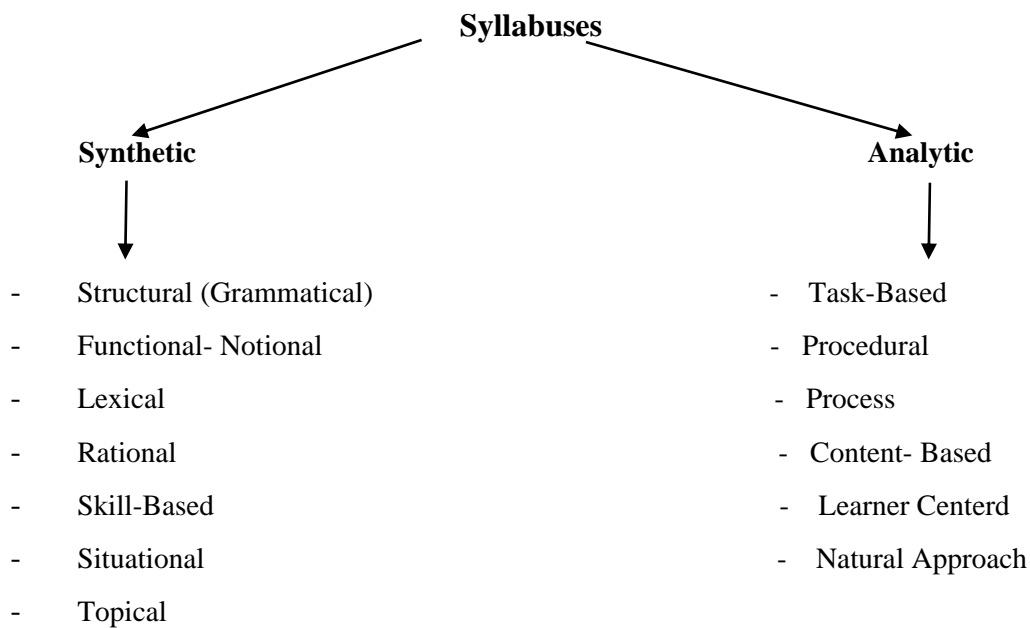


Figure 1.6. Classification of syllabuses (Long & Crookes, 1993)

#### **1.4.4.2 Product-Oriented versus Process-Oriented Syllabuses**

The term *Product-Oriented Syllabuses* is used by Nunan (1988) to refer to the type of syllabuses that put emphasis on the outcomes of learning, that is, the language knowledge and skills which learners ought to acquire after receiving the course. However, *Process-Oriented Syllabuses* are those which focus on the learning operations themselves.

Table 1.1. Product/Process-Oriented Syllabuses

Product-Oriented	Process-Oriented
Structural/formal	Task-based
Situational	Procedural
Lexical	Negotiated
Notional-Functional	Proportional
	Content-based

#### **1.4.4.3 Type A versus type B syllabuses**

The determination and distinction between the two types *A* and *B* are presented by White (1988). Type *A* syllabuses, according to him, are concerned particularly with what should be learned regardless of the learners. That is, learners are treated as passive recipients of pre-arranged language items. Decisions concerning instructions, learning objectives, and learners' assessment are decided in, more or less, an authoritarian way. For this reason, type *A* syllabuses can be best described as being product oriented. On the other hand, type *B* syllabuses are more process oriented in the sense that the way language is learned and actively integrated with learners' experiences are their main concerns. Syllabuses, in this

perspective, are developed through a multilateral process of negotiation between learners and teachers; hence, the evaluation criteria are set after concerted actions.

### **1.4.5 Some widely used syllabuses**

The previous classifications embrace a considerable sorts of syllabuses, but some of them are more widely used than others. The following kinds are some of them:

#### **1.4.5.1 Grammatical Syllabuses**

Viewing language as a set of rules leads to the assumption that learning a language entails necessarily the mastery of those grammar rules. Accordingly, syllabus designers' tasks are to choose and sequence lists of grammatical items, as well as lists of vocabulary items (Richards J. , 2013). Gradation is based on grammatical complexity and only one single item is presented at a time, so that to control input to the learner, as a result of the overall belief that language develops similarly like a building (Richards J. , 2001).

Despite the fact that *Grammatical Syllabuses* are still popular nowadays they have received immense criticism especially on two respects. Firstly, the process of language learning does not necessarily parallel the order adopted in Grammatical Syllabuses as proved from the field of second language acquisition. Secondly, the system of language is so complex to be presented in a linear sequencing (Nunan, 2001).

#### **1.4.5.2 Notional-Functional Syllabuses**

Unlike the grammatical tradition in syllabus designing, David Wilkins (1976) in his book *Notional Syllabuses* stresses that the point of departure for syllabus design should be the specification of concepts and functions that learners wish to express. According to him, *functions* are those communicative purposes realised through language use such as advising, apologizing and complementing. However, *notions* refer to conceptual meanings, for instance, time, space, and duration (Nunan, 2001).

#### **1.4.5.3 Task-Based Syllabuses**

These types of syllabuses are established on the Communicative Language Teaching approach (CLT) (Nation & Macalister, 2010). The syllabus designer carries out NA in order to determine the communicative tasks that the learners need to conduct (Long & Crookes, 1993). The term *task* is a key concept in this perspective; hence, it has language related outcomes, for instance, classroom exercises, as well as non-language-related ones, such as

real-life communicative tasks (Nunan, 2001). Therefore, two kinds of tasks can be identified: target tasks and pedagogical tasks. A target task is what the learner might possibly carry out outside the classroom whereas, a pedagogical task is meant to stimulate the communicative activity inside the classroom (Long & Crookes, 1993). Tasks can also be seen from the input point of view, that is, they can be either reproductive, i.e., require very limited possibilities, or creative, i.e., require the use of the background knowledge in new ways (Nunan, 2001).

#### **1.4.5.4 Lexical Syllabuses**

The basic premise of the Lexical Approach to syllabus design is that the lexis is the building block of language learning and communication (Richards & Rodgers, 2001). Unlike the traditional view to vocabulary as a stock of single words, lexis takes into account word combinations, such as chunks, patterns, and collocations. In this regard, Lewis argues “an important part of language acquisition is the ability to comprehend and produce lexical phrases as unanalyzed wholes, or 'chunks,' and that these chunks become the raw data by which learners perceive patterns of language traditionally thought of as grammar” (1993, p. 95).

With the development in computer technology and concordancing programmes, corpus linguistics studies have focused more on collocations and multi-word units. Lexical items are selected on the basis of frequency, teachability, authenticity, coverage, and similarity (Rajaei Nia, Abbaspour, & Zare, 2013).

#### **1.4.5.5 Multi-approach Perspective to Syllabus Design**

As far as ESP is concerned, several researchers see that no single approach to syllabus design can exclusively meet learners' needs on its own. For this reason, a multi-approach perspective to syllabus design has been suggested by many specialists under several names: Multi-syllabus Syllabus (Hutchinson & Waters, 1987; Jordan, 1997), Integrated Approach (Nunan, 2001), and Multi-dimensional Syllabus (Johnson, 2009).

To borrow Hutchinson and Waters words, “It is wise to take an eclectic approach, taking what is useful from each theory and trusting also in the evidence of your own experience as a teacher” (1987, p. 51). By taking an eclectic approach, the syllabus designers can both overcome the disadvantages of each approach and meet the specific needs of the learners.

## **1.4.6 Stages of course development**

The complexity of course designing leads field-specialists to divide its process into several components or stages. The following are its four main stages

### **1.4.6.1 Determining goals and objectives**

Both goals and objectives in the literature of language teaching and learning refer to the target destination but they differ in several aspects. Goals are often seen as broad statements of target purposes related to a language learning programme based on certain needs. Objectives, on the other hand, are described as specific statements of a state of knowledge, behaviours, or skills that learners ought to achieve by the end of the course (Brown J. D., 1995; Widdowson, 1983; Nunan, 2001) . The task of the course designer is to find a way so that to articulate the objectives designed to achieve the goals desired. In this case, each single goal has to be broken down into several objectives to be achieved, and each objective has three components: the performance component or task, conditions (the circumstances under which the task is to be carried out), and the criterion, i.e., the level of performance (Brown J. D., 1995; Nunan, 2001).

### **1.4.6.2 Conceptualizing course content**

Conceptualizing content entails deciding issues related to what to include, emphasize, and integrate in a language course. Yet, since ESP courses are much more context-dependent several factors have to be carefully considered such as the target population, learning objectives, the teacher's conceptions, the institutional curriculum etc. In addition to this the designer's task is to choose the appropriate ways of categorizing content and integrate them into the course.

With the development of the theories and approaches of language teaching and learning many ways of conceptualizing content have emerged. Kathleen Graves (1996) has outlined some of the potential categories in a *syllabus grid*. This last can facilitate the task of laying out the course content.



<b>Participatory processes</b> <i>Examples:</i> problem posing, experiential learning techniques	<b>Learning strategies</b> <i>Examples:</i> self-monitoring, problem identification, note taking		<b>Content</b> <i>Examples:</i> academic subjects, technical subjects
<b>Culture</b> <i>Examples:</i> culture awareness, culture behavior, culture knowledge	<b>Tasks and activities</b> <i>Examples:</i> information gap activities, projects, skills or topic-oriented tasks such as giving a speech or making a presentation		<b>Competencies</b> <i>Examples:</i> applying for a job, renting an apartment
<b>Listening skills</b> <i>Examples:</i> listening for gist, listening for specific information, inferring topic, choosing appropriate response	<b>Speaking skills</b> <i>Examples:</i> turn-taking, compensating for misunderstandings, using cohesive devices	<b>Reading skills</b> <i>Examples:</i> scanning for information, skimming for gist, understanding rhetorical devices	<b>Writing skills</b> <i>Examples:</i> using appropriate rhetorical style, using cohesive devices, structuring paragraphs
<b>Functions</b> <i>Examples:</i> apologizing, disagreeing, persuading	<b>Notions and topics</b> <i>Examples:</i> time, quantity, health, personal identification	<b>Communicative situations</b> <i>Examples:</i> ordering in a restaurant, buying stamps at the post office	
<b>Grammar</b> <i>Examples:</i> structures (tense, pronouns), patterns (questions)	<b>Pronunciation</b> <i>Examples:</i> segmentals (phonemes, syllables), suprasegmentals (stress, rhythm, intonation)	<b>Vocabulary</b> <i>Examples:</i> word formation (suffixes, prefixes), collocation, lexical sets	

Figure 1.7. The syllabus grid (Graves, 1996;25)

It is noticeable that the outlined categories overlap conceptually; for example, vocabulary is an important part of course content. Developing speaking skills cannot take place without enhancing pronunciation. Since it is impossible to include all these areas it is the ESP practitioner's role to decide upon the categories which fit appropriately the objectives of the desired course.

#### 1.4.6.3 Selecting and developing materials

The specific feature of ESP which strongly rejects one-size-fits-all approach to language teaching and learning makes ESP practitioners in the heart of the battle of producing language materials for each specific subject area or particular learners. In order to ease the burden of writing materials, Hutchinson and Waters go to the extent that they consider "Materials writing is best regarded as the last resort, when all other possibilities of providing materials have been exhausted" (1987, p. 125).

Block (as cited in Jordan, 1997), on the other hand, takes an opposite stance and regards writing materials as worth time-consuming. He sees that writing materials ensures relevancy, specificity, and keeping language materials always up to date.

The decisions concerning language materials range from collecting a variety of materials, adapting existing materials, and developing new materials (Hutchinson & Waters, 1987). In all these cases four important elements are to be considered (Graves, 1996):

- a) effectiveness in realising purposes,
- b) appropriateness for learners and teachers,
- c) feasibility,
- d) and availability.

On the other hand, material developers need to answer precisely the following three questions (Graves, 1996): Why will the materials be used? How? And by whom?

Language material is the concrete ground on which the adopted theoretical approaches to teaching and learning are reflected. For instance, advocates of pro-content-based courses view the issue of authenticity of materials the most important (Carver, 1983). But, process-oriented approaches tend to favour materials which contain interesting texts, enjoyable tasks, so that to stimulate the learning process. However, some researchers prefer for core materials to be flexible so that to be used as a basis for cultivating several skills and competencies (Graves, 1996).

#### **1.4.6.4 Organization of contents and activities**

One of the most important perspectives to content organization is provided by Kathleen Graves (1996). According to this view, two complementary principles of organizing course content are used at the micro level, i.e., for each lesson. These are sequencing materials through building or recycling. Building course content means organizing tasks and activities in one of two ways: from the simple to the complex such as in grammar; for instance, simple sentences are taught first than more complex ones afterward or from more concrete to more open-ended activities, that is, analysing a paragraph, for example, and then producing a paragraph in the same way.

Recycling language materials, on the other hand, means that the same material is tackled from several facets. For example, a passage used for reading comprehension may be reproduced again in a writing exercise. The assumption underpinning this method is that recycling increases learners' ability to understand and use the language materials.

At the macro-level, course organisation frames language materials in terms of definite spans of time. Yet, the overall organisation can be approached in two ways: as a cycle or as a matrix (Graves, 1996).

In the cyclical approach, the activities follow a consistent sequence of a regular cycle. However, the matrix approach allows more freedom for teachers to select the tasks, with regard to the allotted time, parallel to the course progression. Yet, using both of them is not mutually exclusive; thus, the approach to adopt is dictated by the teacher, learning situation, and type of activities.

## **1.5 Evaluation**

Roughly speaking, evaluation can be seen as "a matter of judging the fitness of something for a particular purpose" (Hutchinson & Waters, 1987, p. 96). In teaching and learning situations, the objective can be to determine the effectiveness of a course so that to improve it or provide stakeholders and policy makers with course-related information (Graves, 1996). Course development stages, teacher's role, students' role are all subjects for evaluation before, during, and after the teaching stages (Nunan, 1988). Thus, this can be achieved through several ways, such as classroom observations, informal conversations, questionnaires, oral and written input from students, and even teachers' reflection (Nunan, 1988). Hutchinson and Waters (1987, pp. 97-104) suggest an evaluation plan of four phases and an extensive checklist for material evaluation.

### **1.5.1 Language testing**

Language tests are meant to gauge the abstract state of language knowledge, i.e., to assess what is originally impossible or in best cases too difficult to accurately define. Despite this, they are among the most important measurement instruments which enable teachers to elicit several kinds of information concerning language learners. Bachman argues that "an educational test is a measurement instrument which is designed to elicit a specific sample of an individual's language behaviour" (1990, p. 20) whereas, Sárosdy views that "Language tests provide the means for focusing on the specific language abilities that we are interested in" (2006, p. 132). Actually, it is the pedagogical purposes which determine the kind of information is looked for (Henning, 1987; Brown J. , 1996). In fact, this last might be diagnostic, descriptive, or evaluative (Harmer, 2001).

## 1.5.2 Criteria of good tests

A language test, as any psychometric tool, should fulfil some criteria in order to be used for which it is designed. Some experts emphasize that a language test should, at least, accomplish three important features: validity, reliability, and practicality (Coombe, Davidson, O'Sullivan, & Stoyhoff, 2012). However, some use, instead, the term *test-usefulness* to determine the qualities that a good test should have (Bachman & Palmer, 1996; Fulcher & Davidson, 2007). From their perspective the model of test usefulness comprises six test qualities: construct validity, authenticity, inter-activeness, impact, reliability and practicality (Bachman & Palmer, 1996).

### 1.5.2.1 Reliability

Reliability is defined as "the extent to which a test produces consistent scores at different administrations to the same or similar group of examinees" (Farhady, 2012, p. 39). Theoretically speaking, a reliable test is the one which produces the same scores to the same group at different occasions (Heaton, 1990); yet in practice, test results are rarely free from influencing factors such as physical and psychological conditions, or even some in-test issues like test construct items for instance (Farhady, 2012).

### 1.5.2.2 Validity

The most important characteristic of a test is, certainly, its validity (Bachman & Palmer, 1996; Coombe et al., 2012). It is often defined as "the extent to which a test measures what it is supposed to measure" (Farhady, 2012, p. 38). In other terms, if a test is meant to measure reading ability of learners, it cannot be used simultaneously as a valid tool to refer to learners' ability of listening. Thus, one single ability should be measured by a test, and nothing else; otherwise, the test loses its validity (Heaton, 1990; Henning, 1987).

The concept of test validity is often conceived as a multi-faceted criterion, that is, it has several important validity qualities. Although this concept has undergone careful examination and development (Benedictine et al., 2015), the most important ones remain the following types: face validity, content validity, criterion-related validity, and construct validity (Farhady, 2012; Bachman & Palmer, 1996).

**A) Face validity**

This quality of validity has rather more to do with the physical appearance of the test (Benedictine et al, 2015). It is "the extent to which the physical appearance of the test corresponds to what is supposed to measure" (Farhady, 2012, p. 38). For instance, if a test is designed to measure learners' reading comprehension ability, items related to this particular ability should be included in the test construct in order to ensure high face validity. Nevertheless, this quality is not a determinant kind of validity, that is, low face validity tests can be valid by other criteria. Despite this, language testers should neither ignore it nor give it too much concern (Farhady, 2012).

**B) Content validity**

Since it is almost impossible to include all the content of the language material taught in a test construct, the issue of sample representativeness is important (Benedictine et al., 2015). Content validity is considered as "any attempt to show that the content of the test is a representative sample from the domain that is to be tested" (Fulcher & Davidson, 2007, p. 6). Thus, it links between the two contents, that is, that of the test construct and that of the language material object of the test. Unlike face validity, the latter is crucial for the general test validity (Farhady, 2012) , and by carefully analysing the test table of specifications, high content validity can be achieved (Heaton, 1990).

**C) Criterion-related validity**

The concept of *criterion-related validity* suggests comparing the newly established measurement tool to a criterion measurement tool. This last, the criterion measurement tool, is a test that its reliability and validity are already defined. In other terms, in order to claim that the new test is valid test takers should get, approximately, the same scores in both tests. Thus, criterion-related validity can be seen as "the correspondence between the scores on the newly developed test and those of the criterion test" (Farhady, 2012, p. 38). In this regard, four features are to be mentioned:

- This type of validity is determined empirically unlike content and face validity.
- The criterion measurement tool should be a valid and reliable test on itself, such as TOEFL, and IELTS.
- The validity of a newly developed test is tightly linked to the validity of the criterion test.
- Both tests should have the same purpose.

### **D) Construct validity**

It is the most important type in the validity family according to Bachman and Palmer (Fulcher & Davidson, 2007). In the psychometric field, the term *construct* pertains to the person's *mental ability*; Alderson thinks of it as being "a psychological concept, which derives from a theory of the ability to be tested...Constructs are not psychologically real entities that exist in our heads. Rather, they are abstractions that we define for specific assessment purpose" (Alderson, 2000, p. 118).

What differentiates this concept from the others is that, first, it is theoretically measurable, that is, the construct should be linked to specific observable features which enable testers to make decisions; second, any construct can have relationships with several different constructs (Fulcher & Davidson, 2007). However, construct validity has more to do with the interpretations that one makes on the basis of test results rather than the test itself. In other terms, construct validation is the process through which test developers seek to answer the question: to what extent can we justify the test interpretations? This process includes all the elements of validity family as one evidential basis or a *unifying concept* (Bachman L. , 1990). For this reason, Messick says "construct validity is indeed the unifying concept that integrates criterion and content considerations into a common framework for testing rational hypotheses about theoretically relevant relationships" (as cited in Bachman L. , 1990, p. 256).

#### **1.5.2.3 Authenticity**

The concept of *authenticity* in the current testing literature overlaps with the term content validity in the traditional view. Therefore, it pertains to the extent of correspondence between the language test task features, on the one hand, and the characteristics of the language use in the target domain, on the other hand (Bachman & Palmer, 1996). Authenticity stems its importance from two main facts. First, it investigates *the generalizability* of score interpretations which falls into the scope of construct validity. Second, test takers perceive test relevance with regard to their domain of language use (Bachman & Palmer, 1996).

#### **1.5.2.4 Interactiveness**

Bachman and Palmer (1996) see that the way a test taker interacts with a test task can potentially involve three cognitive characteristics: language ability, topical knowledge, and affective schemata. In their view, language ability is thought of in terms of a combination of

two components: language knowledge and strategic competence. This last, the strategic competence is a set of metacognitive strategies which enables the use of language knowledge (the domain of information in memory) to interpret and create discourse in language use. Topical knowledge, or real-world knowledge, is "the knowledge structures in long-term memory" (Bachman & Palmer, 1996, p. 65).

Affective schemata can be seen as the emotional correlates of topical knowledge which provide the assessment background in terms of previous experiences in similar situations. Having set out these components, Bachman and Palmer see *interactiveness* as "the extent and type of involvement of the test taker's individual characteristics in accomplishing a test task" (1996, p. 25).

#### **1.5.2.5 Impact**

This concept is one of the features that have long been neglected in the traditional perspective of language testing literature (Akbari, 2012). It refers to "the wider effect of tests on the community as a whole including the school" (McNamara, 2000, p. 74). Messick pinpointed to what he called *consequential validity* to refer to a similar concept (Fulcher & Davidson, 2007). Bachman and Palmer (1996) view that the impact that a test has affects two levels: a micro level, i.e., individuals, such as test takers, teachers, and decision makers; and a macro level, i.e., society as a whole and education system. The micro level effect of tests on teaching and learning, inside the classroom is sometimes referred to as Washback (Akbari, 2012) or washback validity (Benedictine, Macquarie, & Moore, 2015).

#### **1.5.2.6 Practicality**

Unlike the aforementioned test qualities, *practicality* pertains to the necessary resources required for implementing the test (Bachman & Palmer, 1996). It refers to "the facilities available to test developers regarding the development, administration, and scoring procedures of a test" (Farhady, 2012, p. 42). In that, it includes equipment, time needed for setting, administering or marking the test (Sárosdy, Poor, & Vadnay, 2006), i.e., a balance must be established between the required resources and the available ones (Bachman & Palmer, 1996).

### **1.5.3 Usefulness evaluation**

In order to assess the usefulness of a test some researchers set up a list of questions for test developers to use in the evaluation of test qualities (Bachman & Palmer, 1996). Although

this list is not all-inclusive, it can be a helpful starting point to define a finite list of parameters and questions so that to set a balance between the different levels of test qualities of usefulness. In order to facilitate the task for test designers, these questions are presented in the form of a checklist of three columns. The first column embraces the questions, the second one indicates the degree of satisfaction, and the third is meant for explanation (see Appendix A).

#### **1.5.4 Test types classification**

Choosing the appropriate language test involves making a number of fundamental decisions. The types of language tests are often classified according to several distinctive features, such as the content, purpose, frame of reference, scoring method, and testing method. Bachman (1990) details thoroughly the different types of tests (see Appendix B).

#### **1.5.5 Different types of tests**

Each type of tests has a determined purpose, and a particular kind of information to elicit, and this of course differentiates one type from another. Accordingly, choosing the appropriate test type relies heavily on relating the test purpose to the decisions to be made. Having said that, two families of tests can be distinguished: standardized tests, and classroom ones (Brown J. , 2012).

##### **1.5.5.1 Standardized tests**

These tests are often large scale and general assessments that are carried out so that to make decisions concerning selecting students for a programme, classifying learners according to their levels, or admission in a particular institution (Brown J. , 2012; Fulcher, 2010). The following three types of tests are the most common ones:

##### **A) Aptitude tests**

Prognostic tests or aptitude tests are often carried out before taking any language course (Heaton, 1990). They are better described as being intelligence tests as they measure the language ability to foresee the future good learners. Students are tested in their native language rather than the target one in order to gauge their probable performance in the foreign language (Sárosdy, Poor, & Vadnay, 2006). The complexity of aptitude testing stems from the various factors which determine the language learning aptitude, such as



intelligence, age, motivation, memory, phonological sensitivity and sensitivity to grammatical patterning (Heaton, 1990).

### **B) Placement tests**

The term placement, in testing literature, means matching a learner to the most appropriate class (Brown J. , 2012). Therefore, the main objective sought from these tests is to separate learners into several groups according to their language proficiency so that to be arranged in classes of appropriate levels (Bachman L. , 1990). The previous knowledge of the students is tested in order to obtain general estimate of their language proficiency before the beginning of the course, that is, placements tests are diagnostic in this regard (Hutchinson & Waters, 1987).

### **C) Proficiency tests**

The students' performance of the target situation language tasks is measured via proficiency tests. Accordingly, these tests are not based on precise curriculum or language courses taught to test takers before (Sárosdy et al., 2006). They are similar to achievement tests in being large scale and covering a wide range of skills; nevertheless, the perspectives of both of them are quite different. Proficiency tests look forward to what should be required to perform in the target situation whereas, achievement tests investigate what has been already learned (Heaton, 1990). Test takers can be from different schools, countries and language backgrounds, and external bodies are usually in charge of administering the test (Sárosdy et al., 2006).

#### **1.5.5.2 Classroom tests**

Classroom related-tests are, in contrast to standardized tests, general assessments administered in order to help teachers know the percentage of language materials already known by the students, gauge specific teaching points, and assess students' knowledge with regard to the overall course materials (Brown J. , 2012). Three classroom tests can be distinguished:

#### **A) Diagnostic tests**

This kind of tests is administered at the beginning of a course to determine the students' weaknesses, deficiencies, and language problems in order to know which areas require enhancement to take appropriate remedial action (Sárosdy, Poor, & Vadnay, 2006). They

are often carried out for groups of students rather than individuals (Heaton, 1990). In fact, the information provided from such kind of tests is a good source of data for syllabus design since they are large scale exams and gauge a wide range of language knowledge learnt over a long period of time (Sárosdy, Poor, & Vadnay, 2006). In spite of the particularities of diagnostic tests, sometimes proficiency and achievement tests are used for the same purpose (Heaton, 1990).

### **B) Progress tests**

Referred to as formative assessments (Benedictine, Macquarie, & Moore, 2015), progress tests are the most widely used kind of tests since they are tightly linked to class progress (Heaton, 1990). This kind of tests resemble achievement tests in their objectives, i.e., assessing students' development, but progress tests, instead, are intended to measure shorter periods. A progress test is often based on the language programme already taught but deals with only one or two particular aspects in language (Sárosdy et al., 2006). The informative role that progress tests play enables teachers to become aware of students' weaknesses and strengths (Heaton, 1990).

### **C) Achievement tests**

These types of tests are sometimes referred to as attainment tests or summative assessments in some cases (Benedictine et al., 2015). Achievement tests are intended to measure the amount of language knowledge that the learner has acquired out of a syllabus on a large scale or a long period of time (Sárosdy et al., 2006). Accordingly, these tests are formal, covering almost all the four skills, and standardized most of the time. For instance, annual school examinations, school certificate tests, secondary school examinations, public tests, etc. all of them take the form of achievement tests (Heaton, 1990).

#### **1.5.5.3 Objective testing versus subjective testing**

In terms of scoring system, language tests fall into one of the two following categories: *objective testing*, or *subjective testing*. Objective tests are meant to be subjective-free (Council of Europe, 2001), that is, they refer to the tests which have only one or a limited number of answers (Heaton, 1990; Henning, 1987). Hence, test scoring can be done mechanically and the type of tests take, most of the time, the form of multiple choice items, and filling the gaps.

Subjective testing refers to the way of performance assessment based mainly on human judgment (Broughton, Brumfit, Flavell, Hill, & Pincas, 2003; Council of Europe, 2001; Henning, 1987). That is, they can be evaluated only by human beings with the necessary linguistic skills and knowledge; essays, for instance, are the most common type of subjective tests (Broughton et al., 2003).

#### **1.5.5.4 Norm-Referenced tests / Criterion-Referenced tests**

A Norm-Referenced (NR) test determines students' language abilities with regard to the language abilities of a norm group (Fulcher & Davidson, 2007; Bachman L. , 1990; ). The concept underlying Norm-Referenced testing is that the distribution of Students' language abilities of the theoretical norm group take the shape of a bell curve (Brown J. , 1996). That is, the number of students of low abilities equals that of high abilities, yet the majority of students fall around the average.

Unlike Norm-Referenced tests, Criterion-Referenced (CR) tests are designed to gauge students' performance with regard to certain standards, criteria, or objectives (Seifert & Sutton, 2009; Bachman L. , 1990). These last range from a specific course content to a state programme. Thus, the interpretation of a student's test scores is independent from other students' scores, that is, score distribution is not necessarily a bell-shaped curve (Brown J. , 1996). The main concern of CR tests is the determination of the degrees of mastery of the different components of the domain in question.

#### **1.5.6 Test development**

The importance of test development stems from the importance of the test itself. For instance, the process of test development for a teacher preparing a test as a part of module assessment can be linear, simple, and informal. However, this would not be the case if the test was meant to be used in making crucial decisions at a larger scale. In this case, the process would be formal, highly complex, and involve careful revision.

Despite this, a plan for the development process of any language test, whatever its importance is, has been proved to be very crucial for three reasons. Firstly, test development process planning helps meet the purpose for which the test is designed to be used for. Secondly, if carefully made, planning would endorse the test development process with the appropriate arguments. Thirdly, careful planning rewards the test developer with a great deal of self-satisfaction (Bachman & Palmer, 1996).

The number of steps that a test development process involves varies greatly among language testers (Bachman & Palmer, 1996; Fulcher, 2010; O'Sullivan, 2012). However, the general outline of the test development process contains necessarily three main stages. The first stage is test design, the second one is operationalization, and the last one is test administration. Bachman and Palmer provide a detailed process of three stages subdivided into several steps (1996).

#### **1.5.6.1 Stage One: Planning and designing**

At this stage the overall design of the test is defined by making decisions as to the test purpose, domain of language, test takers, specific ability to test, i.e., the construct, test qualities, and the types of resources.

##### **A) Determining test purposes**

The statement of purpose is an essential starting point for any sort of tests because it states precisely the inferences to be drawn from test scores (O'Sullivan, 2012). Therefore, issues and questions related to the kind of test to use, particular purposes, language abilities to test, etc. should be addressed clearly at this level (Fulcher, 2010; Hughes, 2003).

##### **B) Describing target language use domain and task types**

In case of classroom assessments, the content of tests are usually drawn from the syllabus. However, when testing is concerned with language performance in a particular situation, test task types should reflect the features of the target language use domain (Fulcher, 2010). This relationship defines the authenticity of the test.

##### **C) Defining test takers**

Describing the characteristics of the intended population is a crucial element in the test development process. Thus, this specific point has been the interest of a considerable number of researchers; therefore, Kunnan (Bachman L. , 2000) mentions more than 20 studies investigating academic background, native language, culture, gender, and field dependence of test takers. This is because the description provided helps evaluate the test impact on test-takers (Bachman & Palmer, 1996).

##### **D) Determining the construct**

Test construct has to be carefully determined in order to be measured (Fulcher, 2010). This theoretical definition enables the investigation of the construct validity of the inferences

obtained from test scores and the delineation of the types of test tasks and items during the operationalization stage.

**E) Putting test qualities evaluation plan**

The list of questions set by Bachman and Palmer (1996) is a good example of a test qualities evaluation plan. Therefore, this checklist can help establish a suitable balance between the text qualities, and the acceptable level of each one of them.

**F) Listing resources and allocating their management**

The resources needed for a test fall into three main categories: human resources, material resources, and time. In terms of evaluation, the resources can be better seen from two points of view: the required resources, and the available resources. The relationship between these two groups defines the level of test practicality. Consequently, the ideal management necessitates meeting perfectly the required resources to the available ones.

**1.5.6.2 Stage Two: Operationalization**

Being well defined in the first stage, the main components of the design statement are to be used to develop the test tasks, the blueprint of the test, and the test itself.

**A) Developing blueprint and test tasks**

The blueprint or the document of specifications provides the basis for the rationale of test tasks and items (Fulcher & Davidson, 2007). Therefore, developing a test task involves information concerning content, test structure and organization (Hughes, 2003). The blueprint provides detailed descriptions of test task characteristics unlike the design statement which is theoretical and more general.

**B) Writing instructions**

Test instructions have to be neither too general nor too specific. Besides, test tasks should be clearly and precisely described so that to enable test-takers to accurately respond.

**C) Specifying the scoring method**

There are two crucial steps to follow when making decisions concerning the scoring method: the basis, on which test taker responses will be assessed, in addition to the type of the scoring procedure.

### **1.5.6.3 Stage Three: Test administration**

Unlike the previous stages, test administration is typically a practical step. It involves a great deal of field-work framed in several procedures:

#### **A) Procedures for launching the test and collecting feedback**

Before launching the field testing, the staff has to be ready and the material has to be prepared for the pre-test phase (trying out the test), and the test phase. During these phases, information is simultaneously collected as feedback so that to check the qualities of the test usefulness.

#### **B) Procedures for analyzing test scores**

Analyzing test scores embraces two main points:

- Describing the scores quantitatively, i.e., by using descriptive statistics in order to investigate the reliability of test scores, the validity of test use, and test items difficulty (Hughes, 2003; Bachman & Palmer, 1996).
- Describing the test qualitatively in order to discover any misinterpretations or possible correct answers (Hughes, 2003).

#### **C) Archiving**

This step involves necessarily using computer technology so that to create a data bank (Bachman L. , 2000; Fulcher & Davidson, 2007). All test tasks and items have to be stored in a file format to facilitate retrieval and reuse. Test-related statistical information is also saved in the database for any future use (Fulcher & Davidson, 2007).

### **1.5.7 Scoring methods**

The ultimate aim of language tests is to render abstract abilities and traits measurable, i.e., described in terms of numbers. Therefore, it is the interpretation of these last which enables testers to make decisions about test takers. Choosing the scoring method, though it is part of the operationalization part, encompasses several aspects of the test development process, such as the construct definition, the types of test tasks, resources available, etc. Consequently, there are several approaches as well as a number of steps so that to choose the appropriate scoring of tests.

### **1.5.7.1 Approaches to scoring methods**

There is a considerable number of scoring methods in the field of language testing, and this is due to the various types of test tasks. Yet, according to Bachman and Palmer, two main approaches underpin all of the scoring methods used: scoring as the number of tasks successfully completed, and rating scales scoring methods (1996).

#### **A) Scoring as the number of tasks successfully completed**

Scoring methods in this approach entail the determination of two crucial points:

- 1) The criteria of a successfully completed task: This has to do with the areas to be assessed for instance; language knowledge (grammar, syntax, and lexis), or content knowledge, etc. To put it differently, test items should reflect the particular ability under examination.
- 2) The type of scores, i.e., right and wrong, or varying degrees of correctness.

This scoring method includes two types:

##### a) Selected responses

Taking into consideration the criteria of correctness, two types of tasks use this method. The first type is called *the correct answer*; it is widely used in tests of grammar where only one correct answer exists among several options. The second one is referred to as *the best answer*; it is very common in multiple-choice tests of vocabulary. The reason behind this label is that the best answer is not necessarily the sole answer; however, indeed it is the sole appropriate answer among the options provided.

##### b) Limited production responses

Unlike the aforementioned type in which the number of alternatives is fixed, this type of tasks is meant to yield a range of possible answers. For instance, a test taker might be asked to add a missing grammatical element, such as a verb, an adjective, or a noun to formulate a correct sentence. In this case the number of possible correct answers varies according to the test taker's ability.

#### **B) Rating scale scoring methods**

The scoring of language tasks which involve production skills, that is, speaking and writing, is usually based on judging the quality of responses. In this case, the language ability used to complete a task is defined in terms of levels or *scale of language ability*. Two approaches to developing rating scales can be distinguished:

### 1) Global scales of language ability

Within this approach, language ability is conceived as a single unitary ability. And hence, scoring is also expressed in one single unit referred to as *global rating*.

Nevertheless, language ability may contain a number of sub-elements treated as *hidden components*.

### 2) Analytic scales of language ability

Unlike the previous approach, language ability in analytic scaling is viewed as a combination of several components. Each component is provided with a separate scale, that is, the number of scores equals the number of components. As a result, the overall score is the sum of the individual scores.

#### **1.5.7.2 The steps of choosing a scoring method**

There are three steps to follow when choosing a scoring method so that to relate test scores to the theoretical premise (Bachman & Palmer, 1996):

- Step One: Define the construct theoretically.
- Step Two: Define the construct operationally.
- Step Three: Establish a method for quantifying responses.

#### **1.5.8 Interpreting test scores**

Test results can be interpreted in terms of what learners can do, i.e., Criterion Reference, or with regard to a norm group, i.e., Norm Reference (Miller, L.Linn, & Gronlund, 2009). In both cases descriptive statistics provides teachers with insightful understanding of the language performance of students. With the use of normal distribution theory and central of tendency measures teachers can learn a lot from students' scores.

##### **1.5.8.1 Normal Distribution**

The investigation into the patterns of the scores of language students demonstrates that many of them take the form of a symmetrical shaped-bell curve (Brown, 1996). This theoretical distribution becomes more noticeable if the sample is larger. Similar distributions are attested in graphs of students' ages, heights, and IQ scores as well. In this particular case the mean, mode, median, and midpoint are the same or very similar (Henning, 1987; Brown J. , 1996).



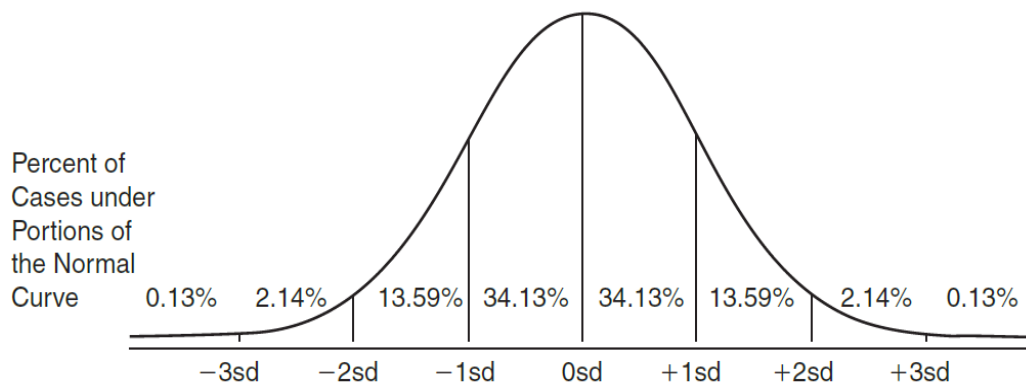


Figure 1.8. The curve of normal distribution (Fulcher, 2010)

### 1.5.8.2 Non-normal Distributions

The distributions of language students' scores are not always necessarily normal; the shape of the curves can be flat, peaked, or scrunched in one direction or another (Henning, 1987). The easy way to define the type of scores' distribution is via the visual examination. Abnormal scores' distributions do not always indicate that the tests do not operate very well; this is simply because the scores' distributions interpretation is tightly linked to the purpose for which the test is designed (Brown J. , 1996).

#### A) Positively skewed distributions

When the mean, median, and mode occur on the left of the midpoint, the curve of scores distribution is said to be positively skewed. Therefore, the curve forms a tail that points towards the high values (Woods, Fletcher, & Hughes, 1986). A positively skewed distribution on a pretest means that the majority of the students do not know the language material and, of course, a suitable course is needed.

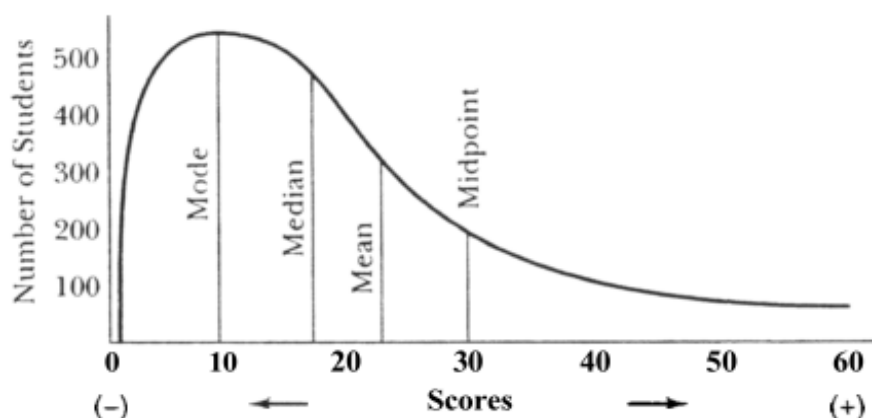


Figure 1.9. Positively skewed distribution (Brown, 1996)

### B) Negatively skewed distributions

In case the mean, median, and mode are on the right of the midpoint, the curve of scores' distribution is seen as being negatively skewed. Hence, the tail of the curve points towards the low values of scores (Woods et al., 1986). This distribution indicates that the majority of the learners attain the objective; for this reason, it is a good indicator for teachers especially after having given the programme of instruction (Henning, 1987).

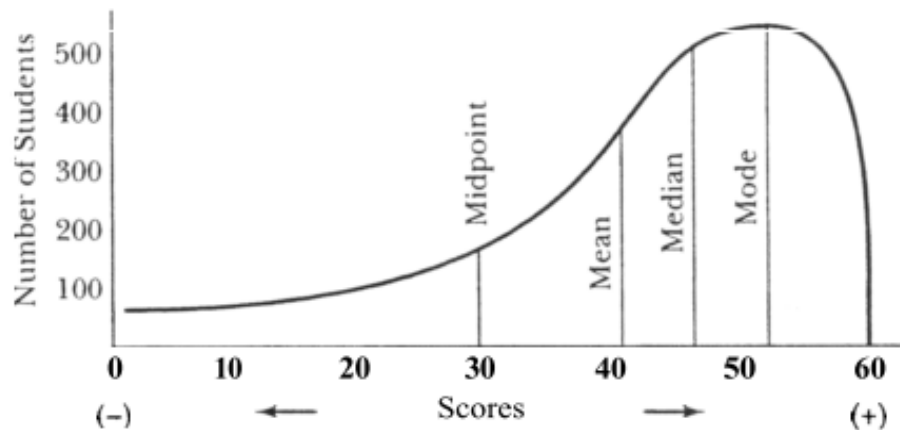


Figure 1.10. Negatively skewed distribution (Brown, 1996)

### C) Peaked distributions

The height and width of the curve are also important to scrutinize when interpreting results. In other terms, a curve might be abnormal if its peak is higher than it should be in a normal distribution, that is, it is too peak, or its width is too big so the curve will be too flat (Brown J. , 1996).

## 1.5.9 Test items

As language tests are made up of individual items (Henning, 1987) these items determine, to a great extent, the success or failure of the overall test as a psychometric measurement tool (Harmer, 2001).

### 1.5.9.1 Definition of an item

Generally speaking, a test item is often perceived as the elementary unit of a language test; for instance, Brown sees that an item of a test is "the smallest unit that produces distinctive and meaningful information on a test or rating scale" (1996, p. 49). Thus, enhancing test items means necessarily improving test qualities.

### **1.5.9.2 Item analysis**

It is defined as "the systematic evaluation of the effectiveness of the individual items on a test" (Brown J. , 1996, p. 50). Therefore, this evaluation helps relate each singular item to the overall test, that is, it investigates how a single item affects the whole test. Inappropriate items, then, should be omitted or at least modified (Hughes, 2003).

#### **A) Item facility**

Sometimes referred to as item difficulty, the term item facility is the percentage of students' correct answers of a test item (Farhady, 2012; Fulcher & Davidson, 2007). To put it differently, this index shows the extent to which an item is easy or difficult. Item facility values are tightly linked to test purposes; for instance, in a proficiency test with the aim of identifying top 10% of test takers the proportion of test items with low facility values should be high. However, when developing a placement test to class participants at several levels facility values should reflect this by taking gradual values (Hughes, 2003). Yet, in public achievement tests and some progress tests the index 0.5 for item facility is preferable (Heaton, 1990).

#### **B) Item discrimination**

The index of discrimination is a coefficient which shows how a test item separates test takers, that is, it differentiates between the good testees and the bad ones (Heaton, 1990; Farhady, 2012). This theory is based on the assumption that test takers of high ability, in question, get more correct answers (Fulcher & Davidson, 2007) . So, good items are those which discriminate between candidates; statistically speaking, items with high discrimination indices. On the other hand, items which all test takers can answer have low discrimination indices since they do not discriminate between the testees. The test reliability parallels test item discrimination indices in the sense that the higher the aforementioned indices are the more reliable is the test (Hughes, 2003).

### **1.5.9.3 Tests of grammar**

There is a wide range of types of items used to test students' awareness of grammar. The following is a list of the most common ones:

#### **A) Multiple choice items**

This type of test items are composed of two parts: the stem and the options. The stem is the main part of the test item and is usually followed by three or four options. These last,

the options, include only one single correct answer; however, the rest are incorrect. The wrong choices should drive test takers' attention away from the right answer; for this reason they are labeled *distractors* (Brown J. , 1996). There are several sorts of multiple choice items which vary in the way the stem and the options are written but many testers prefer the incomplete statements (Heaton, 1990). (see Appendix C)

### **B) Error recognition items**

Error recognition items can be written in two main ways. In the first way, The test takers are given sentences with underlined words or phrases marked as A, B, C, and D, for instance, and asked to identify the part which contains the error. In the second way, the sentence is broken into several fragments by using slashes and the test takers are required to find the error (see Appendix C).

### **C) Completion items**

Unlike the previous types which test learners' recognition ability, the task of completing items is very helpful when measuring test takers' production ability. Test takers might be asked to complete sentences with grammatical, or functional words; however, in reading texts they might be required to add content words (Heaton, 1990). In order to facilitate the task for learners, language testers can provide context, data, or include multiple choice techniques (see Appendix C).

### **D) Broken sentence items**

In this case, items do not test only one single ability such as recognition ability, or grammatical ability, etc. but rather the whole ability in writing full sentences is examined. This is done through giving test-takers a list of words or phrases and, then, asking them to form a correct sentence. In some cases, the testees might also be instructed to make additional changes, for instance, adding prepositions, articles, etc. (Heaton, 1990).

### **E) Pairing and matching items**

Pairing and matching items is more helpful when testing learners' ability of language appropriacy and function. This task is easy to carry out, the testees are given a list of words, phrases, or sentences divided into two columns. The first column is called *the stimulus* and the second one is called *the response*. In case the task is to pair the parts of a short conversation, the stimulus takes the form of questions, for instance, and the response takes

the form of statements. All what the testees have to do is to match or put the mark related to the stimulus in front of the appropriate response (Heaton, 1990).

#### **F) Constructing items involving the changing of words**

This type is a suitable task for testing the grammatical ability of using correct forms of words in general and verbs in particular. Although this type is originally traditional, but it can take several formats. To carry out this type of tasks, test-takers are required to put particular words or infinitive form of verbs in the correct form (see Appendix C).

#### **1.5.9.4 Tests of reading comprehension**

Text reading can take several forms; however, in the core of language teaching and learning, reading comprehension is the most important (S.Madsen, 1983). The problem with testing reading comprehension lies in the fact that receptive skills, and reading is one of them, are difficult to measure because the understanding of a reading test does not manifest overtly. So, language testers' task is to elicit the exact behaviour which demonstrates both: the specific reading ability, and its outcome (Hughes, 2003). Yet, the theoretical fragmentation of the reading skill results in different views to reading abilities. For instance, Heaton (1990) states more than fourteen reading abilities, yet Hughes (2003) mentions nearly twenty seven reading operations (see Appendix D).

#### **1.5.9.5 Tests of vocabulary**

Students' knowledge of vocabulary can be evaluated on the basis of two different criteria: the number of words known, i.e., vocabulary breadth and the level of mastery of those words, i.e., vocabulary depth (Batty, 2012). However, since almost all tests involve, to some extent, learners' vocabulary ability John Read (2012) stresses that "it is also necessary to define the scope of vocabulary testing...tests are intended to focus specifically on some aspect of vocabulary knowledge or use, based on a pre-selected set of words". On the other hand, testing necessitates a careful selection of lexical items, yet in case test takers are taught the same syllabus the task of test development will be quite easy. Thus, vocabulary sampling can be drawn from the syllabus, students' textbooks, reading materials, or lexical errors taken from students' free-written work. Heaton (1990) sites several types of vocabulary tests (see Appendix E).

## **1.6 Conclusion**

ESP, as known today, has inherited not only the linguistic traditions of ELT but also the methodology and the activities of the discipline it serves. Furthermore, its influence encompasses a great deal of domains, fields, as well as several aspects of human life. In this context, this chapter set up the theoretical aspect of this thesis taking into account the specific features of the field of CE in addition to the particularities of the local context of the present study.

The following chapter deals with the research methodology and the general outline of the research design. A thorough explanation of the different techniques and approaches adopted to assess the learners' needs, the target language use domains, and the course materials development.

# **Chapter Two**

## 2.1 Introduction

This chapter accounts for the methodological approach and the overall research design underpinning this study. A comprehensive description and justification is provided for the sample of informants, data collection methods, and techniques adopted in this study. Additionally, the steps of the data collection process are enumerated, including the piloting operation. Specific attention is paid to diagnostic testing by virtue of its importance for the investigation, and a thorough explanation is detailed as to the test design, administration, analysis, and interpretation.

## 2.2 Methodological Approach

The objectives of this study, as they have been mentioned in the General Introduction, are to cater for the academic and professional needs of CE students. This necessitates evaluating learners' proficiency level in English, discovering their attitudes towards this language, and investigating the kind of language required in target contexts. The ultimate aim, as far as ESP is concerned, is to find a way in order to bridge the gap between where they are, in terms of English language competence, and where they ought to be, with respect to their academic and professional needs.

The decision as to the type of strategy to use is taken with regard to the topic investigated, the particular research problem, and questions (Griffie D. , 2012). In order to attain the aforementioned goals and objectives, the researcher opted for the case study research strategy as it "provides a unique example of real people in real situations, enabling readers to understand ideas more clearly than simply presenting them with abstract theories or principles" (Cohen, Manion, & Morrison, 2005, p. 181). Yin (2003) divides case study strategies into three types: descriptive, exploratory, and explanatory whereas, the present investigation restricted only to the description and exploration of the subject study.

Although case studies have long been associated with qualitative methods of analysis, the present case study research is a combination of two methods, that is, it is a mixed-methods approach in the sense that both quantitative and qualitative techniques were used. Questionnaires were operated to elicit quantitative information while, interviews were the primary tools for getting qualitative data.

As to the stages of conducting a case study research, Bassey (1999, p. 66) states an outline of seven steps which can be summarized as follows



- Stage One: Identifying the research problem or hypothesis
- Stage Two: Asking research questions
- Stage Three: Collecting data
- Stage Four: Generating and testing analytical statements
- Stage Five: Interpreting the analytical statements
- Stage Six: Writing the case report
- Stage Seven: Finishing and publishing

Additionally, ESP literature provides an important methodological basis as to the overall framework and the process of Needs Analysis.

### **2.3 Research Tools**

The researcher relied on a number of instruments so that to identify, study, and analyse CE students' needs and evaluate their syllabus of English. In order to elicit more accurate and reliable results, triangulation of methods in collecting data was used. Thus, the tools used are the followings:

1. Observation
2. Questionnaire surveys
3. Semi-structured and unstructured interviews
4. Baccalaureate exam results
5. Diagnostic tests
6. The analysis of middle and secondary school textbooks
7. Literature related to ESP
8. Open access books of CE
9. Academic documents such as the *Canvas*.
10. The experience of the researcher as an expert
11. Job-related documents

### **2.4 Sample Population**

Theoretically speaking, the whole community of CE at Adrar University is concerned with the present study: students, teachers, researchers, field managers, the head of the Department of Science and Technology, and the dean of the Faculty of Science and Technology. Additionally, professional engineers, and Human Resources Managers (HRMs) of some foreign companies were also met to cover some aspects of this study.

### **2.4.1 CE students**

Second year BE students (59 learners) as well as first year Master students of CE (51 learners) of the academic year 2017-2018 were chosen to conduct the practical part of this study. In other terms, these two classes constitute the main sample of the study.

The rationale behind this choice is that the first year in the field of science and technology is a common core, that is, learners are specialized in their second year at university. Consequently, Year Two for learners is their first year as CE students. As a matter of fact, this class is considered as the threshold of CE curriculum and the present study of course. In other words, it is the starting point that defines both the background of the previous experiences and knowledge, and the forthcoming decisions concerning the syllabus design. On the other hand, Year One master class was chosen because it is the first step in the second cycle.

Besides, these classes are the only ones which have English in their curriculum; neither third year BE students nor second year Master learners are taught English. So, the chosen classes were more suitable to conduct classroom observations, diagnostic tests, and few informal interviews.

### **2.4.2 EST teachers**

EST teachers or practitioners constitute a crucial element in the ESP course. Without their assistance the whole EST course is at stake. However, since there were no full time EST teachers at the Department of Science and Technology, the researcher had to ask the students, the head of Department, and some subject matter teachers about EST practitioner' role for CE. The enquiry probes teachers' gender, age, qualifications, experiences, knowledge of technical English, attitudes towards teaching English to CE students, knowledge of CE subject matter, and their official status, i.e., full time or part time teachers.

### **2.4.3 CE teachers and researchers**

The whole teaching staff of CE is composed of 24 teachers and researchers. They are considered within this study because teachers are, to a great degree, aware of the needs of their students. In other words, being what they are allows them to know more about the academic needs of their students. On the other hand, teaching CE at university is also a profession, and it is part of the research scope of study as a target situation.

#### **2.4.4 University managers**

The head of Department of Science and Technology, the supervisors of CE branches (Geotechnics, CE Structures, and Building Materials), the supervisor of the Field of CE, the supervisor of the Domain, as well as the dean of the Faculty of Science and Technology are in the context of university, the *stakeholders*. Accordingly, their perspective on the ESP course is important to take into consideration.

#### **2.4.5 Professional civil engineers**

Professional civil engineers constitute a rich source of information for the qualities of successful engineers, the requirements of their field, and their specific tasks and duties. Actually, there are a variety of sectors, domains, and institutions that involve activities carried out by civil engineers. For this reason, their tasks, needs, working contexts and situations vary greatly. Thus, the researcher had to rely on his own social network of friends and colleagues so that to find informants.

#### **2.4.6 Foreign companies' Human Resources Managers (HRMs)**

Seeking to carry out the Target Situation Analysis, the administrative staff or more precisely the HRMs of some foreign companies were interviewed. Yet, getting an interview with foreign companies' employees had been discovered to be extremely difficult if not impossible due to the problem of access. As a result, the researcher had to look for any alternative to overcome this impediment. One effective way was to use one's own social network to refer to any person working in one of those companies and, of course, willing to help. This type of choosing informants is known within the qualitative research paradigm as *chain referral sampling* or *snowball sampling*, that is, "participants or informants with whom contact has already been made use their social networks to refer the researcher to other people who could potentially participate in or contribute to the study", as stated by Mack et al., (2005, pp. 5,6).

This type of sampling belongs to what is called *purposive sampling*; a method of defining participants according to preselected criteria relevant to a particular research question and a specific situation.

## 2.5 Data Collection Methods

As far as ESP research is concerned, the methods and techniques of collecting data are various (Richards, 2001). However, the methods exploited in this study are chosen with regard to the time allotted, the material and human resources available, the context of the research, and the kind of information needed.

### 2.5.1 Questionnaire surveys

Questionnaire surveys as measurement instruments are widely used in the field of social sciences and applied linguistics as well. Despite their diversity in terms of names and contents, Brown (as cited in Dornyei, 2003, p. 6) still maintains that "Questionnaires are any written instruments that present respondents with a series of questions or statements to which they are to react either by writing out their answers or selecting from among existing answers".

#### 2.5.1.1 Students' questionnaires

The basic premise of this questionnaire survey is to get the information, first of all, from students themselves rather than about them; the idea that is stressed by Hutchinson and Waters (1987). In this context, the questionnaire designed was meant to identify eight different aspects related to the students. The points covered are as follows:

1. Students' background
2. Motives for choosing CE as a major
3. Language abilities
4. Motives for learning English
5. Learning strategies and study skills
6. English language course' content
7. English language teacher's qualifications
8. Teaching methods and materials

Hutchinson and Waters (1987) offered a detailed description for the questions that should be asked when carrying out a Needs Analysis (NA). Despite this, the researcher found that previously used questionnaires are valuable sources of inspiration namely those which were conducted in a quite similar context and for similar purposes. For instance, some items were taken from a questionnaire administered to International Commerce Institute students

(Yahia, 2013). Those items were adopted, adapted to the present situation, and reorganized under several sections.

Another section was implemented so as to link English, as a medium of communication, to the field of CE via students' perception on both of them.

The present questionnaire survey embraces a number of 18 questions and items. It was designed to be filled in less than 20 minutes for this reason only the necessary items were included. The aim is to facilitate the administration process and avoid students' bothersome.

### **A) Procedure**

After designing the questionnaire, it was examined by three university teachers: one specialized in Sociology, another one is an educational psychologist, and the last one is a linguist from the Department of English. The researcher gained insightful feedback from this tripartite consultation. In addition to respecting the administration procedure, the researcher was advised to revise slightly the form, and few items in the content.

### **B) Piloting the questionnaire survey**

The step of piloting a questionnaire, before starting the administration process, has been stressed by many methodological researchers in social sciences (Cohen et al., 2007; Dornyei, 2003; Griffée, 2012). Catherine Dawson in her book *Practical Research Methods* goes to the extent that she says "Once you have constructed your questionnaire, you must pilot it" (2002, p. 95).

The present questionnaire survey was piloted in a private meeting (Gupta, Sleezer, & Russ-Eft, 2007) and its first version was pretested with a convenience sample of eleven students by using the collaborative participant pre-testing method described by Cooper and Schindler (as cited in (Kotzé, 2007)). As a result, some items were omitted because they were unnecessary. The wording of few items was revised so as to avoid ambiguity. Other items were developed more by increasing the number of choices.

The researcher noticed that the students were not familiar with some terms and, thus, he had to administer the questionnaire in situ by himself. As a matter of fact, being closer to respondents when filling out questionnaires helped the researcher clear some ambiguities, retrieve back questionnaire copies immediately and have a vivid feedback on the problems that informants encountered (Gupta, 2007).

Seeking to save time, the number of open questions was restricted to one single question; despite this, when filling out the questionnaires, respondents were advised not to waste too much time thinking it over if they did not have a clear answer.

All in all, the pretesting phase helped the researcher to finalize the questionnaire survey in terms of content, get an idea about the time needed to be filled out, and decide on the suitable administration method.

### **C) Data gathering**

As had been already planned, just after pre-testing the initial version of the questionnaire, the researcher issued the final version of the questionnaire and prepared the number of copies needed. Data collection started by mid-October 2017, yet it lasted for 52 days because of unexpected strike of students.

Due to the weak attendance to English classes, the researcher had to look for an alternative way to get the questionnaires filled. Therefore, since students are obliged to attend practical trainings sessions, the researcher asked some TD and TP teachers for help and, of course, two of them facilitated this task for him. Nevertheless, as these sessions are meant only for one single sub-group (ten to fifteen students maximum) the researcher had to work for more than three weeks to cover the whole population sample.

During the administration, the researcher gave a brief explanation of the objectives of the questionnaire surveys and the study as a whole, although the purpose of the study was mentioned just at the top of the first page. In fact, this persuaded some reluctant respondents to take the matter more seriously and helped avoid information withholding. When collecting the questionnaires, the researcher checked them out for any missing information.

The copies of the questionnaires retrieved were, soon after, codified and then processed on SPSS software programme. Finally, they were archived for any potential use in the future.

#### **2.5.1.2 Subject matter teachers' questionnaire**

CE Teachers and researchers are also considered in this study. Their points of view are of great help in several respects. Firstly, their past experiences as former students enable them to be more aware of students' underlying attitudes towards English. Secondly, they are also able to know students' necessities. Last but not least, teaching at university is also a

profession; so their personal and professional needs especially in terms of *English for Research and Publication* are to be considered too.

In the first phase, a preliminary interview was conducted with one teacher so that to set up the outline of the questionnaire. Besides, the researcher was inspired by some questions from Makhloufi and Bouhania' s journal article (2018a). Then, the draft of the questionnaire was checked by two teachers from the Department of English. The final version of the questionnaire was distributed to 24 subject matter teachers.

The questionnaire is composed of 18 questions and items which cover three main aspects: personal information, lacks and wants, in addition to suggestions for course design. It is divided into seven sections:

1. Personal information
2. Language abilities
3. The motives behind learning English
4. Learning strategies and study skills
5. Interests and importance
6. Teaching methods
7. Teaching materials

The questionnaire surveys was not easy to administer because university teachers are rarely found together so that to carry out the task all at once. Additionally, looking for each one alone is impractical and time-consuming. To overcome this problem, the researcher was advised to attend either workshops, where an important number of them ought to be present, or official meetings, where teacher's attendance is compulsory. Finally, he resorted to both options to get the questionnaires filled out; nevertheless, one female teacher remained and the researcher had to see her during her working hours.

Parallel to this, face-to-face interaction with CE teachers during the questionnaire administration provided the researcher with valuable feedback in the sort of short informal interviews.

### **2.5.2 Interviews**

Among the most frequent methods of eliciting data within the paradigm of qualitative research are interviews (Mack et al., 2005; Dörnyei, 2007). According to Griffée (2012, p. 159) an interview is “a person-to-person structured conversation for the purpose of finding

and/or creating meaningful data which has to be collected, analysed, and validated.” There are three common types of interviews which are structured, semi-structured, and unstructured interviews (McDonough & McDonough, 1997).

Within this study, each type of interviews were meant for a particular situation. Interviews were not piloted since the questions could be modified according to informants’ answers during the conversation.

### **2.5.2.1 Interviews with HRMs**

Through *snowball sampling* success was achieved to meet a number of HRMs. Out of more than 20 foreign companies operating in the province of Adrar, only three managers approved to meet the researcher. The first one represents a Turkish company in charge of constructing the hotel called *Touat Hotel* located in Adrar city downtown; it is labelled *MBD Insaat*. The second one works for a Chinese enterprise investing in the field of renewable energy. *Shijaizhang* was offered the project of constructing few bases of solar energy throughout the territory of Adrar. The third is a manager at a Korean company; its name is *Samsung Engineering* that developed the industrial and CE constructions of the oil field called *Groupement Timimoun*.

Appointments were arranged with the company managers with the help of one of the researcher's friends. When collecting data, the researcher drew on the technique of recording with Samsung recruiter; however, he resorted to note-taking with the others as they preferred their speeches not to be recorded. The interviews were semi-structured, and the questions were concerned with the language and communication skills that recruiters prefer for their employees to have so as to excel in their jobs. The interviews took place in their offices in Adrar city and lasted between 20 and 50 minutes.

### **2.5.2.2 Interviews with CE professionals**

Due to the small number of participants, the researcher opted for interviews with CE professionals in order to get as much as possible of information. Six engineers participated in these interviews; they are as follows: one of them is in charge of engineering, three are supervisors, another one is a head of project, the following is a chief of service, and the last one is a vice-director. The engineers chosen work at the company called *Groupement Touat Gaz* abbreviated as *GTG*. Access was granted with the help of one of the researcher's friend working at this company. GTG Complex basis is situated, approximately, 80 km to the Northeast of Adrar city.



On the 27<sup>th</sup> of February 2018, the researcher made his first phone call to look for an appointment for the visit. It was not until the sixth of March that he received the verbal approval. Four days later, he had to send the official request and a list containing the questions he intended to ask. Two days before the visit, he was asked to send some personal information such as: the researcher's full name, duration of the visit, and the car type and its registration number. Just one day before the visit, the researcher received the access document called the *Journey Management Plan* abbreviated as *JMP*(see Appendix).

On the 13<sup>th</sup> of March, the researcher took one hour trip to reach the work site of the GTG Complex at 8:00 A.M. After waiting for 45 minutes in front of the check point, he received necessary instructions as to security measures and general information about the company. Afterwards, he had to wait for his host to come and accompany him to the main building of the administration. The visit lasted for more than five hours, divided into two working sessions; that of the morning was from 9:15 to 11:40; that of the afternoon was from 14:15 to 17:30. During the rest time, i.e., from 12:00 to 14:00 the researcher saved and organized the files and the recordings that he got on a laptop meanwhile, he prepared some questions for the afternoon session.

### **2.5.2.3 Interviews with CE teaching staff**

With the help of the head of Department of Science and Technology, informal meetings were held with the supervisors of branches (Geotechnics, CE Structures, and Construction Materials), the head of the Field of CE, the head of Domain of CE, as well as the dean of the Faculty of Science and Technology. Viewing teachers' busy schedules, the questions were precise and concise, that is, in a way to get semi-structured interviews in a span of time of 15 minutes maximum.

### **2.5.3 Researcher's observation**

This qualitative method has its roots in traditional ethnographic studies. It can help crosscheck the perspectives and the claims of the study population (Mack et al., 2005). The observations that the research conducted out took place into two different situations. The academic environment of the university, particularly the Department of Science and Technology, is the first one where he was an associate teacher. The second one is the personnel professional context of the researcher as he is an architect at the local department of housing (*Direction du Logements*).

### **2.5.3.1 The Researcher as an ESP teacher**

Since the study took place in the Department of Science and Technology the head of Department suggested the researcher to be in charge of teaching English to CE students because of the lack of ESP teachers. During two successive academic years, i.e. 2016-2017 and 2017-2018, the researcher taught English to Bachelor of Engineering and Master students. This opportunity enabled him to be a participant observer, as it is called in Ethnographic studies. In other words, he approached the informants in their own environment, that is, in situ and in vivo. Thus, this allowed him to crosscheck the participants' answers.

In practice, being a participant observer facilitated for the researcher to

- be closer to the context of the study group,
- overcome the problem of accessibility,
- be able to conduct diagnostic tests for students,
- check informants' responses through observation,
- administer questionnaires and conduct interviews easily,
- and have informal interviews with the participants.

### **2.5.3.2 The Researcher as an expert**

The experience of the researcher as an architect working at the Department of Housing for more than 16 years enabled him to have an insight into the English language impediment that civil engineers and architects suffer from. Therefore, the Ministry of Housing, of Town Planning and the City (*Ministère de l'Habitat, de l'Urbanisme et de la Ville*) organises different types of training programmes (short, medium, and long terms) at the national level as well as abroad. An important number of international programmes require participants quite fluent in English; for instance, during the current decade there have been a number of training programmes in Malaysia (2011), Japan (2017), and the Netherlands (2015 and 2018). Because of the language impediment, engineers and architects in the Building Sector are, most of the time, unable to participate in such training programmes.

## **2.5.4 Text analysis**

The large number of texts available in the form of electronic files can inform course designers about text-types of technical language. The analysis of CE texts aims to identify

CE repertoire in terms of vocabulary and language patterns. This can be achieved through the use of databases in the form of corpora. The subfield of linguistics concerned with corpus studies provides a helpful theoretical framework as to the way specialized corpora should be designed.

This analysis is a follow up of a research work carried out by Makhloufi and Bouhania (2018b). Specialised or CE vocabulary in this regard is identified by using word frequency lists. Several software programmes of text processing were developed to facilitate this task. In this study both *Wordsmith 4.0*, and *KH Coder* were manipulated so that to generate word frequency lists for each part of speech and define the different types of sentences.

Three field-related books were chosen with regard to the branches of CE taught at Adrar University. The sum of running words (tokens) in the whole corpus is 244.827 tokens; the first book is entitled *Construction Materials* (Domone & Illston, 2010) and consists of 134.728 tokens. The second one is named *Principles of Geotechnical Engineering* (DAS, 2010) and contains 54.844 tokens whereas, the last one, *Fundamentals of Structural Engineering* (Connor & Faraji, 2012) contains 55.255 tokens.

The aforementioned documents were selected on the basis of a number of criteria related to the text types, size, online availability, etc. (Orna-Montesinos, 2012). They are field-related in the sense that each one of them can be seen as a fundamental reference in its domain. Consequently, adequate coverage, homogeneity, balance and representativeness of the language of the domain can be, to a certain degree, ensured. However, it would not be the case if research articles, for instance, were chosen instead.

There are different types of corpora with regard to the size, i.e., small, large, etc.; however, some researchers argue that a big size does not necessarily mean good corpora (Gavioli, 2005). Yet, 240.000 tokens, which is the overall size of the present corpus, can be seen as being a considerable number in Language for Specific Purposes studies and specialized corpora (Bowker & Pearson, 2002), and this is especially if careful attention is paid to the corpus design. In the present case, all of the documents chosen consist of several sub-parts and chapters, each of which deals with a given aspect of the main domain.

For the purpose of ensuring authenticity of materials and get more reliable language features, the researcher selected CE books written exclusively by English native speakers of (Bowker & Pearson, 2002).

Concerning the issue of copyright and permission, the *pdf* format of the documents utilized to design this corpus were downloaded from some websites. All of them are open access via SNDL Cerist.

Since the use of software programme processing tools necessitates the files of the documents to be in a plain text format (\*.txt), the researcher had to modify the pdf-file formats. In the meantime, all the photos, graphs, diagrams and unnecessary parts were removed; only the core texts and headings were kept in order to get more accurate statistical data. Lastly, it was necessary to check the final version of plain text format for any possible mistakes.

In spite of the important number of software programme processing tools available, the researcher opted for the free version of *Wordsmith 4*. The reasons behind this choice are the following: firstly, it has been put into service for over 22 years, and since its invention it has been ameliorated seven times (Wikipedia, 2018); secondly, it is widely used in linguistic academic research and acknowledged by recognized universities (Schmitt, 2010); thirdly, Wordsmith has some unique options which other programmes do not offer.

KH coder facilitates the task of classifying words with regard to their parts of speech. Although the results are not free from errors, they are, at least, of great help for starting the analysis. For this reason, the operation of investigation combines between computer analysis and manual study since some grammatical features are not recognized by the free version of this software programme.

### **2.5.5 Assessment of CE English syllabus**

The objective of the evaluation of CE English syllabus is to shed some light on the actual status of the module of English. The present evaluation is based on what is stated in the official academic document referred to as the *canvas* since the interpretation of this document determines precisely the status of the module of English.

Officially, this master piece determines a number of module related issues, such as the category to which the module belongs, the number of teaching hours, the types of the courses, the classes concerned with the module, course content, as well as aims and objectives.

### **2.5.6 Maps Analysis of Pre-university English Textbooks**

Algerian students reach university with a background of seven years of learning English, that is, four years at middle school and three years at secondary school. This period of learning English frames the student's basic knowledge in a way or another. Thus, it is interesting and helpful to know what students were taught or, at least, what they were required to be taught. For this reason, the textbooks or rather maps of the books corresponding to the period of time when the students were at middle and secondary school were examined.

The researcher had to look for middle school textbooks of the academic year 2009-2013 and those of the secondary school related to the academic year 2013-2016. With the help of a secondary school teacher, the researcher gained some clarifications as to the units that the students of the scientific stream are concerned with.

### **2.5.7 Baccalaureate Exam marks**

The Baccalaureate Exam is a large scale standard test that Algerian students take at the end of their secondary school studies to be able to access higher education. Since it is an official test, it is used in the context of the present study as an outside measurement tool. In other terms, the marks of students' Baccalaureate exam were adopted as a reference to crosscheck the results obtained through the new test. This is what is referred to as a Criterion Measurement Tool (Farhady, 2012).

In order to retrieve students' scores, the researcher visited the administration and asked for second year students' marks. As there were no electronic records containing these data the researcher had to check students' files. Being classified in the archives, these documents needed to be pre-arranged by the person in charge. This task was almost impossible during ordinary working days because of the time needed for retrieving the files. The researcher had to wait until summer holidays when he was given an appointment and permission to visit the archives.

In three successive sessions and more than three hours, the researcher examined the files of more than 138 students. English students' scores, general Baccalaureate Exam marks, the academic year, and the stream had to be carefully reported from the documents.

## 2.6 Diagnostic Test

This kind of tests is usually administered to determine students' weaknesses, deficiencies, and language problems in order to know which language areas require enhancement so as to take appropriate remedial actions (Sárosdy, Poor, & Vadnay, 2006). Since it is a crucial part in a needs assessment (Graves, 1996), a test was elaborated and then administered to a group of 21 participants.

### 2.6.1 The Design statement

The design statement lays out the principle bases for developing language tests (Bachman & Palmer, 1996). For the present diagnostic test, the design statement includes the purpose of the test, definition of test takers, representativeness of the target population, definition of the construct, and resource management.

#### 2.6.1.1 The purpose of the test

The information provided from such kind of tests is a valuable source of data so that to inform syllabus design as they measure a wide range of language knowledge which is learnt over a long period of time (Sárosdy et al., 2006), and are often carried out for groups of students rather than individuals (Heaton, 1990).

#### 2.6.1.2 Definition of test takers

The researcher chose second year CE level for the diagnostic test. This population is homogenous to some extent, i.e., 97 % of the informants are Algerians (3% are from Palestine and Western Sahara), and approximately 94 % belong to the same geographical area, that is, they share the same sociocultural background. Despite the fact that they graduated from different educational institutions, the majority of them (90.54%) got their Baccalaureate Certificate during the same academic year, i.e., 2016. This facilitated the task of choosing the sample language for the test. As for the issue of selecting test takers, the researcher opted for *convenience sample*, i.e., informants available and willing to participate; a sampling frame generally exercised in needs analysis (Long, 2005).

#### 2.6.1.3 Representativeness of the target population

Test takers' ages vary between 20 and 23 except for two cases. The first one is 19 and the second one is 26 years old. As for the percentages, 56 % are 21 years old. Gender distribution shows that, out of 21 participants, there are only three males and the rest (18) are females.

The test takers chosen are only those who attended regular sessions and were present during all the testing operation. Thus, only their copies were considered in the study and the rest of the copies were discarded.

#### **2.6.1.4 Definition of the construct**

In order to ensure that the different language items and forms adequately represent the content of the syllabus, which had been already taught to students, the present diagnostic test was designed on the basis of the book-maps and tables of contents of middle and secondary school textbooks. Additionally, tables of specifications of some grammar books meant for English learners as a second language were also used to enrich and crosscheck test content namely, *Practical Grammar Usage* (Swan, 2006) and *Collins Cobuild English Grammar* (The University of Birmingham, 1990).

The overall framework of the test covers four main categories: parts of speech, vocabulary, reading, and writing. Each category contains a number of sub-categories, and these last, in their turn, include several communicative elements. The test is divided into 16 sub-tests and each one of them is devoted to cover a given aspect of language or a grammatical category; at the same time, this division facilitated the administration process, that is, each sub-test would be easily taken before the beginning of one regular session.

As to the forms of the test items used in this test the following is the list of the most widely recurrent types:

##### **A) Multiple choice items**

The great majority of the tasks of this test take the form of multiple choice items. That is, three or four options are given, and all that the student has to do is to put a tick in front of the, presumed, correct answer (Heaton, 1990). It has been opted for this type of exercises in order to test only the particular construct, save time, facilitate the task for students when answering and for the researcher when correcting and scoring the test (Harmer, 1998).

##### **B) Multiple choice items with context provided in Arabic**

Another type of multiple choice items was developed. It is used in the case of modal verbs with some sentences which require their contexts to be clear. This was done by adding translated version of sentences in addition to the multiple options of answers. The objective behind giving the idea in Arabic was to gauge, only, students' ability to recognize the word or phrase that expresses its equivalent in English.

**C) Error recognition items**

The type called error recognition items can take several forms, such as multiple choice forms, underlined words in a sentence to choose among them (Heaton, 1990). However, in the present test the researcher aimed to measure students' ability to recognize errors and, simultaneously, correct mistakes. In this regard, the participants were given sentences and asked to write the correct form after depicting the error.

**D) Completion items**

When testing prepositions, the participants were provided with English sentences followed by their Arabic translation so that to measure learners' acquired knowledge in terms of these grammatical items. In these cases sentences were incomplete, and the students were asked to fill in the blank spaces with the appropriate elements, that is, complete the items needed (Heaton, 1990).

**E) Broken sentence items**

Seeking to measure students' ability to produce correct sentences, the type called broken sentence items was utilized. Therefore, a set of words and phrases were given and the students had to find the appropriate word order and conjugate the verb to form a meaningful sentence.

**F) Pairing and matching items**

Rather than gauging students' knowledge of grammar, the type referred to as pairing and matching items, often, tests learners' sensitivity to appropriacy and students' awareness of language functions (Heaton, 1990). For example, students may be asked, as in this study, to link verbs with the appropriate nouns, or adjectives with the suitable nouns.

**G) Sentence matching**

According to Heaton (1990), this type of exercises is usually meant for reading comprehension tests. The testees are given a number of sentences but only one of them is similar in meaning to the main one. Thus, the informants are asked to read carefully the fundamental sentence and try to depict, from the distractors, the one which expresses the same idea.



### **H) Testing vocabulary**

In view of the importance of the selection of lexical items for any test (Heaton, 1990), the vocabulary of the test was extracted from secondary school textbooks of the scientific stream. Students were, actually, tested in the vocabulary related to written texts, since the majority of their English tests were in written forms. Students' knowledge of vocabulary depth was tested via putting few words in their appropriate slots to form complete sentences or matching nouns with appropriate adjectives or verbs.

#### **2.6.1.5 Resource management**

As mentioned earlier in Chapter One, the term *practicality* refers to the available resources and their management. Actually, all the parts of the test are paper-and-pencil activities; hence, they do not require considerable amount of resources.

##### **A) Human resources**

Managing human resources, during the test development process, is highly important and may cause serious problems in large scale and official tests if it is not professionally done. It can be better understood in terms of the roles and the functions allocated to the individuals involved in the testing process (Bachman & Palmer, 1996).

In the current situation, the researcher himself was the test developer, that is, the person in charge of supervising the process of the test development from the beginning till the end, the test administrator, i.e., the one who carried out the process of giving the test to test-takers, and the test scorer (Bachman & Palmer, 1996).

##### **B) Material Resources**

Material resources embrace all the physical materials needed to successfully carry out the test development process. They include; equipment, physical space, and time.

###### *i. Test equipment*

As all the parts of the test are based on paper-and-pencil activities, the equipment needed are quite modest; the list includes only pens, rough papers, answer sheets, and a computer for the tester to process the data.

*ii. Time*

The researcher himself was an associate teacher; this helped him to carry out the testing operation during his regular classes. Before the beginning of each session, the participants were given one sub-test designed to take no more than 15 minutes to answer.

*iii. Space*

Since testing was carried out during the researcher's regular teaching sessions, the issue of space was, automatically, overcome; thus, all the tests took place in an amphitheatre.

## **2.6.2 Evaluation of the test qualities**

The researcher had to check the test qualities, i.e., the usefulness of the test as a psychometric measurement tool before its operation. To do so, the researcher had to pilot the test and then administer a questionnaire to the pilot group.

### **2.1.1.1 Pilot test**

Piloting a test involves checking the facility and/or discrimination of test items. The purpose behind this is to determine the characteristics of the test items and, then, set a sort of balance between the test items of low facility values and those of high facility values. The ideal theoretical value of the test item facility is 0.5; in other terms, the average of the sum of all the items' facility values should be 0.5 or 50%.

Because of time restraints, it was almost impossible to pilot the whole diagnostic test, so it was opted for some preselected test items from each category of the test. The pilot test was divided into four sub-tests and 23 question elements. The aim behind this was to facilitate the test administration and avoid participants' bothersome. Each sub-test was meant to be handled in 15 to 20 minutes maximum. The pilot group composed of 21 participants was similar to the test group in several respects and the testing operation was conducted in similar conditions and settings of the diagnostic test. On several sessions, the researcher himself conducted the pilot test operation.

### A) Test piloting results

Table 2.1 sums up the results of the pilot test:

Table 2.1 Pilot test results

Number	Category	How to express/refer to	Number of correct answers	%
1	Determiners	a noun in indefinite singular	4	19.05
		particular things (demonstratives)	4	19.05
2	Quantification of nouns	quantification of uncountable nouns	9	42.86
		quantification of countable nouns (a)	8	38.10
		quantification of countable nouns (b)	11	52.38
		an exact number of things	4	19.05
3	Adjectives	describe a noun	10	47.62
4	Adverbs	form an adverb from an adjective	12	57.14
5	Tenses	present to express state (to be)	17	80.95
		negation (to have)	9	42.86
		present perfect	13	61.90
6	WH questions	enquire about a person as a subject	3	14.29
7	Prepositions	time	1	4.76
8	The passive voice	passive voice of simple present	2	9.52
9	Modals	obligation	2	9.52
10	Pronouns	the object	13	61.90
11	Reading comprehension	Sentence One	18	85.71
12	Vocabulary	Example One	8	38.10
13	Verbs/nouns	Element One	2	9.52
14	Adjective/nouns	Element One	1	4.76
		Element Two	1	4.76
15	Correcting sentences	Sentence One	2	9.52
16	Writing sentences	Sentence One	2	9.52

### B) Interpretation of the pilot test results

The results of the pilot test show that the percentages of correct answers of an important number of items, i.e., 12 elements are less than 20%. This means that these elements have low facility values; thus, they are of great help in determining students of high performance in the group. The rates of other five elements are included between 20% and

50%; in other terms, the facility values related to these elements are slightly less than the average. These elements can help classify the participants of a pre-intermediate level. The remaining six elements demonstrate high rates of correct answers; in other words, they have high facility values. For this reason, these elements are not useful in finding participants of high level of performance as they do not discriminate between the testees.

The average of the total score percentages is 32%, that is, the coefficient of facility value of the whole pilot test is 0.32. Applied linguists prefer the ideal theoretical value of this coefficient to be 0.5 or 50%. For this reason, the researcher had to try to increase the facility value for the diagnostic test through setting a balance between items of high facility values and those of low facility values. Since students' category of intermediate level is expected always to be the largest, careful attention had to be given to increasing the number of test items of facility value 0.5 (50%).

#### **2.6.2.1 Questionnaire for Test usefulness**

After piloting the test, a questionnaire survey designed for the evaluation of test qualities was administered. The design of the present questionnaire is based on the model suggested by Bachman and Palmer (1996). The general outline as well as some questions were adopted and then adapted to the research situation (see Appendix G). Credit should be given also to Yasmine Mattoussi (2018) whose article entitled *Testing Usefulness of Reading Comprehension Exams among First Year Students of English at the Tertiary Level in Tunisia* was really inspiring; not to forget Djihed Azeroual (2015) for her thesis *Implementing General English Reading Courses in Teaching English for Science and Technology to Promote the Reading Proficiency of Students of Electronics, University of Constantine*.

##### **A) Results of the questionnaire surveys**

In addition to personal information the questionnaire embraces six other axes: reliability, construct validity, authenticity, interactiveness, impact, and practicality. The overall number of open ended questions is 11 which cover all the aforementioned aspects of the test qualities.

*i. Reliability*

Two questions investigated the issue of test reliability; the first one is concerned with the test instructions and the second one is related to the degree of facility or difficulty of the tests. The questions and responses were as follows:

1. Were the test instructions clear?

Nearly 86% of the participants admitted that the instructions were clear; however, for 14% of them, the instructions were unclear.

Table 2.2. Participants' responses as to the quality of the test instructions

	Clear	Unclear	Total
The number of the participants	18	3	21
The percentage	85.71	14.29	100

2. In terms of difficulty, how were the test activities?

Out of 21 students, 4.76% stated that the activities were difficult, 9.52% said that they were easy, and 85.71% declared that they were acceptable.

Table 2.3. Participants' responses as to the quality of test activities

	Easy	Acceptable	Difficult	Total
The number of the participants	2	18	1	21
The percentage	9.52	85.71	4.76	100

*ii. Construct validity*

3. Do test items test only one language ability at a time?

The majority of the participants, i.e., 80.95% answered that test items check one single language ability at a time whereas, nearly one fifth said no.

Table 2.4. Participants' responses as to the quality of language abilities

	Yes	No	Total
The number of the participants	17	4	21
The percentage	80.95	19.05	100

iii. *Authenticity*

## 4. To what extent are the test inputs related to CE English?

The rate 9.52 % appears twice: in case of complete relatedness and in case of no relatedness at all of the test inputs to CE English. However, the case of partial relatedness gets nearly 81% of participants' votes.

Table 2.5. Participants' responses as to the relatedness of the test inputs to CE English

	Completely	Partially	Not related at all	Total
The number of the participants	2	17	2	21
The percentage	9.52	80.95	9.52	100

## 5. To what extent are the test inputs related to GE?

Nearly the fifth of the participants (19.05 %) argued that there is a complete relatedness between test inputs and GE. However, 23.81 % went to claim that there is no relatedness at all and 57.14% opted for the choice of being partially related.

Table 2.6. Participants' responses as to the relatedness of the test inputs to GE

	Completely	Partially	Not related at all	Total
The number of the participants	4	12	5	21
The percentage	19.05	57.14	23.81	100

iv. *Interactiveness*

## 6. To what extent is this test useful for CE students?

One seventh of the participants (14.29%) took the stance that the test is not useful at all for CE students, but for 33.33 % it was very useful. However, 52.38% perceived it as being quite useful.

Table 2.7. Participants' responses as to the usefulness of the test for CE students

	Very useful	Quite useful	Not useful at all	Total
The number of the participants	7	11	3	21
The percentage	33.33	52.38	14.29	100

## 7. How much are the test inputs interesting to CE students?

More than half of the students (57.14%) stated that the test inputs are quite interesting. Meanwhile, more than one third (38.10%) declared that they were very interesting, but 4.76% saw the opposite by affirming that inputs are not interesting at all.

Table 2.8. Participants' responses as to the extent to which the test inputs is interesting

	Interesting	Quite interesting	Not interesting at all	Total
The number of the participants	8	12	1	21
The percentage	38.10	57.14	4.76	100

v. *Impact*

## 8. Were you previously informed about the diagnostic test?

The majority (95.24%) confirmed that they had been informed about the test except one participant (4.76%) who said *no*.

Table 2.9. Participants' responses as to their previous knowledge about the test

	Yes	No	Total
The number of the participants	20	1	21
The percentage	95.24	4.76	100

## 9. Were you informed about the test purpose?

As for the purpose of the test, nearly 91% declared that they had been told about the purpose of the test. Despite this, 9.52% denied by saying that they had not been informed.

Table 2.10. Participants' responses as to their knowledge about the test purpose

	Yes	No	Total
The number of the participants	19	2	21
The percentage	90.48	9.52	100

vi. *Practicality*

## 10. Was the time allotted for the test enough?

The time allotted was sufficient for all the participants (100%)

Table 2.11. Participants' opinion as to the time allotted for the test

	Yes	No	Total
The number of the participants	21	0	21
The percentage	100	0	100

## 11. To what extent were the testing conditions comfortable?

As for the testing environment and conditions nearly 81% went to say that these last had been quite comfortable. The rest or 19.05% declared that they had been rather very comfortable.

Table 2.12. Participants' opinion as to the test environment

	Very comfortable	Quite comfortable	Not comfortable at all	Total
The number of the participants	4	17	0	21
The percentage	19.05	80.95	0.00	100

### B) Interpretation of the questionnaire results

The investigation into the test qualities of usefulness reveals the followings:

1. The test has a high level of reliability because the instructions are simple, not variant, and clear; thus, 85.71% opted for the option *clear*. Additionally, 85.71% went to say that the activities were acceptable, i.e., they were neither easy nor difficult.

2. As for construct validity, nearly 81% said that the test construct measures one single ability at a time. And of course, test constructs are valid since the design of the majority of the items was mainly based on multiple choice items.

3. The majority (80.95%) said that the test was partially related to CE, and more than half of them (57.14%) stressed that it was also partially related to General English. This is absolutely true since the test materials include some field related vocabulary and GE words extracted from secondary school textbooks. As far as EST is concerned, the researcher viewed that authenticity could be achieved through adapting CE terminology to participants' background language knowledge.

4. Test interactiveness was checked through asking the participants about test usefulness and degree of interest. In both cases, the majority of the students' responses were positive. More than 85.71% for test usefulness, i.e., 33.33% + 52.38%, and more than 95.24% for test interest, i.e., 38.10% + 57.14%.

5. Concerning the issue of test impact, the majority supported this point by stating that they had been previously informed about both: the test (95.24%), and its purpose (90.48%).

6. The last items of this questionnaire survey investigated the aspect of practicality. The entire sample of the participants were satisfied with the testing conditions and the time allotted. As a result, practicality can be claimed to be achieved.

### 2.6.3 The scoring method

The scoring system adopted for the present test can be described as being objective. This is due to the fact that the majority of the activities have a very limited number of correct answers or rather one (Heaton, 1990). In multiple choice items types, it is common to use



the correct or incorrect scoring method. That is, if a test taker answers correctly the value one is given; however, if it is not the case, the value zero is awarded. This is typically a textbook classical scoring system (Fulcher & Davidson, 2007). The sum of the scores informs the test analyst about the participants' ability that the related items are designed to gauge.

#### **2.6.4 Data analysis and interpretation**

In the present study, test result interpretation is based on the criterion frame of reference; in other terms, with regard to what learners can really do with language. The normal distribution theory, upon which the bell-shaped curve is based, as well as central tendency measures derived from the descriptive statistics are by far the medium of interpretation of students' scores.

First of all, each student was awarded the mark one (1) for each correct answer and the mark zero (0) for any wrong answer, following of course the objective testing scoring method. Then, for every single language item the percentages of the correct and wrong answers were computed.

For each language category, a table of frequency of test scores was developed, and its corresponding graph was drawn. The central tendency measures (CTMs) of each language category were calculated including the mean, median, mode, variance, standard deviation, and midpoint.

The analysis, at the first stage, probes test language items one by one, i.e., the percentages of correct answers and those of the wrong answers. At the second stage the whole language test category which embraces a group of test items is examined. The analysis at this level is done through one of two ways: either by comparing the coefficients of central tendency measures or resorting to the graphical representation. The curves of scores' distribution help identify the sort of distribution in question; for instance, it can be normal, positively skewed, negatively skewed, or peaked.

Seeking to facilitate the exploitation of the data, the analysis was carried out by using two software programmes. The first one is Statistical Packages for the Social Sciences known as SPSS version 23 and the second is Microsoft Excel 2010.

## **2.7 Conclusion**

Throughout the pages constituting this chapter, the researcher has tried to highlight the methodological aspect of the present thesis and the reasons underpinning this choice. The different research instruments, the sample population, and the methods of collecting data are thoroughly presented. Additionally, all the phases of the investigation including the pilot study and the study proper are also laid out. Moreover, the diagnostic test development, administration, and the interpretation process are detailed.

By doing so, the fundamental components of the research methodology are tackled. The next step is the data analysis and interpretation which is the concern of the two following chapters three and four.

# **Chapter Three**

### 3.1 Introduction

This chapter considers the analysis of students' current situation. Being the main source of information, students' lacks and wants are thoroughly considered in this regard. Correspondingly, their lacks or more precisely level of performance is gauged through a diagnostic test. The latter is designed on the basis of what students are already been taught at middle and secondary school; hence, the book maps of these two levels are analysed. The criterion related validity of the diagnostic test is checked before test interpretation. Furthermore, students' wants are investigated via questionnaire surveys. The following is the interpretation of the results of both tools.

### 3.2 Results of Maps Analysis of Pre-university English Textbooks

The analysis of the maps of pre-university textbooks aims at defining the students' background knowledge. The importance of the latter lies in the fact that it constitutes the basic ground for the diagnostic test so as to assess students' performance. Hence, the maps of the related textbooks are investigated to know what students are required to be taught in terms of grammar, vocabulary, and sentence structures.

#### A) First-year middle school

During 18 weeks, learners have 39 sessions of English. Course contents embrace basic principles of grammar. The latter consist of 23 grammatical items that can be grouped under six main categories: personal pronouns, auxiliary verbs (to be and to have), adjectives, prepositions, tenses (present simple and future simple), and WH words, i.e., how, what, and where (see Appendix G).

#### B) Second-year middle school

In their second year, pupils receive 36 sessions of English dealing with 25 different points of grammar. Similar to year one, the content of the course contains elementary instructions concerning: tenses (present simple and present perfect, past simple), modals, WH questions, prepositions, modifiers, pronouns (see Appendix H).

#### C) Third-year middle school

In the third year, students learn about 24 grammar items including more advanced points in GE. In addition to expanding students' knowledge concerning the language items

taught in the previous years, students study linking words, interjection, conjunctions of time, and cause and effect (see Appendix I).

#### **D) Fourth-year middle school**

In the last year of middle school, pupils are required to see more complex sentence structures. In addition to modals, semi modals, and tag questions, they learn also how to use conditionals type one and type two. These last make up a total of 21 grammar points (see Appendix J).

#### **E) First-year secondary school**

Students in the scientific stream are concerned with four units out of five units formulating the 1st year secondary school English textbook: Unit One (Getting Through), Unit Three (Our Findings Show), Unit Four (Eureka), and finally Unit Five (Back to nature). Each unit is divided into four sequences with a total sum of 47 sub-sequences and 36 grammar points. In parallel with expanding learners' information about the different parts of speech, at this stage, the emphasis is put on teaching new sentence structures, expressions, and producing new words, i.e., using prefixes (see Appendix K).

#### **F) Second-year secondary school**

At this level, students always have the same number of units, i.e., four: Unit Two (Make Peace), Unit Three (Waste not Want not), Unit Four (Budding Scientist), and Unit Six (No man Is an Island); however, the number of grammar points is 16. In terms of sentence structures, they are required to learn the passive voice, conditional, and reported speech. Additionally, the course content aims to expand learners' repertoire of vocabulary related to citizenship, science and experiments, disasters and solidarity (see Appendix L).

#### **G) Third-year secondary school**

In the last year of secondary school, four units are meant for students: Unit Two (Gotten Gains never Prosper), Unit Three (Safety First), Unit Four (It's a Giant Leap for Mankind), Unit Six (We Are a Family). The map of the book details 31 grammar sub-items which turn around teaching learners how to use modals to express cause and effect, possibility, condition, etc. In addition to the lexis related to business, safety and health, space and feelings, students learn how to form new words of nouns, adjectives, and adverbs by using suffixes (see Appendix M).

### Comments

The analysis of the book maps of the English textbooks of the middle and secondary schools shows that the contents of the courses are quite rich in terms of grammar. There are nearly 163 items and sub-items that can be divided into 10 main groups:

- Nouns, pronouns.
- Adjectives
- Adverbs
- Tenses and moods
- Auxiliaries
- Modals (expressing functions)
- Prepositions
- Asking questions
- Sentences structures: reported speech, passive voice, conditionals, using link words and different types of expressions.
- Word formation

Grammar items vary in their frequencies of occurrence in the textbooks. However, middle school textbooks focus on basic instruction of GE. Comparatively, secondary school textbooks tend to be more specific. Hence, several texts of scientific subjects are provided.

### 3.3 Criterion-Related Validity of the Diagnostic Test

In this study, students' marks of Baccalaureate Exam are used to check the results of the elaborated diagnostic test. As this last was developed from scratch, test designers highly recommend to investigate what they refer to as test's *criterion-related validity*. That is, checking the validity of the new test by comparing its results with the results of a test which its validity is already recognized.

#### 3.3.1 Analysis of Baccalaureate Exam marks

The researcher retrieved English marks of the Baccalaureate Exam of the specific testing group from the whole list of students which he had prepared earlier. Then, he developed the table of frequency of scores' distribution and drew its graphical representation (see Appendix O).

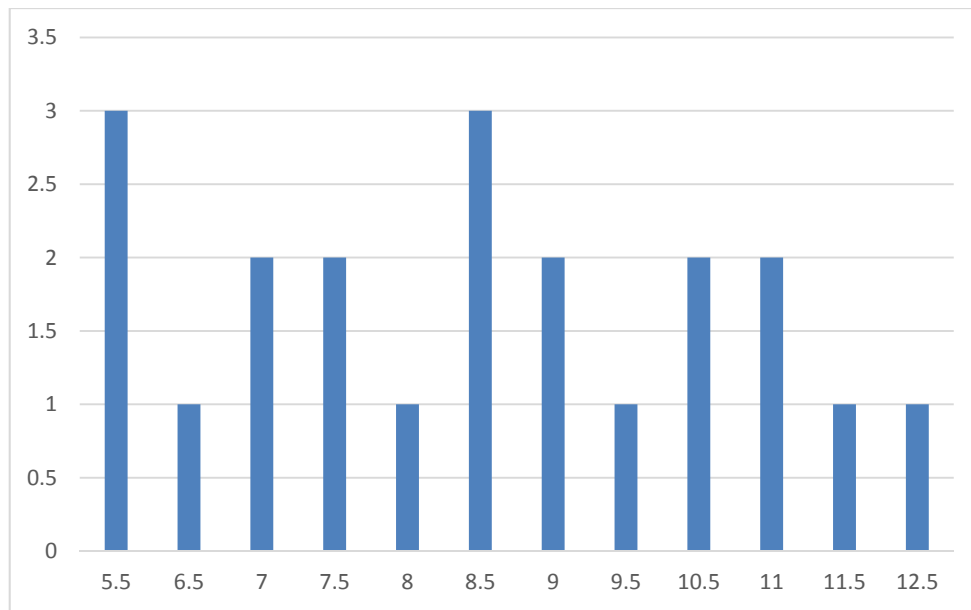


Figure 3.1. The frequency of distribution of Bacculaureate Exam marks

The results show that more than two thirds (71.43 %) scored less than the average (10), and less than one third scored above the average (28.57%). The mean is 8.57 and the midpoint is nine, i.e., they are close to each other and less than the average. Students' marks are not variant as the interval  $8.57 \pm 1$  embraces 66.7% of the total scores.

Table 3.1. CTMs of Bacculaureate Exam marks

The arithmetic mean	8.57
The median	8.5
The mode	5.5
The variance	4.23
The standard deviation	2.06

### 3.3.2 Analysis of the diagnostic test scores

Students' performance during the whole testing operation was translated into a table of scores of 93 test items for 21 participants. The table containing students' individual marks was, then, developed into a table of scores' distribution. This last was, afterwards, graphically represented in Figure 3.2.

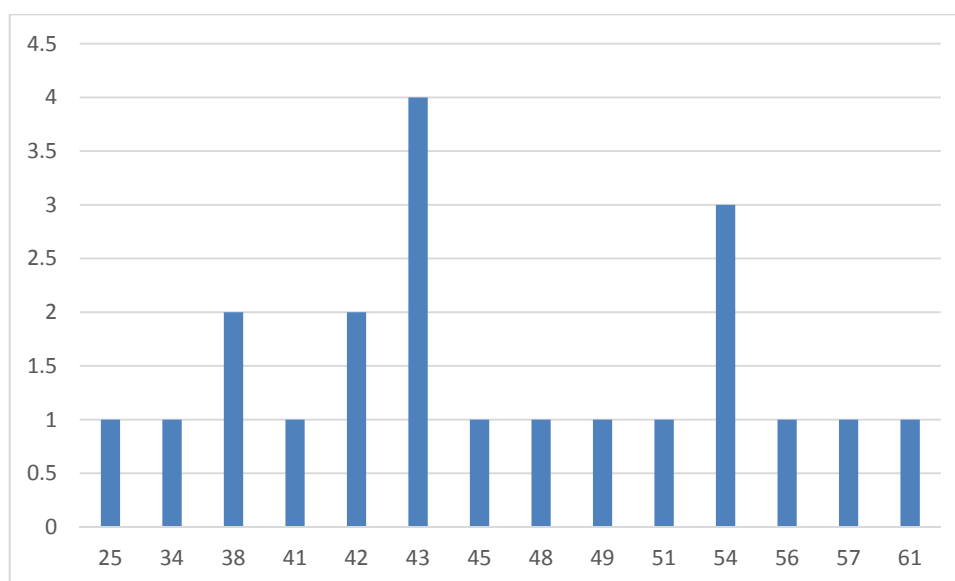


Figure 3.2. Diagnostic test scores' frequency of distribution

As to the diagnostic test results, students' scores reveal that among 21 participants nine, or 42%, got the average (more than 46.5 points); however, 58% scored less. The computation of the Central Tendency Measures (CTMs) reveal that the mean is 45.76, and of course it is less than the average; the midpoint equals both: the median and the mode, i.e., it is 43. The interval  $45.76 \pm 8.61$  includes 67% of the total scores which means that students' marks are not that variant (see Appendix P).

Table 3.2. CTMs of the diagnostic test scores

The arithmetic mean	45.76
The median	43
The mode	43
The variance	74.09
The standard deviation	8.61

### 3.3.3 Comparison between the two tests

In order to compare the two tests, the reference of the scoring scale ought to be unified. The scores of Baccalaureate Marks were computed out of 20 points, but the scores of the new elaborated test were calculated out of 93. It was opted for a scale similar to that of Baccalaureate Exam and, thus, CTMs of the diagnostic test were re-computed. Table 3.3 reports the values of CTMs of the two tests.



Table 3.3. Comparison between the CTMs of the two tests

CTMs	Baccalaureate Exam	Diagnostic test
Arithmetic Mean	8.57	9.84
Median	8.50	9.25
Mode	8.50	9.25
The midpoint	8.57	9.25
The standard deviation	2.06	1.85
The mean +1	10.63	11.69
The mean -1	6.51	7.99

It is noticeable from table 3.3 that

- the values related to Baccalaureate Exam are lower than those of the diagnostic test,
- there are some paltry differences between the values of the two tests,
- the mean, the median, the mode, and the midpoint of both cases are less than average,
- and students' scores for the two exams share approximately the same frequency of distribution.

These findings confirm, to a great extent, that the present diagnostic test is valid.

### 3.4 Results and Interpretation of the Diagnostic Test

This section presents and interprets the diagnostic test results. The grammatical categories are dealt with successively. Firstly, test items are analysed by comparing the percentages of correct answers to those of wrong ones. Secondly, the distribution of test scores of each category is examined via CTMs and the bell-shaped curve derived from the theory of Normal Distribution.

#### 3.4.1 Determiners

The opening test category probes students' knowledge as to the use of determiners (see Appendix Q). It is divided into seven exercises designed in the form of multiple choice items. Each one is concerned with a particular construct, and the participants' task is to pick up the right answer among three or four options, that is, there are two or three distractors for each case (see Appendix R).

Table 3.4. Test results related to the category of determiners

Number	How to express, refer, or mention	Total	%
1	a noun in indefinite singular	5	23.81
2	a noun in definite singular	19	90.48
3	a noun in indefinite plural	7	33.33
4	a noun in definite plural	11	52.38
5	a proper noun	13	61.90
6	particular things (demonstratives)	4	19.05
7	possession (possessive adjectives)	8	38.10
<b>Total</b>		67	

The results are as follows:

- 1- How to express a noun in indefinite singular: Out of 21 students five picked up the right answer (23.81%); however, the rest of the group, i.e., 16 or 76.19 % did not. This means that less than a quarter knew how to use properly indefinite articles with singular nouns.
- 2- How to express a noun in definite singular: Two participants or 9.52% did not answer correctly whereas, the majority picked up the right choice (90.48%); it is the highest rate recorded in this grammatical class.
- 3- How to express a noun in indefinite plural: The number of correct answers is seven, i.e., 33.33%, and the number of wrong answers is 14, i.e., 66.67%. This indicates that one third knew the right form of indefinite plural nouns and two thirds did not.
- 4- How to express a noun in definite plural: As many as 11 examinees (52.38%) selected the right choice. However, 10 (47.62%) seemed to have some difficulties with definite plural nouns.
- 5- How to use proper nouns: Nearly two thirds of the testees (61.90%) chose the appropriate answer, i.e., 13 participants and 38.10% (eight) mistakenly selected inappropriate answers.
- 6- How to refer to particular things (demonstratives): This test item has got the lowest percentage of correct answers in this part with 19.05% or four answers. The number of incorrect answers is 17, i.e., a rate of 80.95%.
- 7- How to mention possession (possessive adjective): Among 21 students eight preceded the noun with the suitable possessive adjective, that is, slightly more than two-fifths (38.10%). On the other hand, 13 missed the right choice, i.e., 61.90%.

So far, the scores of the respondents have demonstrated that the rates of three language items out of seven in this part of determiners are more than 50%. Only one of them, the case of the definite article with singular nouns, exceeds 90%; however, all the rest are less than 40%. These rates help the course designer and ESP teacher to determine the type of remedial actions to take. Test items of low rates, i.e., those included between 0% and 47% should be carefully examined via the new elaborated course; for instance, expressing a noun in indefinite singular, indefinite plural, using demonstratives, and possessive adjectives. Items of rates included between 47% and 61% should be consolidated through make-up activities such as expressing a noun in definite plural. Test items which get more than 61% can be used for introductory sessions, for example, expressing a noun in definite singular.

Table 3.5. CTMs of the category of determiners

The arithmetic mean	3.24
The median	3
The mode	3
The variance	1.89
The standard deviation	1.37

The analysis of the CTMs related to the testees' individual scores of the category of determiners shows that the mean is 3.24, i.e., it is less than the midpoint (3.5). Although the scores' distribution is slightly peaked and skewed to the positive direction, the median and the mode have the same value (3.00). This indicates that the scores related to this category are more or less homogenous. The standard deviation (1.37) indicates that the scores are not that variant, i.e., the interval  $3.24 \pm 1.37$  includes 71.43 % of the total scores.

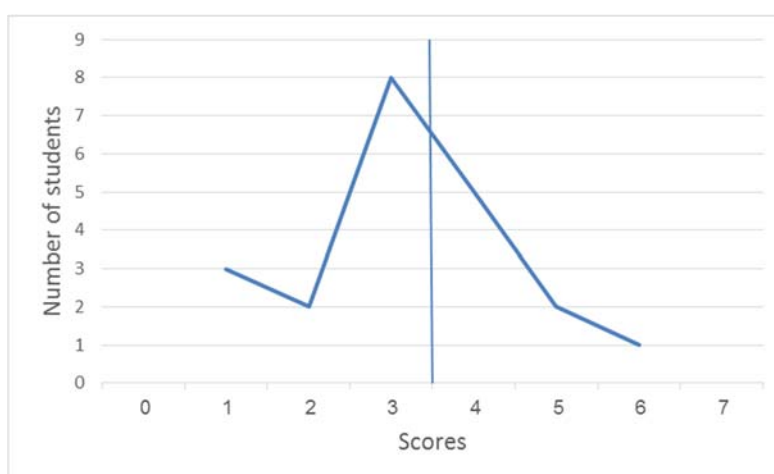


Figure 3.3. Scores' distribution related to the category of determiners

### 3.4.2 Quantification of nouns

The second set of test items tackles students' ability to quantify nouns; four main points were chosen (see Appendix S). As to the form, test items keep always the multiple choice type. Table 3.6 displays the main results (see Appendix T).

Table 3.6. Test results related to the quantification of nouns

Number	The function	Total	%
1	Quantification of uncountable nouns	9	42.86
2	Quantification of countable nouns (a)	8	38.10
3	Quantification of countable nouns (b)	11	52.38
4	Expressing an exact number of things	4	19.05
<b>Total</b>		32	

The results are as follows:

- 1- How to express quantification of uncountable nouns: When trying to use quantifiers with uncountable nouns nine participants found the correct answer, i.e., 42.86% and the rest, i.e., 57.14% or 12 failed.
- 2- How to express quantification of countable nouns (a): Out of 21 students, eight got positive scores, i.e., 38.10%, and 13 (61.90%) got zero instead.
- 3- How to express quantification of countable nouns (b): The purpose behind this example was to examine students' ability to distinguish between *much* and *many*. The results show that 11 (52.38%) knew this and 10 (47.62%) did not.
- 4- How to express an exact number of things: Less than one fifth answered correctly, that is, four examinees out of 21. However, more than 80% missed the right answer; this is the highest percentage of wrong answers in this part of speech.

The overall analysis of the language items' percentages reveals that the rate of one language item is more than 50%. However, approximately all the remaining items are less than 43%. In view of the importance of all these items for scientific fields a careful examination in the intended courses is necessary.

Table 3.7. CTMs related to the quantification of nouns

The arithmetic mean	1.52
The median	2
The mode	2
The variance	1.16
The standard deviation	1.08

On the other hand, the mean (1.52) is less than the midpoint (2.0), i.e., participants' general level is somehow low despite the fact that both the median and the mode equal two which means that the distribution is positively skewed. The standard deviation of the total scores (1.08) is slightly low; and hence, the interval  $1.52 \pm 1.08$  embraces nearly 66.67 % of the total scores.

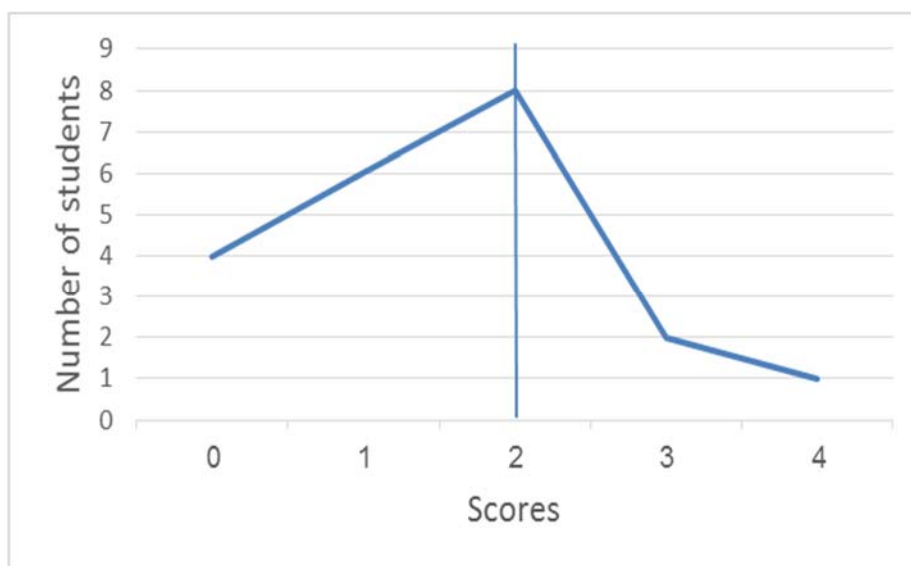


Figure 3.4. Scores' distribution related to the quantification of nouns

### 3.4.3 How to describe a noun (adjectives)

The third part was designed to gauge students' knowledge as to describing nouns and using adjectives (see Appendix U). Six main points concerning using adjectives in English were tested and the findings are detailed in table 3.8 (see Appendix V).

Table 3.8. Test results related to describing nouns

Number	How to	Total	%
1	describe a noun (adjectives in attributive position)	14	66.67
2	form an adjective (a)	5	23.81
3	form an adjective (b)	12	57.14
4	describe a noun (adjectives in predicative position)	17	80.95
5	express comparison	8	38.10
6	express uniqueness (using superlatives)	7	33.33
<b>Total</b>		63	

The obtained results are as follows:

- 1- How to describe a noun (using adjectives in attributive position): Two thirds picked up the correct answer (14 participants) and one third went wrong (seven testees).
- 2- How to form an adjective (a): When trying to find the appropriate *root + suffix* combination, five students, i.e., 23.81% found the right composition despite the fact that this example includes the suffix *ful* which is fundamental in middle and secondary school textbooks.
- 3- How to form an adjective (b): In this instance, 12 test takers succeeded to answer this test item (57.14%). However, this score should have been higher as the word chosen is a basic term, for a foreign language learner, with the same form in French, and widely used in technical writings.
- 4- How to describe a noun (using adjectives in predicative position): 80.95% of the examinees did choose the right option. This rate proves that the learners are familiar with the basic structure *subject + to be + adjective*.
- 5- How to express comparison: Out of 21, eight ticked the right sentence, i.e., 38.10%. This means that the comparative form of adjectives is confusing for 61.90%.
- 6- How to express uniqueness (using superlatives): The number of correct answers in this case is seven, i.e., one third. The rest two thirds are wrong, i.e., that of 14 participants.

The study of test item percentages shows that the values are equally distributed around the middle, i.e., three values are higher and the same number of values are lower. All the rates are included in the middle, i.e., between 33.33% and 66.67% except two values (80.95% and 23.81%) which are outliers. Language items of more than 66% are to be used for introductory and revision exercises such as using adjectives in predicative position and attributive position. Forming adjectives, expressing comparison, and indicating uniqueness should be carefully examined.

Table 3.9. CTMs related to the category of adjectives

The arithmetic mean	3.00
The median	3
The mode	3
The variance	1.80
The standard deviation	1.34

Three CTMs have the same value (3.00) which means that the mean represents perfectly the students' scores. The midpoint is also three, i.e., it equals the arithmetic mean; this means that the overall students' level is intermediate. On the other hand, the standard deviation confirms that the distribution of scores is peaked since the interval  $3 \pm 1.34$  embraces nearly 81% of the total scores.

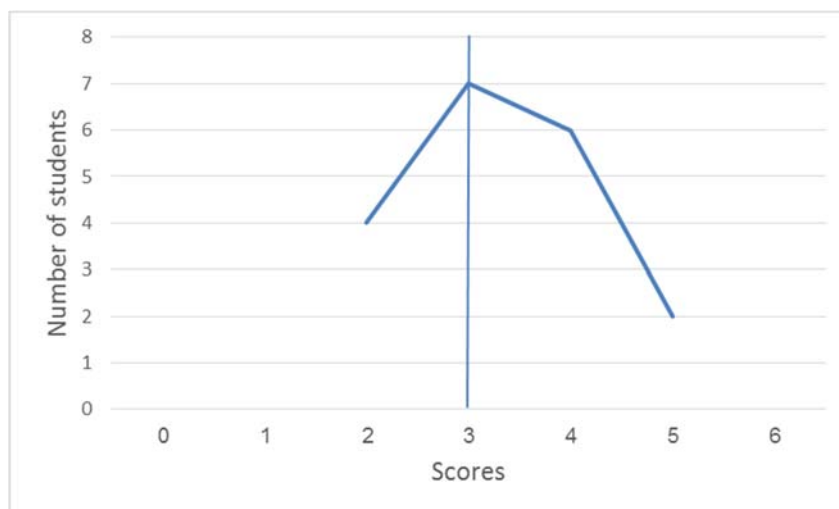


Figure 3.5. Scores' distribution related to the category of adjectives

### 3.4.4 Adverbs

The fourth set of test items is meant to tell language tester more about what the participants know concerning the use of adverbs (see Appendix W). Four important features of adverbs are measured through multiple choice items as the results in table 3.10 demonstrate (see Appendix X).

Table 3.10. Test results related to the category of adverbs

Number	How to form	Total	%
1	an adverb from an adjective	8	38.10
2	an adverb modifying an adjective	12	57.14
3	an adverb modifying another adverb (a)	5	23.81
4	an adverb modifying another adverb (b)	7	33.33
<b>Total</b>		32	

The results are as follows:

- 1- How to form an adverb from an adjective: Eight students did choose the right answer for this test item, i.e., 38.10%. More than three fifths (61.90%) failed to differentiate between the noun, adverb, and adjective form of the same word.
- 2- How to form an adverb modifying an adjective: Slightly better than the previous item, 12 learners or 57.14% responded correctly as to choosing the right order of words for an adverb modifying an adjective.
- 3- How to form an adverb modifying another adverb (a): This example seems to be the most difficult in the category of adverbs. Out of 21, five found the right form, i.e., 23.81%, and more than three quarters went wrong.
- 4- How to form an adverb modifying another adverb (b): It is not better than the third item, in this instance seven participants scored, i.e., 33.33%. This result confirms the previous findings since two thirds or 14 did not score.

Only one value related to forming an adverb modifying an adjective which exceeds average (57.14%); this language item can be the subject of make-up activities. The rest of the values are between 23.81% and 38.10% which means that students' performance in these aspects of language is low and it should be enhanced. That is, carefully elaborated activities should be devoted to teaching the way an adverb is formed from an adjective and how an adverb modifies another adverb.

Table 3.11. CTMs related to the category of adverbs

The arithmetic mean	1.52
The median	1
The mode	1
The variance	0.66
The standard deviation	0.81

As for the individual scores, the arithmetic mean (1.52) is lower than the midpoint (2) and higher than the median and the mode (1) which means that the distribution is peaked and slightly positively skewed. The values are not variant but rather gathered around the mean as the interval  $1.52 \pm 0.81$  includes 90% of the total scores.



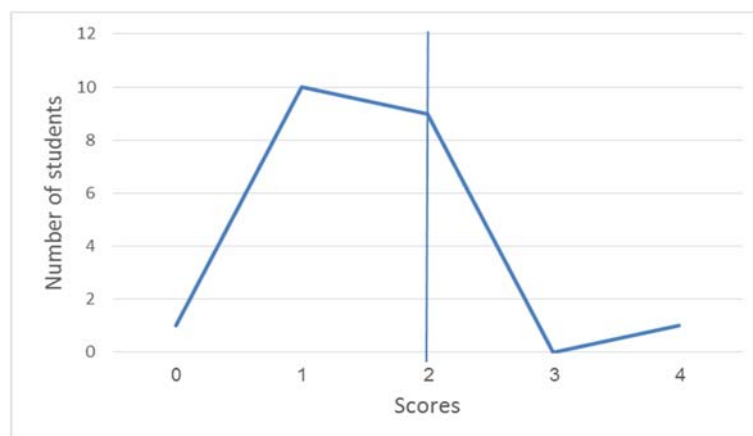


Figure 3.6. Scores' distribution related to the category of adverbs

### 3.4.5 Tenses

As for the fifth sub-test, it considers the conceptual issue of expressing events in particular moments in time; in other terms, how to use tenses in English (see Appendix Y). In view of their importance, eighteen test items were selected to cover the crucial part of language tenses in English grammar. Table 3.12 concludes the findings (see Appendix Z).

Table 3.12. Test results related to the use of tenses

Number	How to use / express	Total	%
1	present to express state (to be)	18	85.71
2	present to express state (to have)	12	57.14
3	express a completed state in the past (to be)	17	80.95
4	express a completed state in the past (to have)	7	33.33
5	express a progressive action at present	10	47.62
6	express a progressive action in the past	7	33.33
7	express negation (to be)	10	47.62
8	express negation (to have)	9	42.86
9	ask yes and no questions (to be)	5	23.81
10	ask yes and no questions (lexical verbs)	9	42.86
11	past negation (lexical verbs)	5	23.81
12	enquire about an action in the past	7	33.33
13	present perfect	13	61.90
14	present perfect in negative form	13	61.90
15	future	13	61.90
16	negative form	16	76.19
17	enquire about future events	5	23.81
18	give instructions	9	42.86
Total		185	

The percentages related to the scores displayed in table 3.12 show the following:

- 1- How to use the present tense to express state (to be): The great majority of the sample (85.71%) seem to know how to use the linking verb 'to be' to express state in the present. Three testees or 14.29% mistook the right option and chose the infinitive form of the verb, without 'to' of course.
- 2- How to use the present to express state (to have): 12 out of 21 were able to use the verb *to have* in the present tense to express state; this formulated 57.14% of the testees.
- 3- How to express a completed state in the past (to be): The number of those who scored is 17 students, i.e., 80.95% of the sample. In contrast, four (19.05%) failed to score.
- 4- How to express a completed state in the past (to have): The right form of the verb 'to have' in the past was chosen by seven testees, that is, 33.33%. Two thirds either did not know the right verb form or did not pay attention to the adjunct of time.
- 5- How to express a progressive action in the present: 52.38% (11 students) did not recognize the right form; slightly half of the participants (47.62%) did express the progressive present action correctly (10 students).
- 6- How to express a progressive action in the past: There are seven members who correctly answered this test item, i.e., 33.33% whereas, 14 students missed the point (66.67%).
- 7- How to express negation (to be): As for formulating the present negative form with the verb to be, 10 did choose the appropriate option (47.62%) and, 11 or, 52.38 % had some confusion between the negative form of auxiliary verbs and that of lexical verbs.
- 8- How to express negation (to have): Not better than the seventh item, nine out of 21 picked the right answer, i.e., 42.86%. However, 57.14% seemed to have problems with negative sentence structures and subject-verb agreement.
- 9- How to ask *yes* and *no* questions (to be): This language item has got the least rate of right answers with 23.81%; in other terms, five members presumably know how to produce *yes* and *no* questions and 76.19 %, or 16, mistook the right form of the answer.
- 10- How to ask *yes* and *no* questions (lexical verbs): Nine students, i.e., 42.86% did recognize the appropriate form of questions for this particular case. The remaining participants (12) missed the right form of using lexical verbs in *yes* and *no* questions.
- 11- How to use past negation (lexical verbs): Concerning the past negative form of lexical verbs less than one fourth scored. The rest, 76.19% or 16 participants, seemed to ignore the right form of lexical verbs in this case.

- 12- How to enquire about an action in the past: The number of right answers related to producing past interrogative form of action verbs is seven, i.e., 33.33%. On the other hand, 14 or two thirds is the rate of wrong answers.
- 13- How to use the present perfect: A considerable number of test takers apparently knew how to use the present perfect (61.90% or 13 students). The participants left, 8 or 38.10%, failed to recognize this form.
- 14- How to use the present perfect in the negative form: The same rate as test item 13 is witnessed here again, i.e., 61.90% of the whole sample correctly picked the appropriate answer and 38.10% did not.
- 15- How to use the future: As for the use of the simple future, 13 did answer correctly, i.e., 61.90%. The remaining eight testees did not know the form that lexical verbs take when expressing future tense.
- 16- How to formulate negative forms: The purpose of this item is to investigate students' knowledge about the suitable words for formulating negative statements; 16 participants knew the appropriate word *not*, i.e., 76.19%; however, five or 23.81 % did not.
- 17- How to enquire about future events: Out of 21 participants, five answered this language item correctly, i.e., 23.81% and 16, or 76.19 %, apparently ignored how to enquire about future events.
- 18- How to give instructions: As to the last item in this category, nine students out of 21 picked the right choice concerning giving instructions, i.e., 42.86%. Conversely, 57.14 % or 12 went wrong and chose incorrect forms of the verb.

The overall distribution of rates shows that six values are more than 61%, three are included between 47% and 61%, and nine are less than 47%; three among these last are less than 24%. Language items of more than 61% of positive answers can be implemented in introductory activities of revision; these embrace, for instance, using present perfect, negative forms of the present perfect, future, negative forms of the future, enquiring about future events, and giving instructions. The items of the percentages included between 47% and 61% ought to be consolidated through make-up tasks, such as using lexical verbs to formulate past negation, yes and no questions, and questions about events in the past. The rates of the last nine items which are less than 47% should be examined carefully. The latter include mainly using the present (to be, to have, negative form of to be, negative form of to

have), the past (to be, to have), progressive past and present actions, and yes and no questions of the auxiliary verb to be.

Table 3.13. CTMs related to the use of tenses

The arithmetic mean	8.81
The median	9
The mode	6
The variance	6.76
The standard deviation	2.60

The arithmetic mean of test takers' individual scores (8.81) is slightly lower than the midpoint and median (9.00) at the same time, and it is higher than the mode (6.00). The scores' distribution of this part of speech is skewed to the positive direction, despite the fact that the interval  $8.81 \pm 2.60$  embraces 67% of the total scores, and the interval  $8.81 \pm (2 * 2.60)$  includes 95.24% of the whole values.

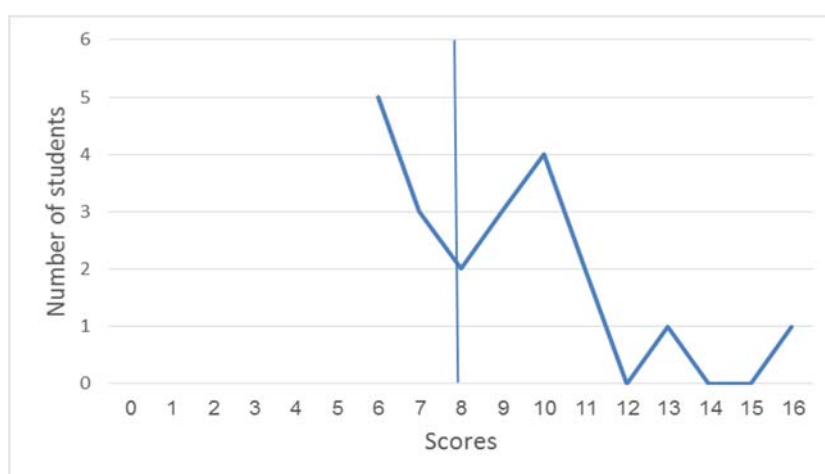


Figure 3.7. Scores' distribution related to the use of tenses

### 3.4.6 Asking questions

The sixth package of test items is concerned with gauging students' communicative competence of asking questions by using WH words (see Appendix AA). To psychometrically assess this feature, seven grammar points seen as relevant were chosen to be tested. The data resulted are presented in table 3.14 (see Appendix BB).

Table 3.14. Test results related to asking questions

Number	How to enquire	Total	%
1	about a person as a subject	1	4.76
2	about something as an object	2	9.52
3	about an object in a limited set of possibilities	5	23.81
4	about ways and methods	4	19.05
5	about the height of something	6	28.57
6	about time	2	9.52
7	about locations	7	33.33
<b>Total</b>		<b>27</b>	

The followings are the obtained results:

- 1- How to enquire about a person as a subject: The first test item in this aspect of language investigates participants' knowledge concerning the choice and use of WH words to ask about a person as a subject. One single test taker picked the appropriate WH word (4.76%) and 20 students (95.24 %) did not.
- 2- How to enquire about something as an object: As for the issue of enquiring about something as an object of a sentence, two participants scored, that is, 9.52%, and 19 (90.48%) did fail to score.
- 3- How to enquire about an object in a limited set of possibilities: In this second case of asking about the object of a sentence, five did choose the right answer, that is, 23.81%, and 16 students (76.19 %) mistakenly ticked other options.
- 4- How to enquire about ways and methods: Four participants succeeded to use the appropriate word how, i.e., 19.05%. However, 17 or 80.95 % opted for different distractors.
- 5- How to enquire about the height of something: There are six students who used the right word how, that is 28.57%. The rest of the participants, i.e., 15 or 71.43 % did not succeed to pick the right choice.
- 6- How to enquire about time: Out of 21, 2 found the right answer, that is, 9.52%; 90.48% or 19 wrongly opted for different distractors.
- 7- How to enquire about locations: This is the last test item in this aspect of language, seven participants seemed to know the precise WH word (33.33%). On the contrary, two thirds or 14 students seemed to ignore how to ask about locations.

Out of seven language items related to this grammatical area, none has got more than 33.33%; furthermore, two rates are more than 25%. These findings demonstrate that test

takers suffer from considerable lack in terms of formulating questions in English. Consequently, this area of language needs specific attention.

Table 3.15. CTMs related to asking questions

The arithmetic mean	1.29
The median	1
The mode	0
The variance	1.41
The standard deviation	1.19

At the level of participants' individual performance, the arithmetic mean is 1.29, that is, it is remarkably lower than the midpoint (3.5), yet the mean is higher than both the median (1.00) and the mode (zero). This means that the curve of scores' distribution can be claimed to be positively skewed. Nevertheless, the scores are variant as the interval  $1.29 \pm 1.19$  includes 52.38% of them which indicates that the curve is also slightly flat.

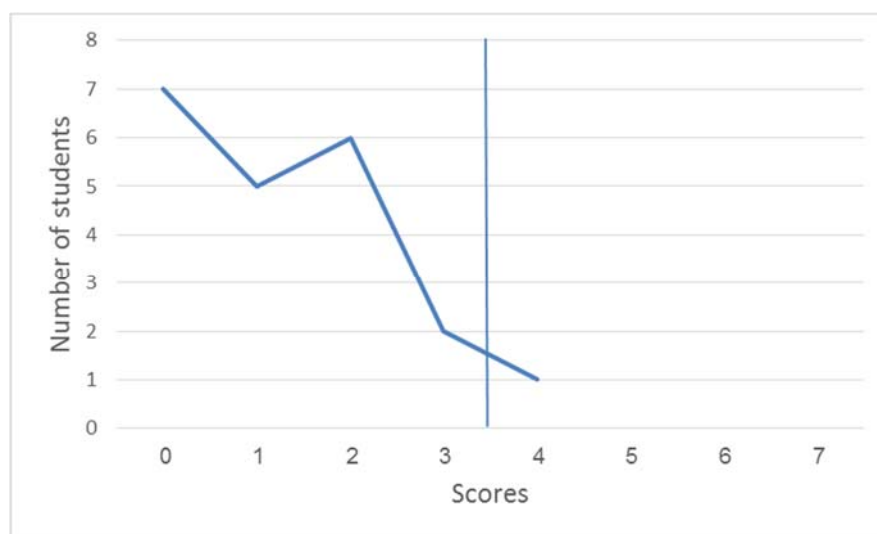


Figure 3.8. Scores' distribution related to asking questions

### 3.4.7 Prepositions

Category seven in this test series has to do with the use of prepositions in English. To investigate students' ability related to the use of this part of speech, five test items were chosen; each of which expresses a specific notion (see Appendix CC). The information gathered are displayed in table 3.16 (see Appendix DD).

Table 3.16. Test results related to prepositions

Number	How to express	Example	Students' scores	Total	%
1	Location	One	0	6	9.52
		Two	2		
		Three	4		
2	Time	One	2	2	4.76
		Two	0		
3	Movement	One	0	4	9.52
		Two	4		
4	Means	One	1	1	2.38
		Two	0		
5	Consistence	Three	5	5	23.81
<b>Total</b>				<b>18</b>	

Here are the overall results:

- 1- How to express location: The participants were provided with three sentences and asked to fill in some blank spaces with the appropriate prepositions. To facilitate the task for the participants, the sentences were also translated into Arabic. Among 63 expected answers six found the appropriate prepositions.
- 2- How to express time: With the same sort of activity as the first test item two examples of sentences were given in this case. Out of 42 students' answers two responses are correct, that is, 4.76%.
- 3- How to express movement: The participants were also required to fill in the blank spaces related to two instances of sentences in this item whereas, four cases were correct, i.e., 9.52%.
- 4- How to express means: It seems to be the most difficult test item in this category; one correct answer out of 42 is attested by this two-sentence task (2.38%).
- 5- How to express consistence: This case includes one single example, and the number of right answers is five out of 21, that is 23.81%.

As shown in table 3.16, out of the five language items related to the use of prepositions none of their rates exceeds 25%. Moreover, four test item rates are less than 10%, and one single value is more than 20%. The rates of these four test items reveal students' remarkable deficiency in the mastery of this particular grammatical category; hence, the intended activities have to consider these items carefully.

Table 3.17. CTMs related to the category of prepositions

The arithmetic mean	0.86
The median	0
The mode	0
The variance	1.63
The standard deviation	1.28

On the other hand, the mean of test takers' scores (0.86) is also lower than the midpoint (2.5) but higher than both the median and the mode (zero for each one). This means that the curve of the scores' distribution is positively skewed. The standard deviation (1.28) shows that the scores are not so variant but the distribution is rather peak as 80.95% of the total scores are included in the interval  $0.86 \pm 1.28$ .

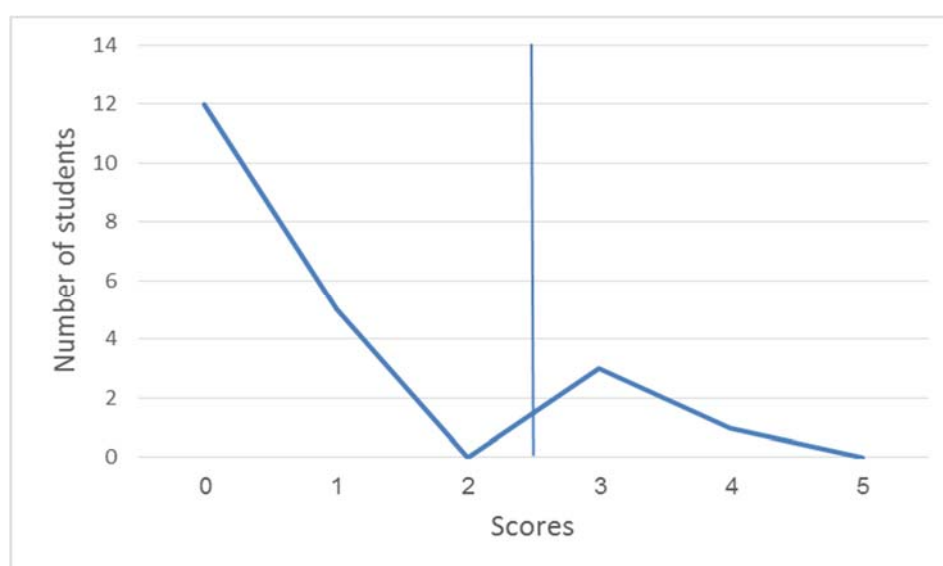


Figure 3.9. Scores' distribution related to the category of prepositions

### 3.4.8 The passive voice

This part of the diagnostic test endeavours to elicit information concerning the participants' degree of mastery of sentence structures. Six different forms of the passive voice were the underlying basis of this set of test items (see Appendix EE). Table 3.18 concludes the results (see Appendix FF).



Table 3.18. Test results related to the use of the passive voice

Number	How to use the	Total	%
1	passive voice of simple present	12	57.14
2	passive voice of simple past	13	61.90
3	passive voice of present continuous	8	38.10
4	passive voice of past continuous	6	28.57
5	passive voice of present perfect	11	52.38
6	passive voice of future	7	33.33
<b>Total</b>		<b>57</b>	

The data obtained are as follows:

- 1- How to use the passive voice of simple present: The first test item of the passive voice introduces the way simple present sentences are produced. Three instances are written, i.e., two distractors and one correct choice. The results demonstrate that 12 answers are correct, i.e., 57.14% meanwhile, nine answers are not (42.86%).
- 2- How to use the passive voice of simple past: Among 21 answers 13 are correct, that is, 61.90%. In contrast, eight participants or 38.10% failed to consider either subject-verb agreement or the verb form.
- 3- How to use the passive voice of present continuous: Up to 38.10% of the sample scored, i.e., eight test takers whereas, 13 participants went wrong and chose incorrect forms of the verb.
- 4- How to use the passive voice of past continuous: Slightly less than one third of the participants got the right answer, i.e., 28.57% (6 students). At the same time, 71.43% (15 participants) were misled by incorrect sentence structures and verb forms.
- 5- How to use the passive voice of present perfect: More than half did find the anticipated answer (11 participants or 52.38%). In contrast, 10 participants (47.62%) did not consider subject-verb agreement and the appropriate active voice structure.
- 6- How to use the passive voice of future: One third of the group picked the appropriate choice (7 students) while, two thirds or 14 were misled by wrong verb forms or incomplete sentence structures.

Having given these points, the findings show that all the percentages are included between 28% and 62%; additionally, five out of six language items belong to the second third, i.e., between 33.3% and 66.67%, and half of them are more than 50%. In view of the importance of the passive voice in technical writings, it is preferable when designing the

course to examine the language items of more than 50% earlier before those of less than 50%. This means that language items related to using past, present, and present perfect passive voice are used for make-up exercises; then, those concerned with the future, progressive present, and past should be thoroughly examined.

Table 3.19. CTMs related to the use of the passive voice

The arithmetic mean	2.67
The median	3
The mode	4
The variance	2.33
The standard deviation	1.53

In the light of the CTMs of the individual scores, the value 2.67 is the arithmetic mean. Therefore, it is lower than the midpoint (3.00), the median (3.00), and the mode (4.00). This indicates that the curve of scores' distribution is somehow negatively skewed whereas, the test takers individual scores are not that variant as the interval  $2.67 \pm 1.53$  embraces 66.67% of the whole scores.

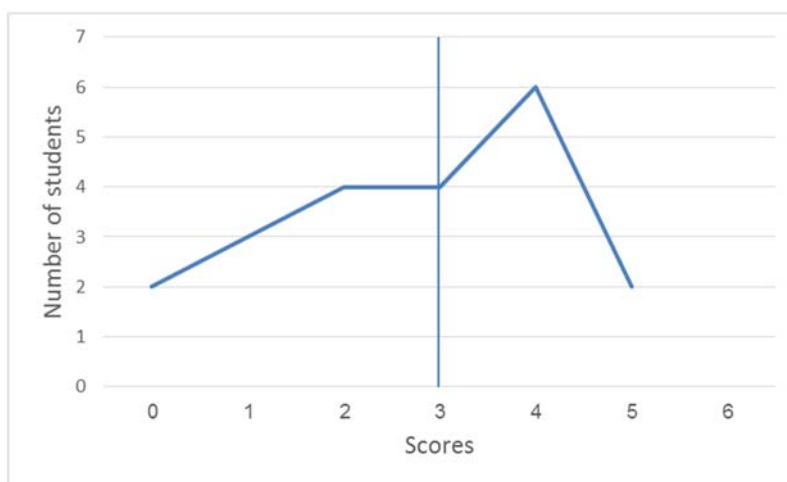


Figure 3.10. Scores' distribution related to the use of the passive voice

### 3.4.9 Modal verbs

The following set is the ninth in this test series. Its objective is to analyse participants' communicative competencies in expressing functions namely those which require the use of modal verbs (see Appendix GG). There are six test items and each of which represents a particular function as shown in table 3.20 (see Appendix HH).

Table 3.20. Test results related to the use of modals

Number	How to express	Total	%
1	obligation	8	38.10
2	absence of obligation	11	52.38
3	condition	8	38.10
4	cause and result	9	42.86
5	regret about the past	5	23.81
6	desire	14	66.67
<b>Total</b>		55	

The participants' scores are as follows:

- 1- How to express obligation: To correctly express obligation, the test takers were asked to fill in a blank space in a sentence with one of the three choices provided. Exactly, eight succeeded to put the appropriate modal verb (38.10%). On the contrary, 13 (61.90%) wrote inappropriate modals.
- 2- How to express absence of obligation: Exactly, 11 students did opt for the right word (52.38%). Conversely, 10 (47.62%) apparently did not know the way absence of obligation is expressed.
- 3- How to express condition: Approximately, 38.10% presumably knew the conditional form type one and picked the right verb (eight members). Besides, 61.90% (13 participants) put instead wrong forms of the main verb.
- 4- How to express cause and result: Just nine students out of 21 got the point, i.e., 42.86% meanwhile, 12 or 57.14% had some confusion as to the right expressions of cause and result.
- 5- How to express regret about the past: To clarify the idea more, the sentence was also translated into Arabic; five testees scored, i.e., 23.81% and 16 failed to score, i.e., 76.19%
- 6- How to express desire: Two thirds did put the appropriate verb (14 members). The remaining third went wrong and chose the verb in its past perfect form.

The results reveal that the rates of two language items are more than 50% while four are less than average. Five out of six items are included between 33% and 67% whereas, the least rate is nearly 24%. To inform the course design, the two items having more than the average should be consolidated in make-up activities; however, the rest should be better taught right from scratch.

Table 3.21. CTMs related to the use of modals

The arithmetic mean	2.62
The median	2
The mode	2
The variance	0.85
The standard deviation	0.92

As has been seen, the mean of the whole scores (2.62) is higher than the median (2.00) and the mode (2.00), but it is lower than the midpoint (3.00). These results indicate that the curve is positively skewed. The value 0.92 of the standard deviation demonstrates that the curve of the test takers' scores is rather peaked; hence, the interval  $2.92 \pm 0.92$  includes 80.95% of the total scores.

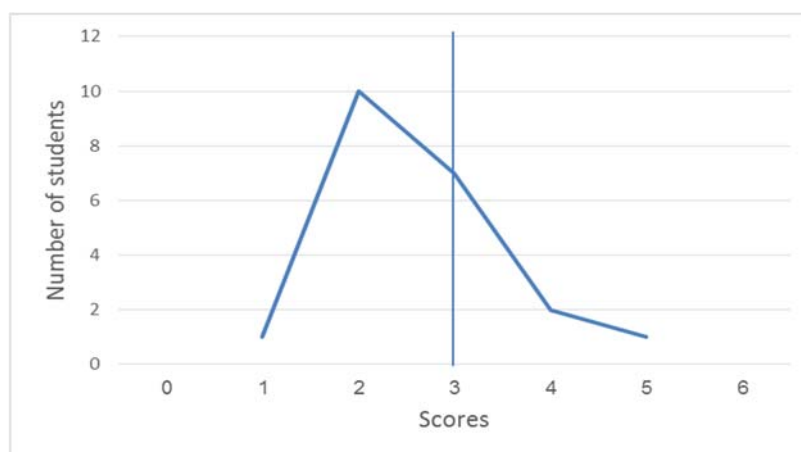


Figure 3.11. Scores' distribution related to use of modals

### 3.4.10 Pronouns

As for the set of test items number ten, it attempts to get an idea about the participants' ability to refer to some parts in a sentence without stating them, that is, using pronouns (see Appendix II). The results are summarized in table 3.22 (see Appendix JJ).

Table 3.22. Test results related to the use of pronouns

Number	How to refer to	Total	%
1	the subject	15	71.43
2	the object	15	71.43
3	possession	8	38.10
4	existence	8	38.10
5	link two clauses together	8	38.10
<b>Total</b>		<b>54</b>	

Five cases of using pronouns are the subject of this test:

- 1- How to refer to the subject: As many as 15 members selected the right pronoun, that is, 71.43%; however, six mistakenly chose a wrong pronoun as a subject.
- 2- How to refer to the object: The same rate as the first item is also witnessed for this one, that is, 15 participants or 71.43%. The rest of the informants, i.e., 28.57% or six were not able to refer correctly to the object.
- 3- How to refer to possession: Eight students put the appropriate pronoun (38.10%); on the contrary, 13 or 61.90% opted for inappropriate possessives.
- 4- How to refer to existence: The same rate of correct answers seen in the previous test item occurred again, i.e., 38.10%; however, 61.90% failed to refer to existence.
- 5- How to link two clauses together: The rate of the right answers is not different from the two previously mentioned, that is, 38.10%. Seemingly, 61.90% did not know how to correctly join two clauses together.

As has been noted, the percentages related to two test items are above average (both are 71.43%) whereas, three values are less than average (38.10% for each one). For the first group of language items, i.e., referring to a subject and an object a general revision may be sufficient for students but the second group, i.e., referring to possession, existence, and linking two clauses a specific examination from scratch is required.

Table 3.23. CTMs related to the use of pronouns

The arithmetic mean	2.57
The median	3
The mode	2
The variance	1.06
The standard deviation	1.03

As for the individual performance of the examinees, the arithmetic mean (2.57) is higher than the midpoint (2.5) and the mode of course (2.00), yet it is lower than the median (3.00). Additionally, the interval  $2.57 \pm 1.03$  includes 71.4% of the whole individual scores; for this reason the distribution of test scores is not variant and the curve is nearly normal.

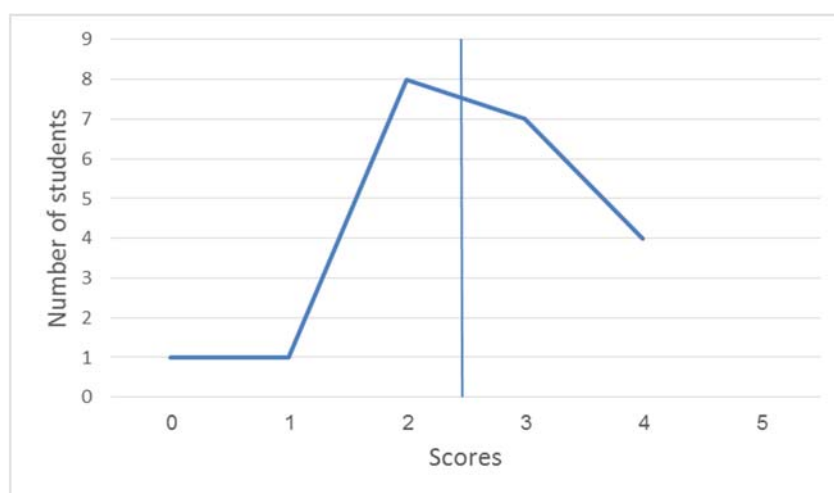


Figure 3.12. Scores' distribution related to the use of pronouns

### 3.4.11 Reading comprehension

Reading comprehension skills are the subject of part eleven in this diagnostic test. The test-takers were given five sentences, and each sentence had two possible interpretations; the students' task is to put a tick in front of the one that is more likely to be similar in meaning to the main one (see Appendix KK). The data gathered are displayed in table 3.24 (see Appendix LL).

Table 3.24. Test results of reading comprehension

Number	Sentence	Total	%
1	One	19	90.48
2	Two	11	52.38
3	Three	13	61.90
4	Four	7	33.33
5	Five	8	38.10
<b>Total</b>		<b>58</b>	<b>55.24</b>

The results are as follows:

- 1- Sentence One: The majority of the group succeeded to tick the appropriate sentence, i.e., 19 members or 90.48% yet, 9.52% failed, that is, two members.

- 2- Sentence Two: More than half of the test sample did find the appropriate answer, that is, 11 participants (52.38%). Yet, 47.62% seemed to be misled by the meaning of the word *shopping* in both: the main sentence and the distractor.
- 3- Sentence Three: Nearly two thirds answered correctly (13 students or 61.90%) and the rest of the sample were mistaken by the sentence structure (eight test takers or 38.10%).
- 4- Sentence Four: One third of the group marked the anticipated answer (seven examinees). The remaining two thirds (14 testees) were trapped by the confusion between the two words *like* the verb and *likely* the adverb.
- 5- Sentence Five: Nearly two fifths scored (eight test takers or 38.10%). For the remaining, i.e., 61.90% or 13 students, they did not understand the meaning of the subordinate clause in the three sentences.

Out of the five examples concerned with reading comprehension test, three words have more than 50% of correct answers; however, the rest, i.e., two have got less than the average. Four percentages are included between 33% and 66.67%, and one score is an outlier (90.48). The overall rate is more than the average (55.24%).

Table 3.25. CTMs of reading comprehension

The arithmetic mean	2.76
The median	3
The mode	3
The variance	0.99
The standard deviation	1.00

Table 3.25 shows that the median and the mode (3.00) are higher than the arithmetic mean (2.76) of participants' individual scores which is, in its turn, higher than the midpoint (2.5). In this case the curve of scores distribution can be described as being pretty negatively skewed. The interval  $2.76 \pm 1.00$  contains 71.43% of test takers' scores, that is, these values are not variant.

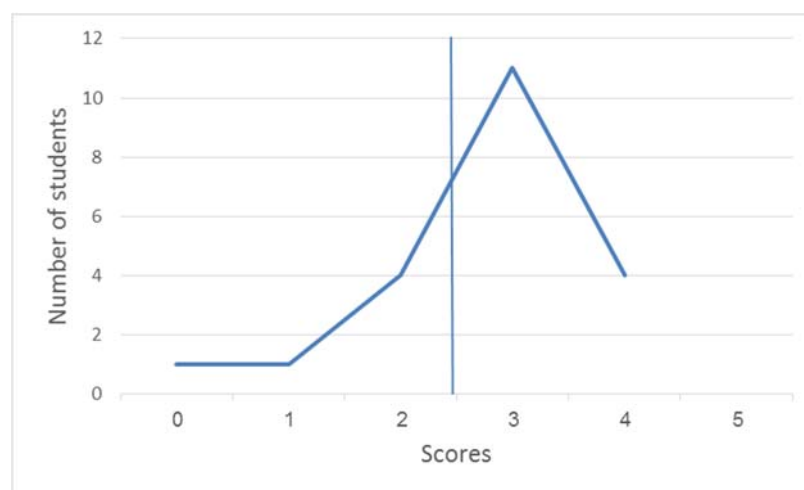


Figure 3.13. Scores' distribution related to reading comprehension

### 3.4.12 Vocabulary

The present exercise, number twelve, is devoted to investigating students' knowledge of vocabulary namely the recognition of words' appropriateness. The testees were provided with five words and a similar number of sentences, i.e., words and contexts. Their task is to match each word with its appropriate context (see Appendix MM). The table 3.26 shows the findings (see Appendix NN).

Table 3.26. Test results related to the category of vocabulary

Number	Vocabulary	Total	%
1	Example One	8	38.10
2	Example Two	1	4.76
3	Example Three	1	4.76
4	Example Four	4	19.05
5	Example Five	4	19.05
<b>Total</b>		<b>18</b>	<b>17.14</b>

- 1- Example One: Even though this example had the highest rate of correct answers, this last is less than two fifths, i.e., 38.10%.
- 2- Examples Two and Three: One single right answer for each sentence is witnessed in these two examples, that is, 4.76% for each one.
- 3- Examples Four and Five: The same number and percentage is also found here for these two last examples (four correct answers and 19.05%).



All things considered, the percentages of all the instances of vocabulary are less than 50%; moreover, four are less than 20% and the overall mean of the correct answers is 17.14%. This means that students' lexis is, to some extent, limited and needs to be enriched.

Table 3.27. CTMs related to the category of vocabulary

The arithmetic mean	0.86
The median	1
The mode	0
The variance	0.93
The standard deviation	0.96

As for test takers' individual performance, the mean is 0.86, i.e., it is lower than both: the midpoint (2.5) and the median (1.00), yet it is higher than the mode (zero); these values lead the curve to be positively skewed. The standard deviation (0.96) indicates that the interval  $0.86 \pm 0.96$  embraces 71.43% of the total scores; hence, these values are not so variant.

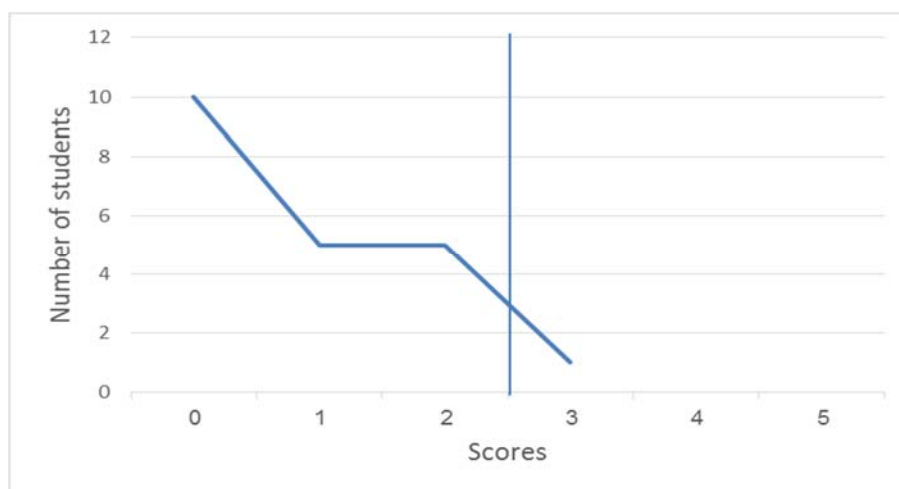


Figure 3.14. Scores' distribution related to the category of vocabulary

### 3.4.13 Linking verbs with nouns

Dealing with the same area of language, this sub-test gauge students' ability to match verbs with the most appropriate nouns. Two lists of six words for each grammatical category were given to the participants; the task was to link each verb from the left column to the most suitable noun on the right column (see Appendix OO). In table 3.28, the main findings are provided (see Appendix PP).

Table 3.28. Test results related to matching verbs with nouns

Number	Verbs	Total	%
1	Instance One	3	14.29
2	Instance Two	11	52.38
3	Instance Three	3	14.29
4	Instance Four	7	33.33
5	Instance Five	9	42.86
6	Instance Six	1	4.76
<b>Total</b>		<b>34</b>	<b>26.98</b>

- Instance One: Exactly, three students linked correctly the first verb with the most corresponding noun, i.e., 14.29%.
- Instance Two: To some extent, more than half of the sample joined the second verb with the appropriate noun (52.38%).
- Instance Three: Less than one sixth of the whole group did find the noun which suits the third verb (three test takers or 14.29%).
- Instance Four: One third of the sample rightly put together the fourth verb and its corresponding noun (seven testees).
- Instance Five: More than two fifths successfully related the verb with the suitable noun, that is, nine informants or 42.86%.
- Instance Six: Last and least altogether, one participant found the right noun for the sixth verb, i.e., 4.76%.

Despite the fact that six examples were provided, in one case the percentage of the correct answers is higher than 50%; however, the interval 4.76% and 42.86% includes all of the rest of the values. The overall mean of the correct answers is 26.98%, which means that the participants' ability to link verbs with appropriate nouns is low and needs to be developed.

Table 3.29. CTMs of matching verbs with nouns

The arithmetic mean	1.62
The median	2
The mode	2
The variance	0.55
The standard deviation	0.74

Additionally, CTMs related to the individual scores of the examinees reveal that the mean (1.62) is lower than all of the midpoint (3.00), the mode (2.00), and the median (2.00). This leads to conclude that the distribution of the scores is lightly negatively skewed and also peaked since the interval  $1.62 \pm 0.74$  contains 90.48% of the values.

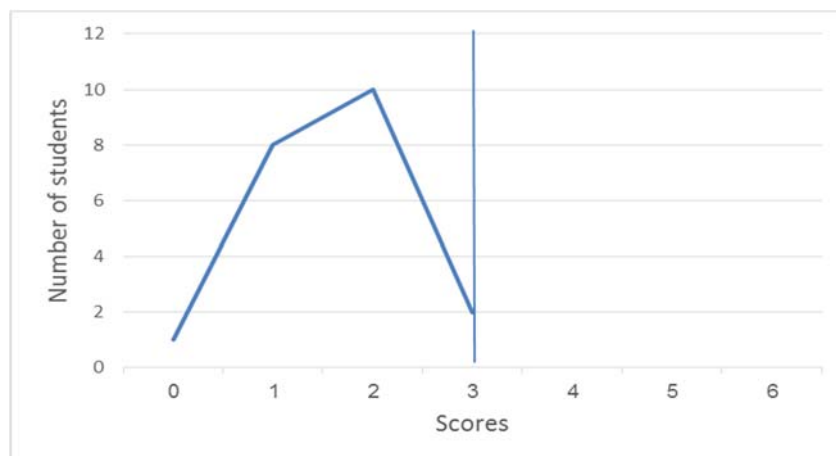


Figure 3.15. Scores' distribution related to matching verbs with nouns

### 3.4.14 Matching adjectives with nouns

The current test item, exercise fourteen, is based on the same principle as the previous one. However, the underlying purpose is to get an idea about the participants' knowledge with regard to adjectives and nouns appropriateness. The sample of vocabulary in this exercise embraces six words from each grammatical category (see Appendix QQ). The table 3.30 displays the results (see Appendix RR).

Table 3.30. Test results related to matching adjectives with nouns

Number	Adjectives	Total	%
1	Element One	9	42.86
2	Element Two	8	38.10
3	Element Three	5	23.81
4	Element Four	4	19.05
5	Element Five	5	23.81
6	Element Six	2	9.52
<b>Total</b>		<b>33</b>	<b>26.19</b>

- Element One: The rate 42.86% is for those who correctly coupled the first adjective with the appropriate noun, i.e., nine students.

- Element Two: Slightly less than the first case 38.10% did find the correct noun for the second adjective (eight members).
- Element Three: More than one fifth of the sample (23.81%) rightly linked the corresponding noun to the third adjective.
- Element Four: Less than one fifth of the group (19.05%) joined correctly the fourth adjective with the relevant noun.
- Element Five: Exactly, five participants successfully did the task and linked the fifth adjective with the suitable noun (23.81%).
- Element Six: For the last instance, two students did put together the sixth couple of adjective and noun (9.52%).

After all, none of the aforementioned percentages is higher than 50%; conversely, they are rather included between the values 9.52% and 42.86%. The general mean of the correct answers is 26.19%. This finding confirms the previously mentioned results concerning pairing verbs and nouns as well as vocabulary. For this reason, the same sort of treatment can be suggested, i.e., developing students' competence as to this aspect of lexis.

Table 3.31. CTMs of matching adjectives with nouns

The arithmetic mean	1.57
The median	2
The mode	2
The variance	2.26
The standard deviation	1.50

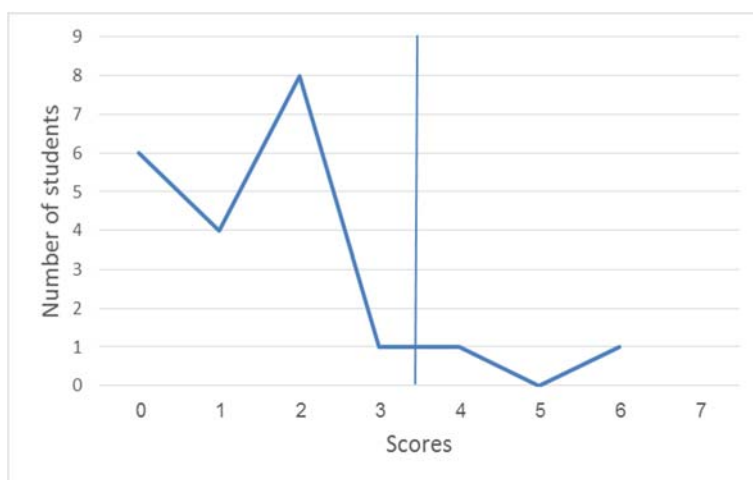


Figure 3.16. Scores' distribution related to matching adjectives with nouns

The value 1.57 is the arithmetic mean of all participants' scores. It is lower than the midpoint (3.00), the median, and the mode; which means that the distribution is negatively skewed. However, the value of the standard deviation (1.50) is slightly high since the interval  $1.57 \pm 1.50$  includes 61.90% of the total scores. For this reason the scores can be said to be somehow variant.

### 3.4.15 Correcting sentences

As for the part fifteen of the present test, it concerns itself with the sentence level. This test item is written on error recognition form. Two sentences are given and the participants were asked to correct the grammatical mistakes in each one (see Appendix SS). The findings are presented in table 3.32 (see Appendix TT).

Table 3.32. Test results related to correcting sentences

Number	Sentences	Total of students' scores	%
1	Sentence 01	0	0.00
2	Sentence 02	0	0.00
<b>Total</b>		0	

Despite the fact that the test takers did their best to find the errors, no correct answer was reached. This general failure might be due to several reasons. For instance, the testees had not seen such sort of activities before and so they were not familiar with this type of tests; another possible reason is that the exercise might have been beyond their level.

### 3.4.16 Writing sentences

The last item in this diagnostic test moves a step forward to test production skills or more precisely students' writing skills. This exercise is based on the broken sentence principle. Thus, the participants were given a set of random words and they were instructed to formulate a correct sentence (see Appendix UU). The table 3.33 concludes the findings (see Appendix VV).

Table 3.33. Test results related to writing sentences

Number	Sentence	Total of students' scores	%
1	Sentence 01	1	4.76
<b>Total</b>		1	

Out of 21, one single testee did put all the words together and formulate a correct sentence, that is, 4.76%. The overwhelming majority failed to do so, i.e., 20 which represents 95.24%. The reasons behind students' inability to answer this item are unclear but there are few possibilities:

- The lack of practice as to language skills and production activities.
- The unfamiliarity of students with such kind of exercises.
- The difficulty of the activity itself.

### **3.5 Discussion of the Diagnostic Test's Results**

The thorough analysis of the language items included in this test demonstrates that the participants' performance is high in few areas, i.e., 14 items, intermediate in some areas, i.e., 11 items, and low in an important number of language areas, i.e., 49 items. This indicates that the overall students' level is pre- intermediate. Thus, the course designer's task in this case is to consider these elements by refreshing students' knowledge as to what they already master as a starting point, then consolidate the areas of language where they are intermediate, afterwards language items of low performance are to be carefully examined. The importance and the degree of difficulty are to be considered also during the classification and the treatment of all language items.

### **3.6 The Questionnaire of Second-Year BE Students**

Out of 71 students, 59 informants filled out the present questionnaire (see Appendix XX). This means that nearly 81 % of the population participated in this survey. That is, the confidence level is approximately 95% and the sampling error is 5% (Cohen, Manion, & Morrison, 2005).

#### **3.6.1 Personal background**

Introductory questions of this category examine the participants' age and gender.

##### **3.6.1.1 Gender**

The first element in this questionnaire survey shows that female participants outnumber their male counterparts by more than one fifth (36 females versus 23 males). Thus, the percentage of males is 38.98 %, but that of females equals 61.02 %. In fact, these rates parallel the rates of male/female representation in the population of the second year CE

students with a slight discrepancy. The overall number of males is 32 students (45.07 %), and that of females is 39, i.e., 54.93 %.

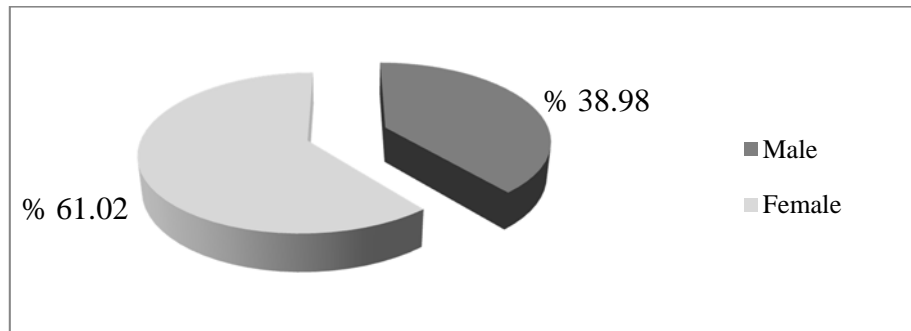


Figure 3.17. Male/female representation

### 3.6.1.2 Age

The diagram of students' age shows that the age of 19 students is 20, i.e., 32.20 %. Additionally, the ages of 69.48% vary between 20 and 22 years (41 participants).

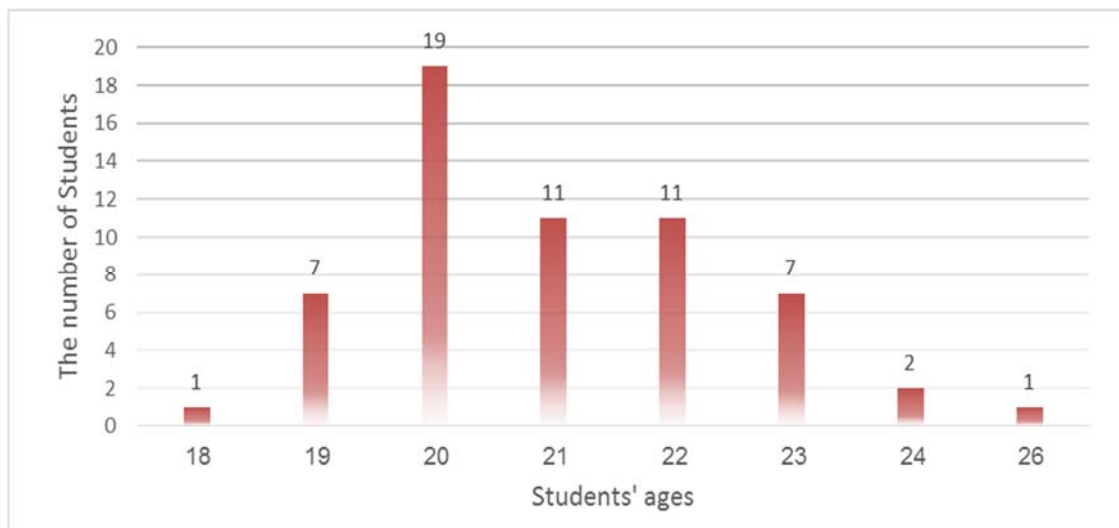


Figure 3.18. Students' ages

### 3.6.2 The reasons behind studying CE

Two questions are addressed under this category; they probe participants' views toward CE in general.

#### 1) Why did you choose to study CE?

One third of the sample (33.90 %) stated that CE is their favourite branch; however, 28.81% declared that they did not find a better choice. Job opportunities were the driving motive for 22.03 % to undertake CE studies. On the opposite side, 15.25 % have chosen to do CE without any clear idea in mind.

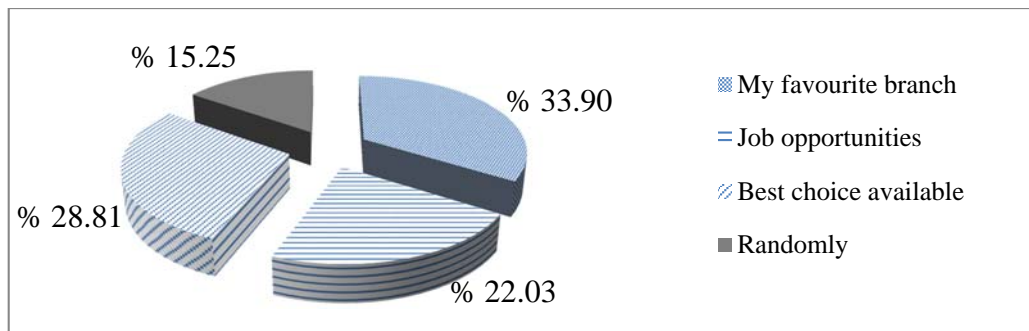


Figure 3.19. Motives behind studying CE

2) For what sector, institution, or company do you intend to work?

As for future prospective jobs, 27.12% answered that they have no idea. Design offices and laboratories draw the intention of 23.73%, yet 15.25% saw that it is more likely for them to work for local enterprises. Furthermore, 13.56% have the intention to work at public services. Teaching at university and working in foreign companies respectively attracted 11.86% and 8.47% of the informants.

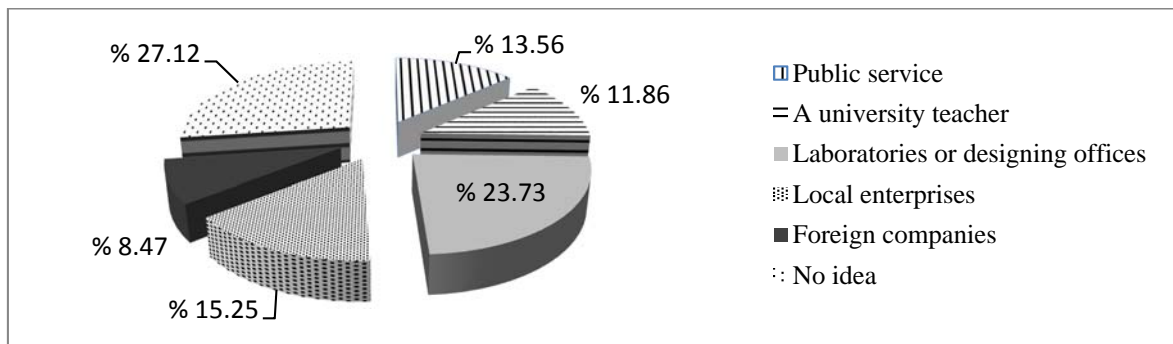


Figure 3.20. Students' intentions as to their future jobs

### 3.6.3 Language abilities

The questions of this category probe the participants' level of mastery of the languages they know. The informants were given three choices (Arabic, French, and English), and for each case there were three levels. The task was to put a tick in front of the appropriate level, i.e., low, intermediate, or high.

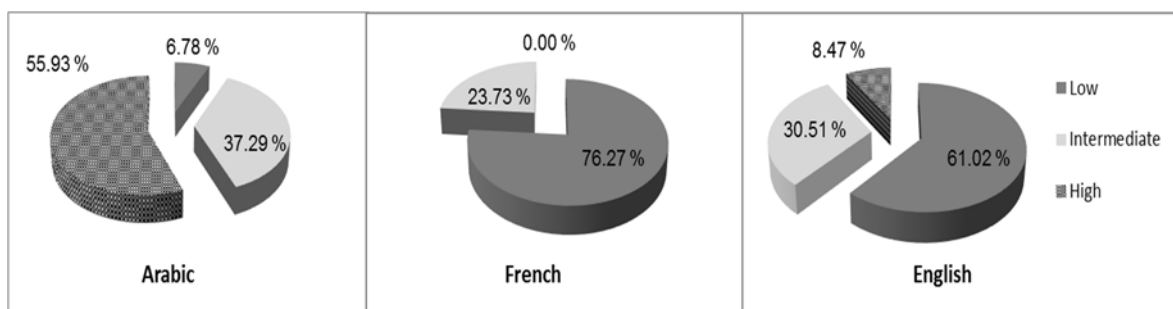


Figure 3.21. Languages and their degree of mastery



The investigation proved that

### 3) Arabic

Out of 59 respondents, 55.93% stated that their performance in Arabic is high whereas, 6.78 % declared that their level is low and in the meantime, 37.29 % affirmed that intermediate is their level in this language.

### 4) French

Despite the fact that they are taught in French, 76.27 % stressed that their level is rather low. The rest, that is, 23.73 % viewed that their level as being intermediate.

### 5) English

Concerning English, 61.02 % is the rate of the informants who have low level; 30.51% represents the category of those who have an intermediate level. The last category formulates 8.47%; it is for those who claimed having a high level.

## 3.6.4 Motives for learning English

The following set of questions has to do with participants' attitudes towards English, and their reasons behind its learning.

### 6) Is English important for CE?

Nearly 86.44 % saw that English is important for CE; however, a few participants saw the opposite, that is, 13.56%.

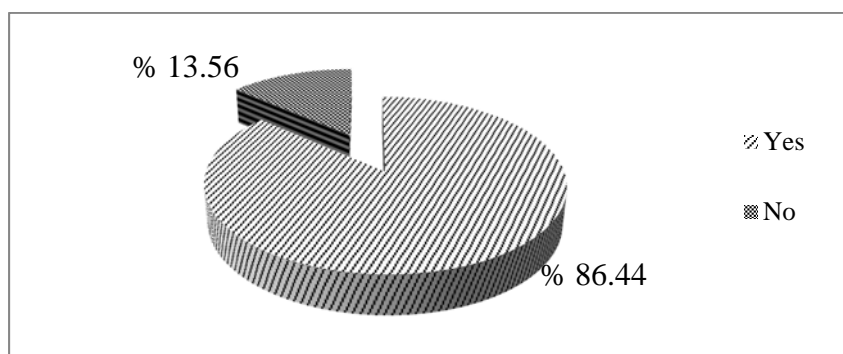


Figure 3.22. The importance of English for CE

### 7) Do you attend English sessions?

The majority of the informants (54.24 %) honestly said no as to the question enquiring about their attendance to English sessions whereas, 45.76 % said yes.

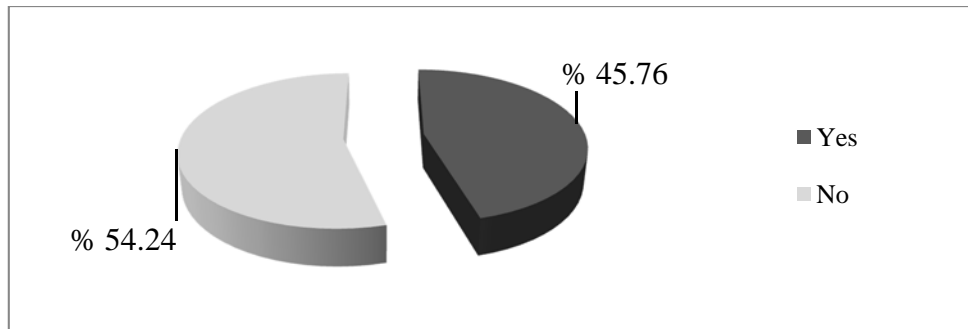


Figure 3.23. Students' attendance to English sessions

8) The reasons behind students' attendance.

This question is a follow up enquiry to the previous one. It probes the reasons behind students' attendance to English sessions. The responses demonstrate that 15 students, or nearly 55.56 %, returned their attendance to the interest they have in learning English, 37.04% claimed that the way English is taught is the reason behind their attendance, and 7.41 % attend English classes because it is compulsory.

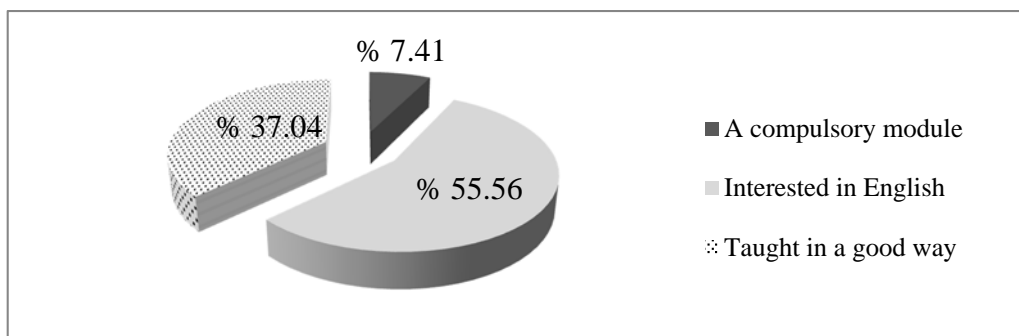


Figure 3.24. The reasons behind students' attendance to English sessions

9) How do you find learning English?

With regard to learning English, 59.32 % find it acceptable. Yet, 22.03 % viewed it difficult. On the opposite side, 15.25 % stressed that it is easy. However, two participants (3.39 %) classified it very difficult.

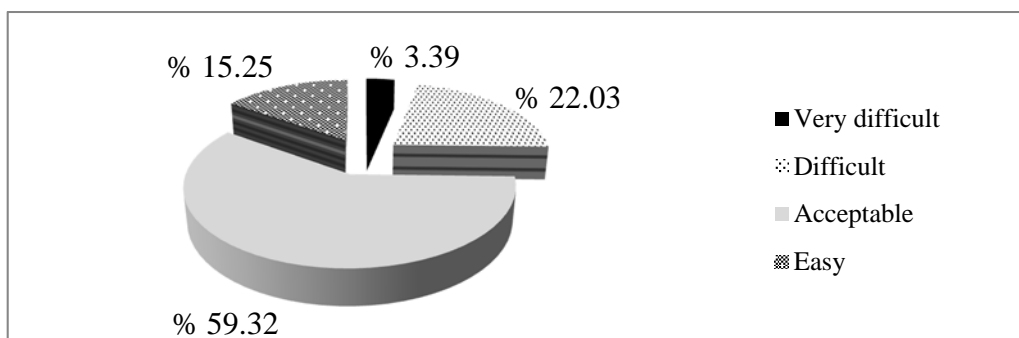


Figure 3.25. Students' attitudes towards learning English

## 10) What is your proficiency level in English?

When asked about their English proficiency level, 42.37 % answered that it is intermediate. However, 20.34 % mentioned that it is high. Yet, 16.95 % admitted that their level is low, and 13.56 % declared that it is pre-intermediate. At the top of the scale, 6.78 % of the sample assumed having a high level in English.

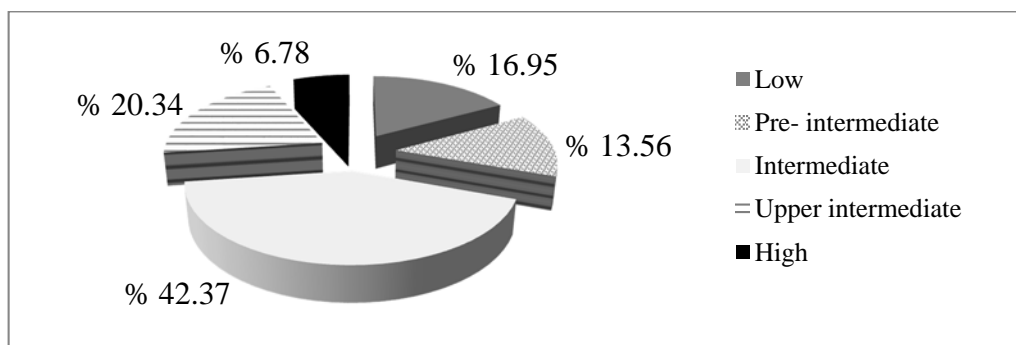


Figure 3.26. English proficiency level

## 11) How often do you need English for your studies?

The inquiry about the frequency of using English shows that more than half of the informants, that is, 55.93 %, *sometimes* use English for their studies while, 28.82 % answered *never*, 3.39 % responded that they *always* use it. Equally important, 11.86 % affirmed that they use English most of the time.

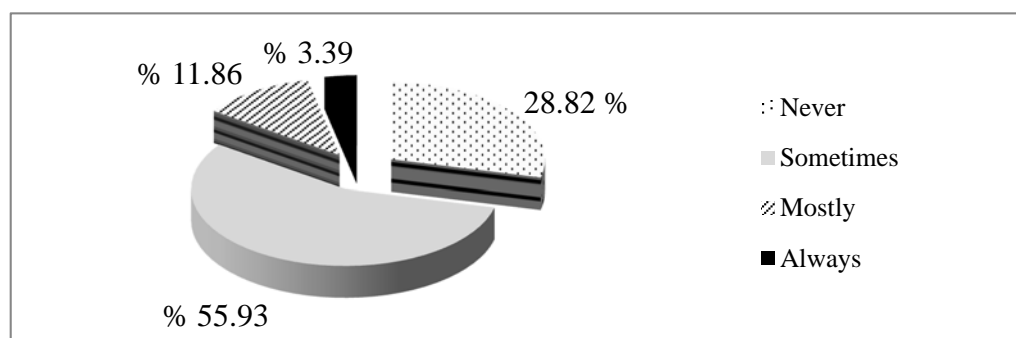


Figure 3.27. Frequency of using English

### 3.6.5 Learning strategies and study skills

## 12) Classify language skills according to their importance for you.

Listening seems to be the most important skill for 42.37%. However, 25.42% see that it is speaking which matters more. Reading attracts the interest of 20.34%, yet writing is the last one with a percentage of 11.86%.

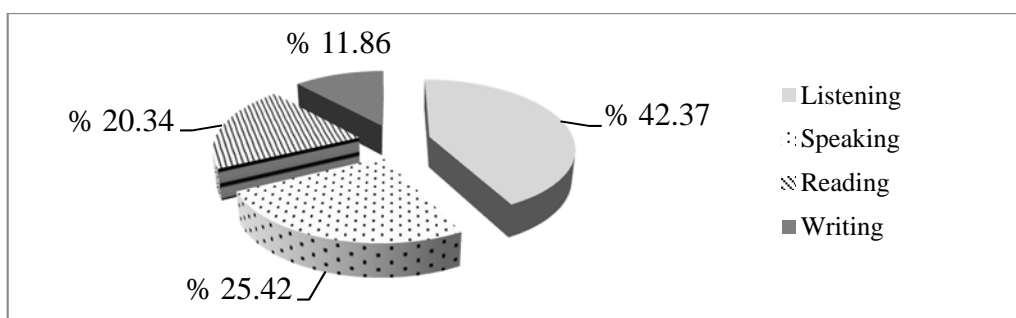


Figure 3.28. The importance of language skills

13) Classify the grammatical categories with regard to their degree of difficulty to you.

On the scale of difficulty, 40.68% classified the grammatical class of verbs as the most difficult whereas, 20.34% chose adjectives instead. The class of prepositions was in the third position with 18.64%. Adverbs and Nouns were in the fourth and fifth positions with 11.86% and 8.47% respectively.

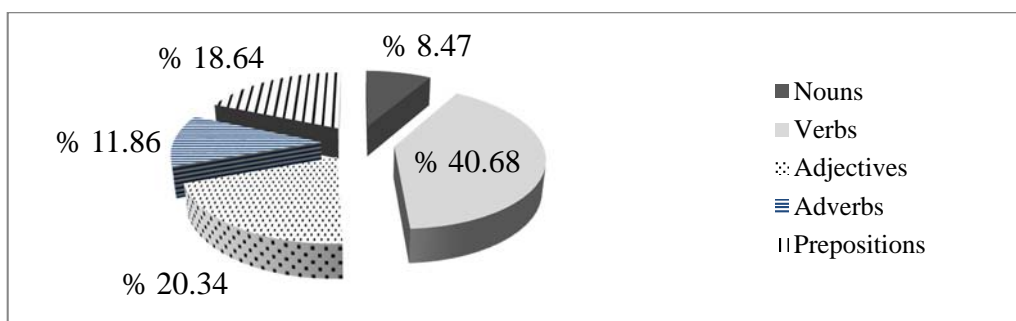


Figure 3.29. Grammatical categories' degree of difficulty

14) What are the difficulties that you face for learning English?

Unlike all the items in this survey, this one is an open question. Students' answers are remarkably variant; nevertheless, there are some recurrent points:

- the irregular forms of verbs,
- the English spelling system, i.e., the difference between written and spoken forms of words,
- the awkwardness of understanding oral discourses,
- and the discontinuity in learning English.

### 3.6.6 English course content

15) What is your opinion about the content of the English course?

Out of 59 participants, 69.49% saw that the content of the course of English is interesting; 27.12% noted that it is quite interesting, but 3.39% declared that it is not interesting at all.

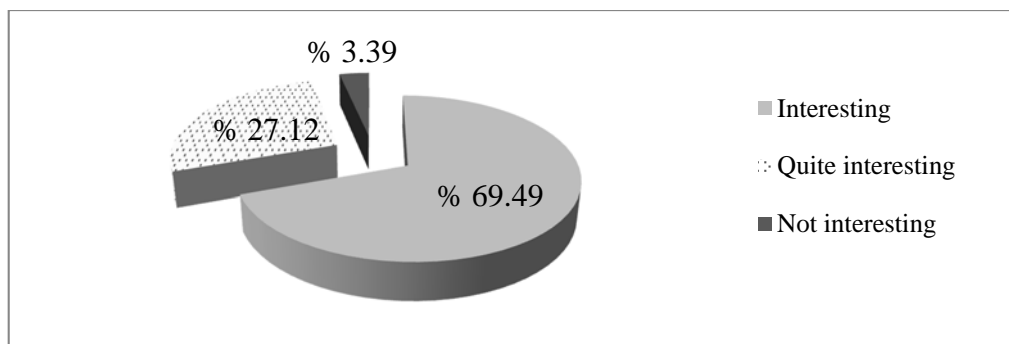


Figure 3.30. Students' opinions on the course content

16) Which type of texts should the course be based on?

CE based texts are preferable for 57.63%. Instead, 35.59 % opted for a mixture of all sorts of text; conversely, 6.78% chose communicative texts.

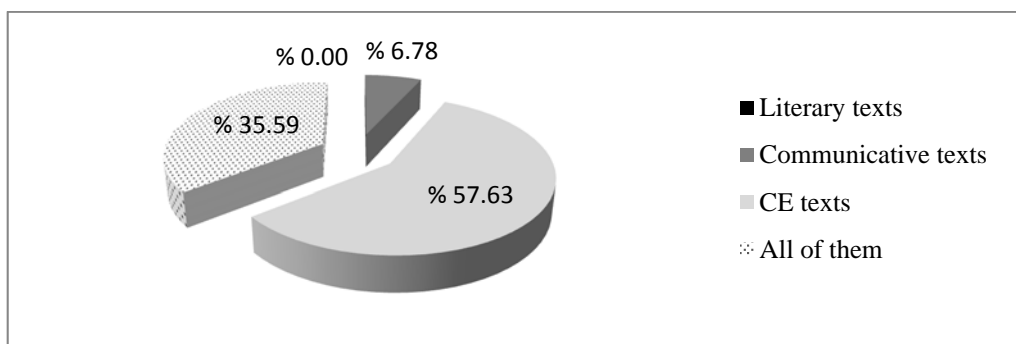


Figure 3.31. The types of texts chosen for the English course

17) The source of inspiration of the language course content.

The enquiry about the sources of inspiration for the course content revealed that 37.29% (22 informants) preferred a mixture of sources; 30.51 %, or 18 informants, regarded future professional needs as more important. Modern technology was chosen by 20.34 % (12 informants), and 11.86 % (seven informants) opted for scientific materials.

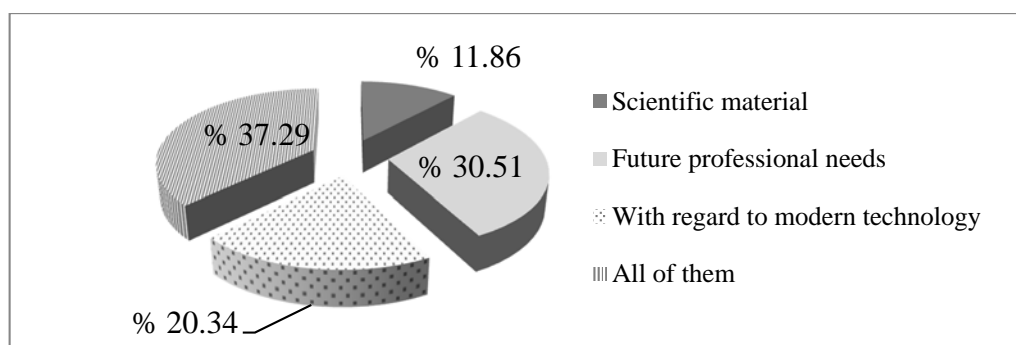


Figure 3.32. The source of inspiration of the course content

### 3.6.7 The English teacher for civil engineering

18) Which qualifications do you prefer the English teacher of CE students to have?

Nearly half of the participants (29 students or 49.15%) preferred a CE teacher with some competence in English. Yet, about two fifths (38.98 %) opted for an English teacher with a degree in teaching ESP while, 11.86 % suggested to have a teacher with a degree in teaching General English.

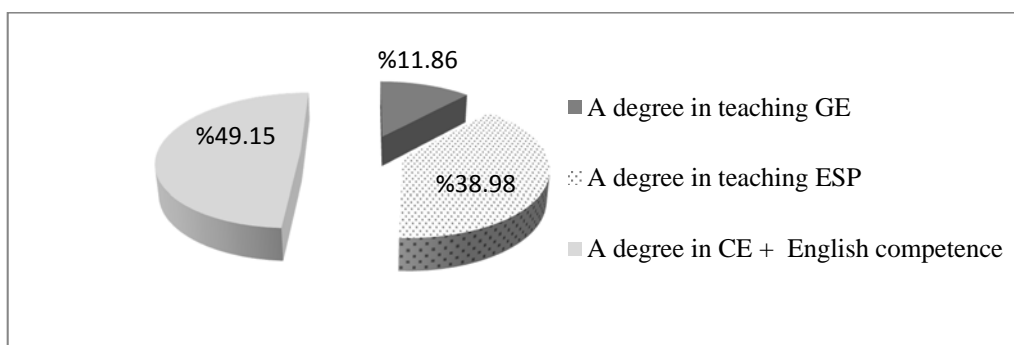


Figure 3.33. The qualifications of the English teacher

### 3.6.8 Teaching methods and materials

19) How do you prefer the instructional materials to be delivered?

As many as 50 participants (84.75 %) opted for a mixed methods approach as instructional methods, 10.17 % preferred multimedia-based methods, but 5.08% chose traditional ones.

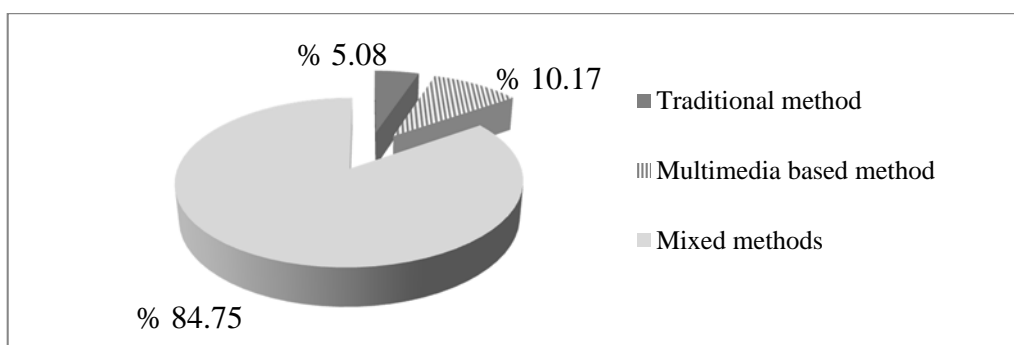


Figure 3.34. Teaching methods

20) Which sorts of materials do you think the course should contain?

A combination of instructional materials is the preferred choice for 67.80 %. Textbooks and CDs is chosen by 5.08%; however, work-forms and charts is the best teaching materials for 27.12%.

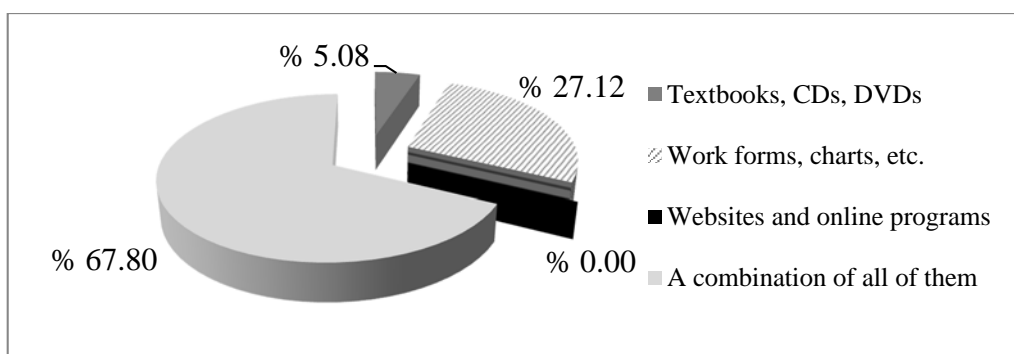


Figure 3.35. Teaching materials

### 3.6.9 Summary and discussion

At this level, it is worth mentioning some points which have surfaced so far:

- With regard to students' ages, the sample is quite homogenous as the interval 20-22 years includes 69.48% of the participants.

- The investigation into students' underlying motives behind studying CE shows that their views are diverse; one third chose it because it is their favourite branch. Accordingly, their views to CE as a career are also varied and sometimes blurred to the extent that beyond one forth (27.12%) have no idea about their prospective jobs.

- As to language abilities, the classification of languages with regard to the highest rate per level results in the following order: for the level *high* Arabic has the top percentage (55.93%), concerning the level *intermediate* French has the highest value (37.29 %) whereas, the level *low* is for English by 61.02 %.

- There is a great deal of agreement over the importance of English for CE (86.44%). Yet, above half of the students confessed that they do not attend English classes and half of those who attend return this to the interest they have in this language.

- English learning is acceptable for more than half of them. However, the highest rate recorded concerning students' self-perception to their English proficiency is 42.37% which corresponds to intermediate level.

- As to the issue of using English for academic tasks, more than half say that *sometimes* they use it.

- The classification of language skills with regard to their importance comes up with the following order: listening, speaking, reading, and writing.

- Among all the parts of speech, 40.68% classified verbs as the most difficult grammatical class.

- The English course content is interesting for 69.49%.

- The majority of the participants prefer the course to be based on CE texts

- As to the sources of inspiration, instructional materials, and teaching methods a considerable number of students prefer mixture for all of them over the other approaches.

- Nearly half of the participants prefer a subject matter teacher with some competence in English for teaching the ESP course.

### **3.7 The Questionnaire of First-Year Master Students**

The number of students in first year Master class is 68; 42 of them are females, i.e., 61.76 % and 26 are males 38.24 %. Out of the whole class, 51 students filled the present questionnaire (see Appendix XX). In other words, the percentage of participants is 75 %, which means that, according to Cohen, Manion, and Morrison the confidence level is less than 95 % and the sampling error is higher than 5 % (2005).

#### **3.7.1 Personal background**

This category probes two points: the age and the gender of the students.

##### **3.7.1.1 Gender**

The first item in this questionnaire shows that 38 out of 42 females and 13 out of 26 males have participated in this survey. The percentage of female participants is higher than that of males, i.e., 74.51 % versus 25.49 %. These values do not match exactly the rates of male/female representation in the whole population. In other terms, the percentage of females in the sample is higher than their rate in the population (74.51 % versus 61.76%); on the other hand, the percentage of males in the sample is less than their rate in the population (25.49% versus 38.24%).



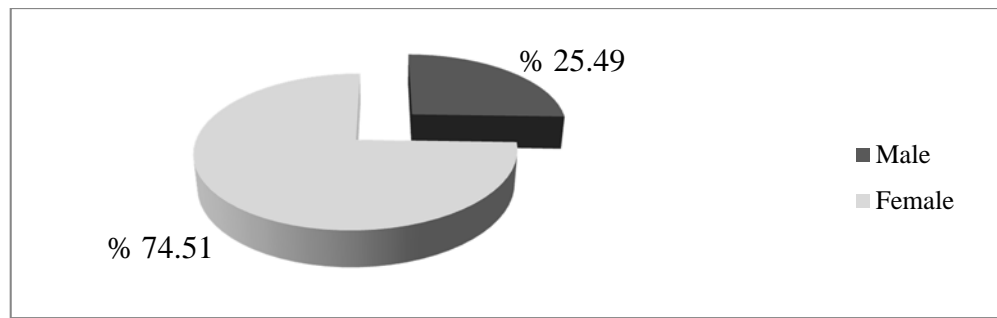


Figure 3.36. Male/female representation

### 3.7.1.2 Age

Students' ages, as it is shown in table 3.37, vary greatly but nearly 27.45 % of the participants are aged 23. And the ages of 82.36 % vary between 22 and 25 years.

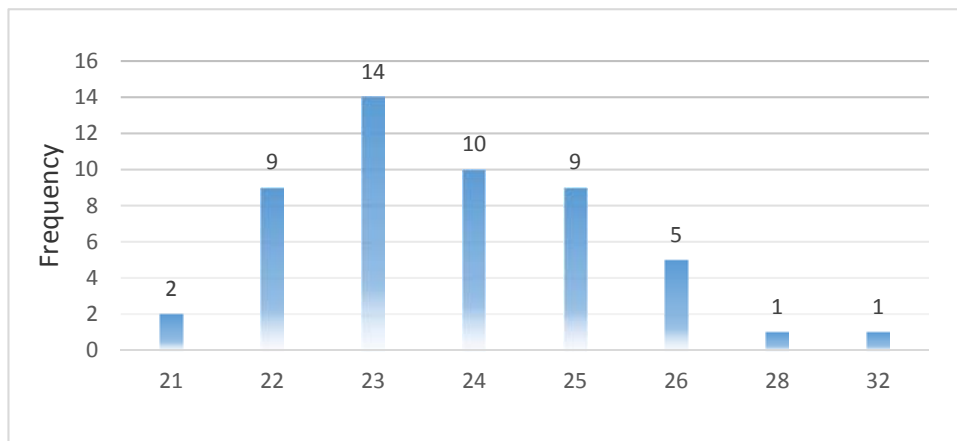


Figure 3.37. Students' ages

### 3.7.2 The reasons behind studying CE

#### 1) Why did you choose to study CE?

Nearly 56.86%, mentioned that CE is their favourite branch. Best choice available occurs in the second position with 25.49 %. As for job opportunities and random choice, they are respectively in the third (9.80 %) and fourth position (7.84 %).

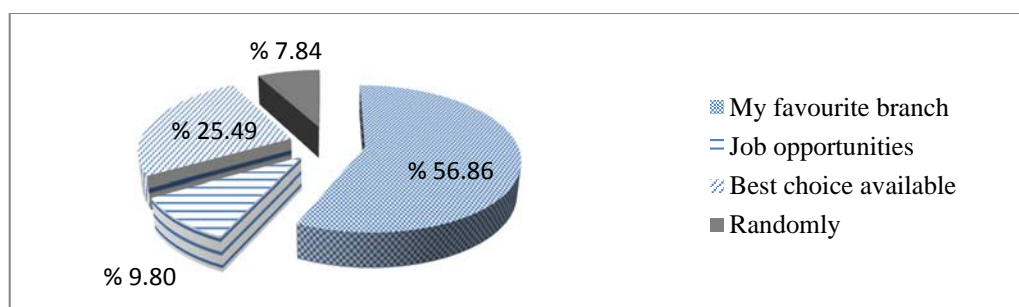


Figure 3.38. Motives for studying CE

2) For what sector, institution, or company do you intend to work?

Out of 51 participants, 31.37% put public services as their first choice for future occupation while, 25.49% prefer to be university teachers. Working in laboratories and designing offices is the choice of 19.61%. At the same time, 11.76% aspire to get jobs in foreign companies, yet 5.88% chose local enterprises; and the same percentage as the latter for those who have no clear idea.

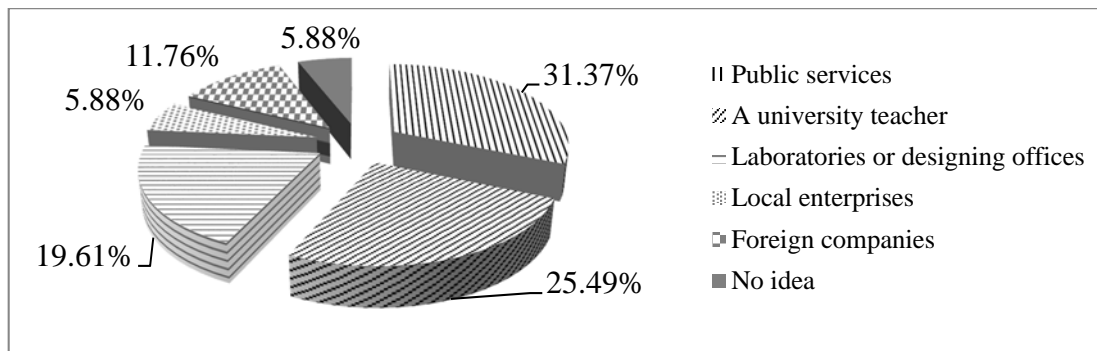


Figure 3.39. Students' intentions as to their future jobs

### 3.7.3 Language abilities

Concerning the degree of language mastery, especially Arabic, French, and English the results are represented in figure 3.40.

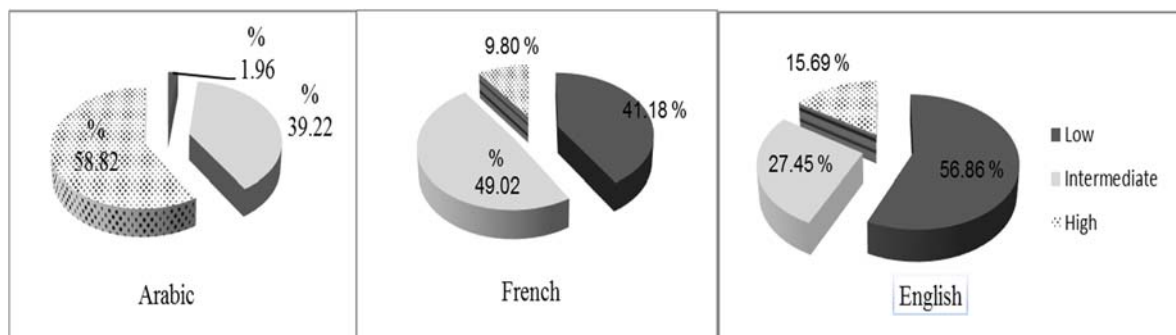


Figure 3.40. Languages and their degree of mastery

3) Arabic

Nearly, 58.82% affirmed that their proficiency level in Arabic is high; 39.22% mentioned that it is intermediate, and one informant stated that his level in Arabic is rather low, that is, 1.96 %.

## 4) French

As for French, 49.02% declared that they have an intermediate level. Yet, more than two fifths, i.e., 41.18 % do see their level as being low, and 9.80% ( five informants) said that their performance in French is high.

## 5) English

More than half, i.e., 56.86 %, stated that their English level is low; 27.45 % said that it is intermediate; however, 15.69 % considered it as being high.

### 3.7.4 Motives for learning English

## 6) Is English important for CE?

When asked about their personnel opinion concerning the importance of English for their field of study, 76.47% stressed that, indeed, it is important, but 23.53 % saw the opposite.

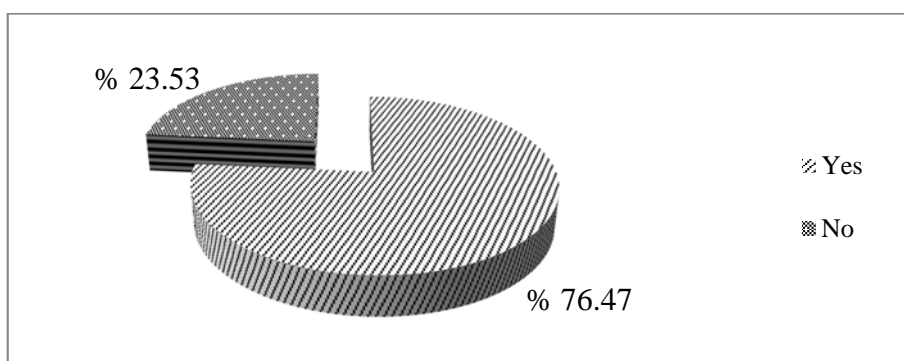


Figure 3.41. The importance of English for CE

## 7) Do you attend English sessions?

More than two thirds (68.63%) honestly admitted that they do not attend English sessions. However, less than one third (31.37 %) said that they do.

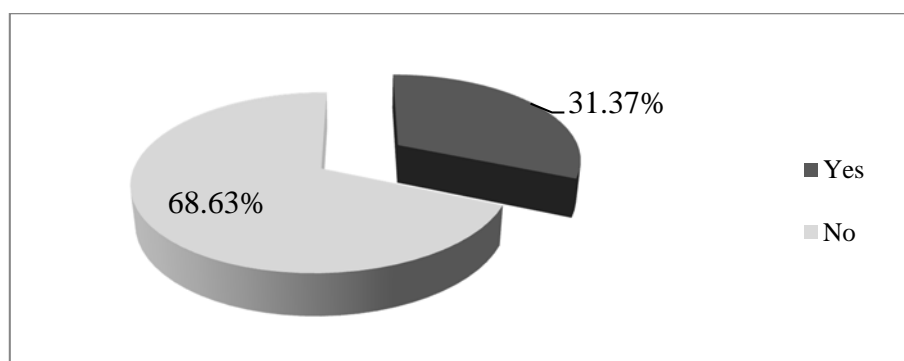


Figure 3.42. Students' attendance of English sessions

## 8) The reasons behind students' attendance.

Seeking to know the driving motives behind students' attendance particularly those who answered yes for the previous question, the respondents were given several options. Exactly, 68.75% returned their attendance to the interest they have in English; 18.75 % attend because of the way of teaching English, and 12.50 % think that the attendance to English sessions is compulsory.

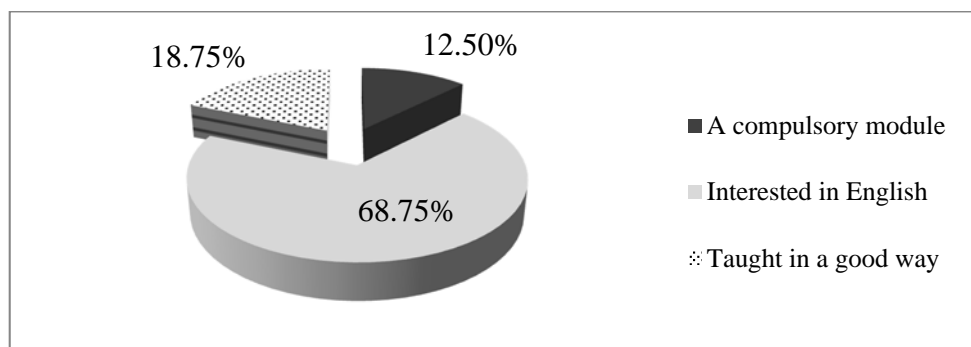


Figure 3.43. The reasons behind students' attendance

## 9) How do you find learning English?

When asked about their personnel views to learning English, 60.78 % affirmed that it is acceptable; 23.53 % confirmed that it is difficult; 13.73 % stated that English learning is easy, and one participant (1.96 %) declared that it is very difficult.

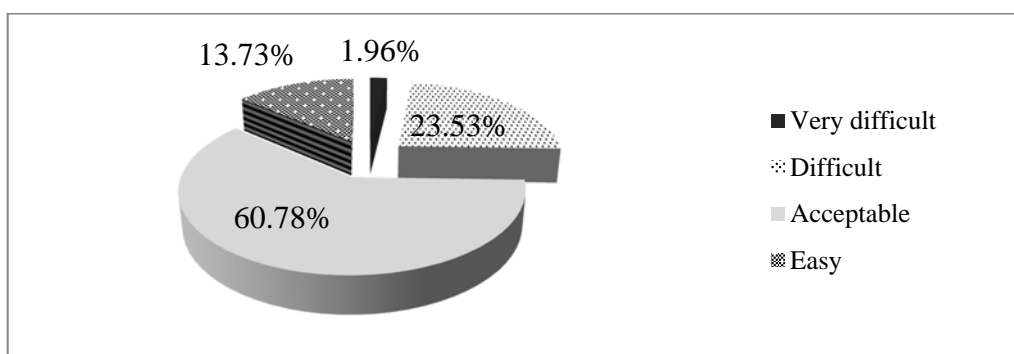


Figure 3.44. English language learning

## 10) What is your proficiency level in English?

The investigation into participants' self-assessment revealed that 39.22% answered that they are intermediate. The distribution of the rest is quite balanced. 21.57 % stated that they are upper-intermediate in English, but 19.61% said that their level is pre-intermediate. On the other hand, 7.84 % perceived themselves as having high level whereas, 11.76% went to the opposite side by ticking the spot low.

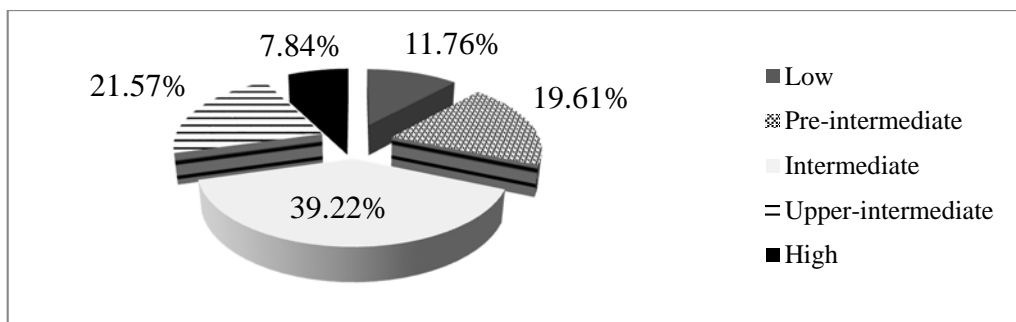


Figure 3.45. English proficiency level

11) How often do you need English for your studies?

The results show that half of the informants, i.e., 50.98 % sometimes use English. The second highest rate is for those who never use English with a percentage of 35.29 %. In contrast, 11.77 % use English mostly, and 1.96% for those who always utilise it.

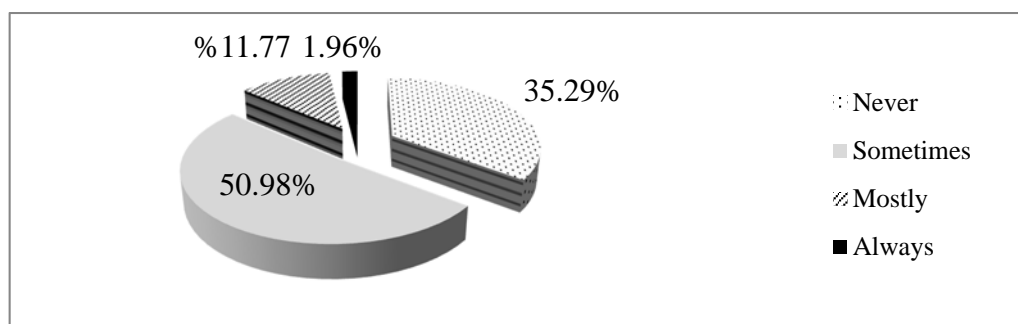


Figure 3.46. Frequency of using English

### 3.7.5 Learning strategies and study skills

12) Classify language skills according to their importance for you:

On the scale of importance, 47.06 % see that listening is the first language skill. However, for 33.33 % speaking is much more crucial. Reading holds the third position with 13.73 %. Finally, 5.88 % opted for writing.

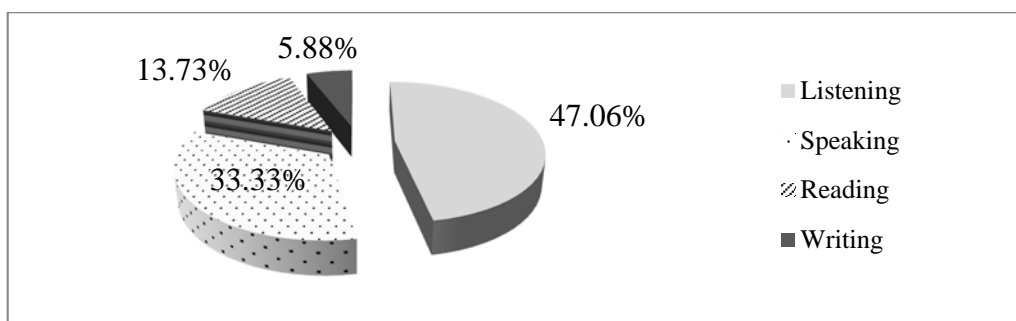


Figure 3.47. The importance of language skills

13) Classify the grammatical categories with regard to their degree of difficulty to you.

All the rates are included between 15 % and 30 %. The highest percentage is for verbs with 29.41%. Then, the category of prepositions takes the second position with 19.61 %. The categories of adjectives and nouns have the same percentage 17.65 %. Adverbs are the last ones with 15.69 %.

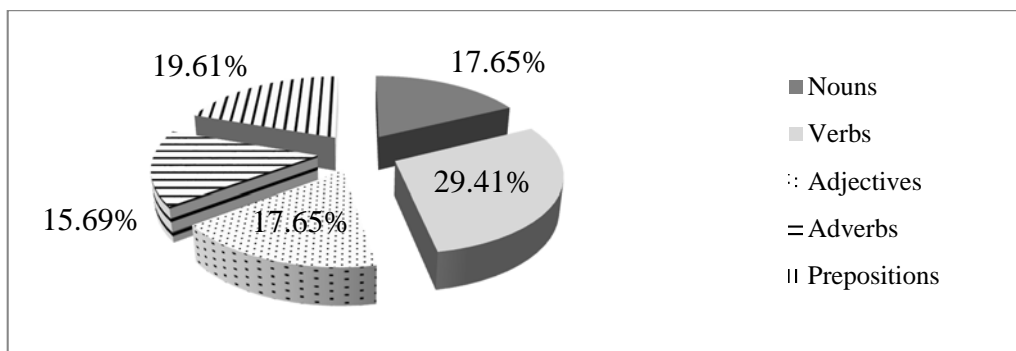


Figure 3.48. Grammatical categories' degree of difficulty

14) What are the most significant difficulties that you face for learning English?

Students' responses to this question turn around the following issues:

- the lack of practice,
- the mastery of irregular verbs forms,
- spelling words correctly,
- and understanding spoken English.

### 3.7.6 English course content

15) What is your opinion on the content of the English course?

The majority of the students (58.82%) answered that the course content is interesting. 35.29 % replied that the content is quite interesting, but three informants or 5.88 % of the sample declared that it is not interesting at all.

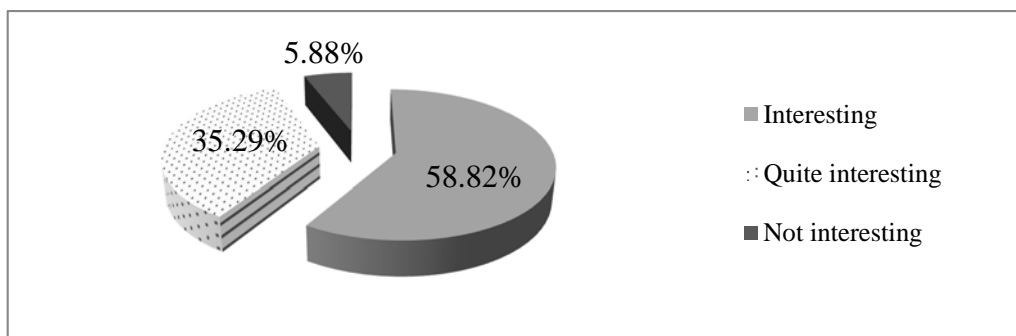


Figure 3.49. Students' opinion on the course content

16) Which type of texts should the course be based on?

Up to 54.90 % of the participants want the English course to be based on CE texts, but 27.45% prefer the course to be based on several sorts of texts; however, communicative texts are chosen by 17.65 %.

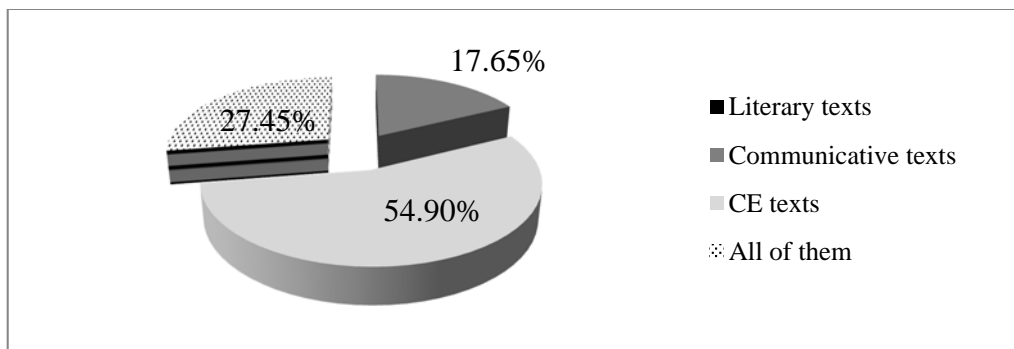


Figure 3.50. The types of texts chosen for the English course

17) The source of inspiration of the language course content.

As to the source of inspiration, 41.18 % opt for a mixture of materials. Yet, 31.37 % see that language materials inspired from future professional needs are better to be used for the course content. Modern technology is the choice of 19.61% and 7.84 % pick up scientific materials instead.

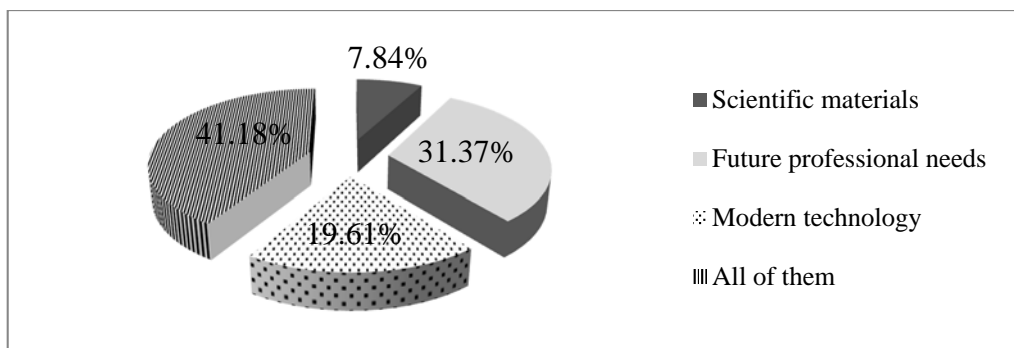


Figure 3.51. Source of inspiration of the course content

### 3.7.7 The English teacher

18) Which qualifications do you prefer the English teacher of CE students to have?

A subject matter teacher with some competence in English is preferable for half of the participants, i.e., 50.98 % .One third (33.33%) chose an English teacher with a degree in ESP. However, 15.69 % opted for a teacher with a degree in teaching General English.

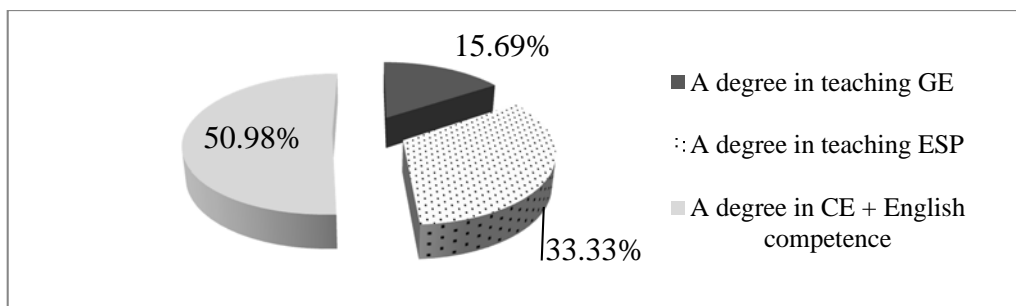


Figure 3.52. The qualifications of the English teacher

### 3.7.8 Teaching methods and materials

19) How do you prefer the instructional materials to be delivered?

A mixed methods approach was chosen by the majority, i.e., 70.59 %. Multimedia-based method comes in the second position as it was selected by 17.65 %. The traditional method of teaching is the last one; it was picked up by 11.76 %.

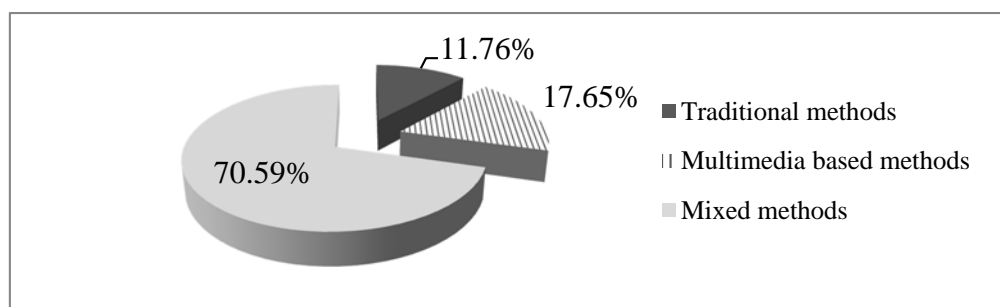


Figure 3.53. Teaching methods

20) Which sorts of material do you propose for the course to contain?

Approximately two thirds (64.71 %) responded that a combination of teaching materials is preferable. The choice of 17.65 % is for using work-forms and charts instead. Besides, 11.76 % opted for using textbooks and CDs. The least rate is for using websites and online programmes with 5.88%.

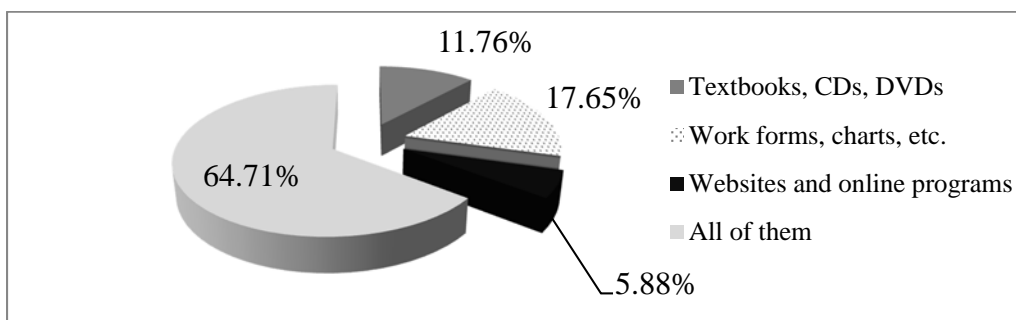


Figure 3.54. Teaching materials



### 3.7.9 Summary and discussion

This statistical analysis reveals the followings

- The sample population can be said to be homogenous as the ages of 82.36% are between 22 and 25 years.

- The majority of the students (56.86%) have chosen to do CE because it is their favourite branch. Yet, as to the institution they aspire to work for their choices are, by order of importance, as follows: public services, university, laboratories and designing offices.

- The investigation into the students' language abilities reveals that the majority of students have high proficiency level in Arabic, half have an intermediate level in French, and nearly three fifths have low level in English.

- The relevance of English for CE as a scientific language is stressed by three fourths whereas, over than two thirds (68.63%) confessed that they do not attend English classes out of whom 68.75% returned their attendance to the interest they have in English.

- More than three fifths of the participants (60.78 %) see that English learning is acceptable.

- As to the frequency of using English, half of the informants (50.98 %) said that *sometimes* they use it for their studies.

- Students' classification of language skills with regard to their importance results in the following order: listening, speaking, reading, and writing.

- Although English verbs are classified as the most difficult grammatical class (29.41%), there are slight differences between all the percentages as they are included between 15 % and 30 %.

- The content of the English course is interesting for 58.82%.

- The majority (54.90 %) prefer CE texts for their English course and two thirds opt for a mixed methods approach for teaching materials, and instruction methods.

- A teacher of CE with some competence in English is preferable for half of the participants, i.e., 50.98 %.

### 3.8 Comparison between Master and BE Students' Results

The comparison between the questionnaires' results of the two groups, BE and Master students, aims to deduce the common views and features upon which the language syllabus will be designed. Table 3.34 summarizes the main findings.

Table 3.34. Comparison between BE and Master students' responses

Number	Questions	Percentages (%)	
		BE	Master
	<b>Personal background</b>		
1	- Gender		
	a) Male	38.98	25.49
	b) Female	61.02	74.51
	<b>Reasons behind studying CE</b>		
2	- Why did you choose to study CE?		
	a) My favourite branch	33.9	56.86
	b) Job opportunities	22.03	9.8
	c) Best choice available	28.81	25.49
	d) Randomly	15.25	7.84
3	- For what institution, or company do you intend to work?		
	a) Public service	13.56	31.37
	b) A university teacher	11.86	25.49
	c) Laboratories or designing offices	23.73	19.61
	d) Local enterprises	15.25	5.88
	e) Foreign companies	8.47	11.76
	f) No idea	27.12	5.88
	<b>English language ability</b>		
4	a) Low	61.02	56.86
	b) Intermediate	30.51	27.45
	c) High	8.47	15.69
	<b>Motives for learning English</b>		
5	- Is English important for CE?		
	a) Yes	86.44	76.47
	b) No	13.56	23.53
6	- Do you attend regularly the English lectures?		
	a) Yes	45.76	31.37
	b) No	54.24	68.63
	- In case you have answered positively, is this because it is		
	a) a compulsory module ?	7.41	12.5
	b) interesting for you?	55.56	68.75
	c) taught in a good way ?	37.04	18.75
7	- How do you find English language learning?		
	a) Very difficult	3.39	1.96
	b) Difficult	22.03	23.53
	c) Acceptable	59.32	60.78
	d) Easy	15.25	13.73
8	- How often do you need English in your studies?		
	a) Never	28.82	35.29
	b) Sometimes	55.93	50.98
	c) Mostly	11.86	11.77
	d) Always	3.39	1.96

Table 3.34. (continued).

<b>Learning strategies and study skills</b>			
9	- Classify language skills according to their importance to you.		
	a) Listening	42.37	47.06
	b) Speaking	25.42	33.33
	c) Reading	20.34	13.73
	d) Writing	11.86	5.88
10	- Classify the grammatical categories with regard to their degree of difficulty to you.		
	a) Nouns	8.47	17.65
	b) Verbs	40.68	29.41
	c) Adjectives	20.34	17.65
	d) Adverbs	11.86	15.69
	e) Prepositions	18.64	19.61
<b>English language course' content</b>			
11	- Which type of texts the course should be based on?		
	a) Literary texts	0	0
	b) Communicative texts	6.78	17.65
	c) CE texts	57.63	54.9
	d) All of them	35.59	27.45
12	- The content of the course should be inspired		
	a) from the scientific material	11.86	7.84
	b) with regard to the future professional needs	30.51	31.37
	c) in concordance with modern technology	20.34	19.61
	d) all of them	37.29	41.18
<b>The English teacher</b>			
13	The English teacher should have (be)		
	a) a degree in teaching General English.	11.86	15.69
	c) a degree in teaching ESP	38.98	33.33
	b) a subject teacher with some competence in English	49.15	50.98
<b>Teaching methods and materials</b>			
14	- How do you prefer the instructional materials to be delivered?		
	a) Traditionally face-to-face	5.08	11.76
	b) Multimedia based	10.17	17.65
	c) Both of them	84.75	70.59
15	- Which sorts of materials do you propose the course should contain?		
	a) Textbooks, manuals, CDs, etc.	5.08	11.76
	b) Materials used on a job and actual workplace	27.12	17.65
	c) Materials from websites and online programmes.	0	5.88
	d) A combination of all of these	67.8	64.71

The comparison between the results of the two levels reveals that there is a great deal of agreement over a considerable number of points between the two groups:

- 1- Female students outnumber their male counterparts nearly three to two for BE and three to one for Master students.
- 2- the favourite branch and the best choice available are respectively the first and the second choices for students.
- 3- English is seen as being important for CE yet, the students admit that they do not attend its classes despite their low level. The majority of those who attend see that the course is interesting.
- 4- Learning English is neither difficult nor easy, i.e., it is acceptable for them and sometimes they need to use English for their studies.
- 5- The classification of language skills as to their degree of importance is as follows: listening, speaking, reading, and writing.
- 6- The grammatical category of verbs is the most difficult part of speech.
- 7- It is preferable for the language course to be based on CE texts and its content should be inspired from a mixture of scientific materials and job related documents.
- 8- The English teacher should be a subject matter teacher with some competence in English
- 9- The mixed methods approach is the most favourite choice for teaching methods and instruction materials.
- 10- It can be deduced from points three and eight that the students like the content of the English course that was given by their subject matter teachers.

On the other hand, BE and Master students' views as to their future working institutions are diverse. Slightly more than quarter of BE participants seem to have no clear idea about it. However, public services attract nearly one third of Master students.

### **3.9 Conclusion**

The importance of the analysis of the present situation lies in the fact that it brings to light the very specific concerned people's features which facilitate the task for the forthcoming actions. So far, students' lacks and wants have been thoroughly highlighted. The first ones were achieved through testing and the second ones were examined via administering questionnaires. Nevertheless, an ESP course design does not only require the study of the present situation but it also needs the analysis of both: the target situation and pedagogic needs which will be dealt with in the following chapter.

# **Chapter Four**

## **4.1 Introduction**

The target situation can be interpreted in terms of tasks, activities and a given level of performance that the CE professionals should have. But, Pedagogic Needs Analysis (PNA) related to the learning situation can be seen as the way that a learner should follow to attain the desirable objective. Both aspects are dealt with in this chapter which details the profile of CE including educational information, academic environment, and occupational information. The academic context is investigated quantitatively and qualitatively in the sense that questionnaire surveys, interviews, and text analysis are used to probe this situation. Yet, the professional context is analysed qualitatively by using interviews with CE professionals, and Human Resources Managers (HRMs).

## **4.2 CE Profile**

The current profile of CE considers two main areas. The first one is the academic side which examines the educational curriculum of civil engineers and the second one is the occupational side which describes job related contexts.

### **4.2.1 Academic and educational information**

The information provided, in this regard, is based on some official documents of CE curriculum such as the canvas and few interviews with a number of CE teachers. The points highlighted are as follows: the main domain, the different degrees, the teaching programme, and the language used for teaching.

#### **4.2.1.1 Domain**

The field of CE belongs to the domain of science and technology which encompasses a range of engineering fields. The latter are meant to feed the Economic Sector with the necessary professionals at the local scale. Thus, CE field is intended to form the necessary technical staff for the Building Sector including public services, private enterprises, national companies, and designing and consultancy offices.

#### **4.2.1.2 Degree and qualification**

Under the LMD system a CE student gets a Bachelor of Engineering (BE) degree after completing six semesters, i.e., three years, a Master degree after studying ten semesters in other terms five years (BE + Master), and a Doctorate degree after achieving at least three years of training at the post-graduation stage.

### **4.2.1.3 Education and programme**

Officially, the aim of the CE curriculum is to equip future engineers with the scientific and technological bases that enable them to be industry ready for the various domains. The Building Sector, being on the top of these domains, receives an important number of civil engineers and requires both a good mastery of theoretical knowledge and a high level of professional skills. Another aspect of the construction sector has more to do with management, control, and project supervision. The latter necessitate a great deal of professional capacity as to management skills.

#### **A) Bachelor of Engineering degree**

The Bachelor of Engineering syllabus consists of 64 modules, including theoretical lectures and training sessions. They are divided into four units: a fundamental unit, a discovery unit, a methodology unit, and a transversal unit. The first two semesters contain common core subjects for all science and technology students, but starting from the third semester learners are oriented towards several fields. Theoretically, by the end of the sixth semester they would have been taught 2250 hours. Having completed this, students will have the chance to proceed with their studies and get a Master degree.

#### **B) Master degree**

There are three CE sub-fields at Adrar University: Structural Engineering, Construction Materials Engineering, and Geotechnical Engineering. Despite the fact that the number of modules varies from one specialty to another (25 for Structural Engineering, and 30 modules for both Materials Engineering and Geotechnical Engineering) the number of units (four), and the number of teaching hours (1125 hours for three semesters) are the same. For all the subfields, the fourth semester is devoted completely to preparing dissertations.

#### **C) Doctorate degree**

Seeking to enrich the teaching and researching staff at the Department of Science and Technology, a third cycle of training postgraduate students is suggested. Doctorate formation is meant to be undertaken in a span of three years minimum.

Officially, for six semesters, doctorate students have to be taught seven modules, attend seminars, and prepare personal research work. Throughout the whole training period English is a mandatory module.

#### **4.2.1.4 CE specialties**

There are several areas in which civil engineers are specialised but the following notes tackle only the sub-fields taught at Adrar University. The points of view considered deal specifically with what they carry out in real life.

##### **A) Structural Engineering**

Structural engineers assume the tasks of designing and evaluating different sorts of projects. They are, first and foremost, responsible for ensuring the strength and durability of constructions.

##### **B) Geotechnical Engineering**

Their main concern is the study of the interaction between earth and constructions. In other terms, they always make sure that construction foundations are solid, provide civil engineers with soil reports, and check how structures are built. Additionally, they help design slopes, retaining walls, and tunnels.

##### **C) Construction Materials Engineering**

The materials of project constructions have been attracting too much interest recently. Engineers in this regard endeavour to enhance, develop, or discover new building materials. Their aim is to produce materials friendly to the environment, and / or demonstrate better physical and mechanical characteristics.

#### **4.2.1.5 English syllabus**

Out of 64 modules, two are devoted to teaching foreign languages and classified under the transversal unit. Students take a 45 hour course of French in the first semester. However, they receive a number of 22.5 hours of English throughout the whole BE cycle. To put it another way, the time allotted to English amounts to one percent of the whole number of hours devoted to materials teaching (2250 hours).

During the second cycle or Master level, students take 29 modules in three semesters. The number of hours devoted to English totals 22.5 hours. Given to students in their first semester, the English course covers two percent of the total teaching hours (1125 hours). In the nine semesters of the two cycles, this language is provided in two separate semesters: the third semester, i.e., BE level and the seventh semester, i.e., the first one in Master level. Officially, the English classes vary between theoretical lectures and practical sessions for



oral expression. The latter are required to take place by using multimedia and audio-visual aids.

The contents of the course, as stated in the canvas, provide students with deep understanding of CE English especially

1. grammar, vocabulary, and frequent spoken expressions,
2. reading manuals, specialized magazines, articles, and technical documents,
3. and describing tasks and activities fluently when working for English speaking companies.

Three objectives of the course of English are stated:

1. understand a scientific article written in English,
2. describe or comment on a technical text,
3. and enable students to proceed with their studies in English.

#### **4.2.1.6 Summary**

In brief, it is clear that the contents of the English course, as officially stated, are interesting and the course objectives are important. However, the status of the English module and the time allotted (45 hours for both cycles with a percentage of 2% of the total teaching hours per semester) are not enough to attain the aforementioned objectives. Additionally, the gap in English teaching between semesters affects the accumulation of language knowledge and, of course, the English learning process. At the same time, the canvas suggests having practical sessions of oral expression by using audio-visual aids; nonetheless, neither training sessions for English are mentioned in the table of specifications (only lectures) nor audio-visual equipment is available in reality. Moreover, the mixture between Academic and Professional English, academic tasks and real life oral communication are not easy to establish. This means that these overall guidelines are not enough to direct the teacher to design the CE course.

#### **4.2.2 Occupational information**

CE field is very large to tackle all its subfields, domains, different occupations. The occupations and contexts portrayed in the present description are specific to the Algerian situation. Three main points are portrayed: the typical organizations, the career options, and finally the language(s) of communication.

#### **4.2.2.1 Typical organizations, companies, and institutions**

Organizations and institutions hiring civil engineers vary remarkably yet, they can be grouped under two main categories: the Public Sector, and the Private Sector.

##### **A) The Public Sector**

It is the sector controlled by the state and provides services to the public. In Algeria, this sector is composed of different types of institutions which differ in terms of size and function.

###### *i) Public administrations*

This category represents all the public and administrative institutions; they can be viewed either as being technically specialized, or non-technically specialized. Technically specialized administrations are those establishments whose main concern is the Building Sector, such as Department of Housing, Department of Public Equipment, Department of Urban Planning and Construction, Department of Public Infrastructure, etc. Non-technically specialized administrations are, as their names suggest, the public institutions which are not specialized in the Building Sector but are in charge of their own constructions, i.e., they have their own technical staff, for instance, Department of Sport and Youth, Department of Culture, Department of Health, Department of Tourism, Department of Local Administration, and municipalities etc.

###### *ii) Educational and research institutions*

This category embraces three types:

- a) Public establishments of education that hire civil engineers as teachers, for instance, the case of Professional Training Centers.
- b) Highly specialized institutions of research such as the one called *Centre National d'Etudes et de Recherches Intégrées du Bâtiment* abbreviated as *CNERIB*. These institutions are concerned with research and development of construction materials. Engineers are, first and foremost, researchers in this case.
- c) Higher establishments of education: This category includes universities and higher educational institutions which employ postgraduate engineers as teachers and researchers at the same time

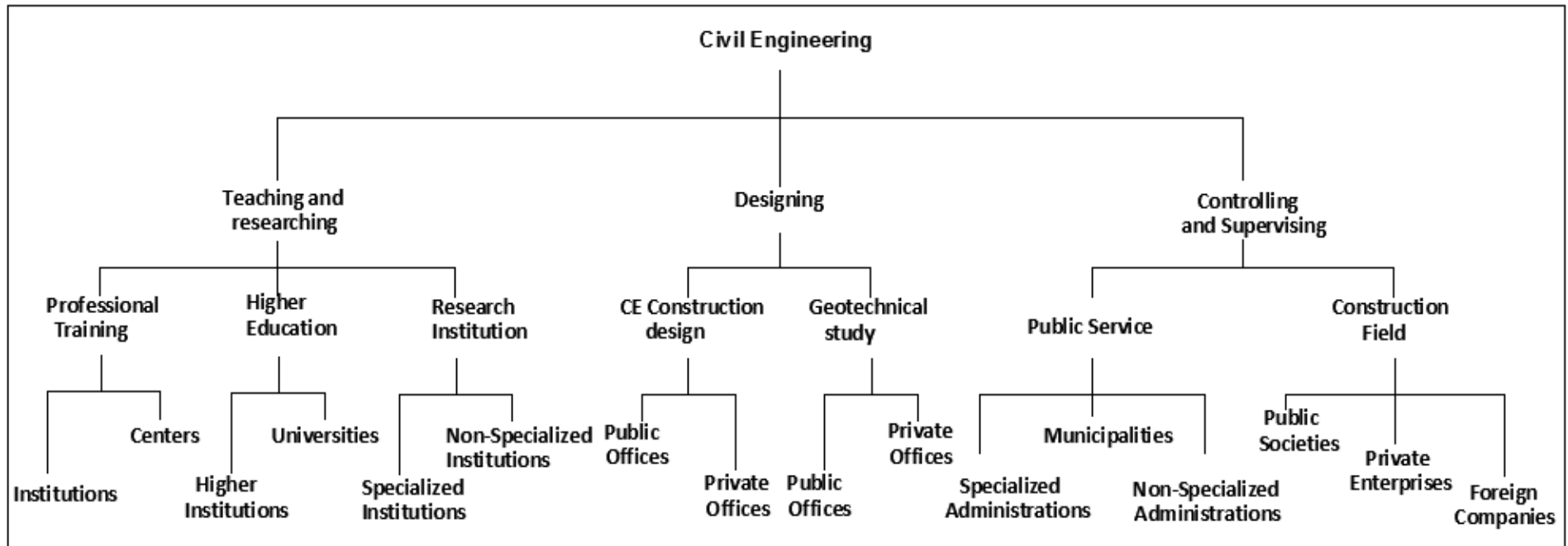


Figure 4.1. Different institutions hiring civil engineers

## **B) The Private Sector**

This sector can be viewed from two angles. From the point of view of what they do, i.e., functions, two types of institutions can be distinguished: design and consultancy agencies, and construction enterprises. Design and consultancy agencies embrace architectural and CE design offices, consultancy agencies, soil study laboratories, and technical control agencies. Construction enterprises include all the companies concerned with realizing civil constructions, urban infrastructures, and monumental projects of art.

As to the second angle, that is, where they come from or their origin country, two types are also identified. The first type groups local and national companies; as they are Algerian-based their technical staff are Algerians. The second type, on the contrary, covers foreign companies which are mainly from: Germany, France, Spain, Turkey, Italy, Egypt, Lebanon, China, and Korea. As their staff are multinational, English is the main language of communication.

### **4.2.2.2 Career options**

The position that a civil engineer holds varies significantly from one employer to another. Therefore, in specialized institutions the engineer has more chance for climbing the ladder than his or her counterpart in non-specialized institutions. In fact, he or she starts his or her professional career as a simple engineer, but with ample experiences he may move into senior positions and become a project manager, afterwards an office responsible, later on a sub-department chief, and it is also possible to be appointed an executive director. However, in non-specialized institutions the engineer may end up his or her career as the head of his or her technical team; a position which might not be even officially recognized in some institutions.

### **4.2.2.3 Language in use**

Companies and institutions hiring civil engineers do also vary in the languages used for communication. Local and national companies and institutions tend to prefer using French in technical documents although both Modern Standard Arabic and French are used in administrative correspondence. Different Algerian language varieties are the medium of communication in everyday conversations. English is not used except in some cases; for instance, when enrolling for a training programme abroad, dealing with some new technological devices, or using software programmes.

Among all these institutions, there are only two cases where English is really a matter of utmost importance. The first one is university and research institutions and the second one is English speaking companies.

### **4.2.3 Summary**

The present profile details the educational curriculum of CE field of study. It goes over the academic information including the domain, qualification, and syllabus. It gives an overview of CE specialties taught at Adrar University. The issue of the English language teaching and learning is also highlighted. Moreover, potential occupations and career options of civil engineers are also reported. There are two cases in which the mastery of English is of paramount importance: the first one is teaching at university, the second one is working for multinational and foreign companies. However, in public services, engineers might occasionally need it for participating in training programmes abroad.

## **4.3 The Academic Context**

Both students and teachers need to use English to carry out a number of academic tasks. CE students may need to use English to undertake research works especially when preparing their Master dissertations. Besides, Doctorate students are more in need for the mastery of English.

### **4.3.1 Questionnaires of CE teachers**

The administration of the questionnaire survey which targeted the teaching staff of CE was, to some extent, successfully achieved. This assumption is due to the fact that all the teachers and researchers filled out the questionnaire form (see Appendix YY).

#### **4.3.1.1 Personal background**

The introductory questionnaire items enquire about some personal information such as gender, age, field, and the participants' degree.

The teaching staff of CE is composed of 24 teachers. Four among the whole group are females. The ages of the participants vary between 26 and 60 years old, but only three participants are more than 50. All of them studied CE except two teachers who majored in Architecture. Eighteen participants have Magister degree, five others are doctors, and only one is an engineer in charge of the laboratory and preparing for a Master degree. All the participants are full-time teachers.

### 4.3.1.2 Language abilities.

The second set of questions probed participants' language abilities or their language proficiency level. Three languages were mentioned: Arabic, French, and English. Besides, a scale of three levels was provided: high, intermediate, and low. The results obtained were as follows:

#### 1) Arabic

Out of the whole number of the teaching staff, 24 teachers, 54.17 % or 13 participants stated that their proficiency level in Arabic is high. Yet, 45.83 % (11 informants) declared that they have an intermediate level.

#### 2) French

Concerning French, 25 % of the sample or 6 members affirmed that their level is high whereas, 62.50 % (15 participants) asserted that they are intermediate. Yet, three teachers (12.50 %) assumed having a low level.

#### 3) English

As for the last language, English, 75.00 % of the teachers agreed on being low in it, while the rest or 25.00 % asserted that they have an intermediate level.

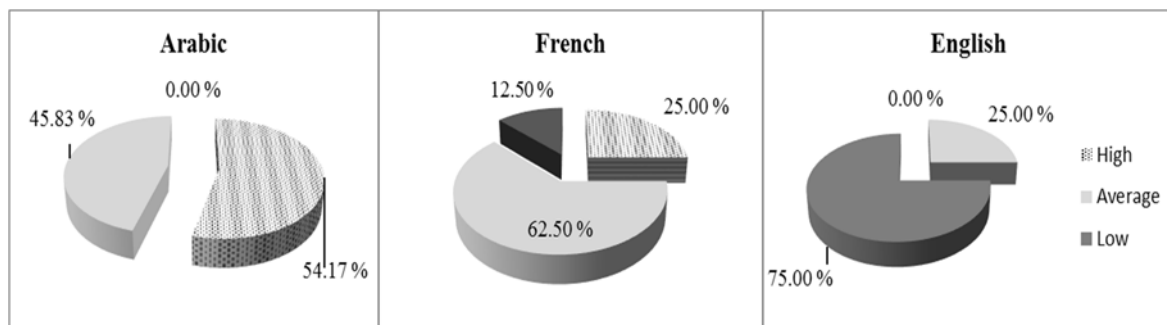


Figure 4.2. Languages' degree of mastery

#### Comments:

An overview of figure one shows that

- The order of languages (the highest percentage per level) with regard to their proficiency level is as follows:

- Arabic has the highest percentage (54.17 %) in the level *high*.
- French has the highest percentage (62.50 %) in the level *intermediate*.
- English has the highest percentage by 75 % in the level *low*.

- The value zero percent appears twice: in case of Arabic (low level), and English (high level).

#### 4.3.1.3 Motives for learning English

The following set of questions tackle the driving motives behind learning English.

4) Do you have any desire for learning English?

The participants were asked if they had any desire for English learning, and their responses were entirely positive (100%). The follow up enquiry pertains to the sincere stimuli behind teacher's desire for learning English.

5) What is/are the sincere stimulus/stimuli behind your desire for learning English?

Teachers' responses were slightly different as they had received an open question. Despite this, their responses can be summed up in three main points. The first one is the relevance of English as the world-wide language for technology and scientific research. The second one has to do with the communicative role that English plays especially in international academic conferences. Last but not least, it is the world-wide lingua-franca when traveling abroad.

6) Classify the languages that you use to keep abreast of the latest scientific research by order of importance.

Up to 83.33 % of the sample confirmed that the languages they often use to be up to date with the latest scientific research are – by order of importance – as follows: French, English and then Arabic. In contrast, 12.50 % affirmed that English is the first one, then French and finally Arabic. Yet, only one teacher put Arabic the second on the scale of importance after French and finally English (4.17 %).

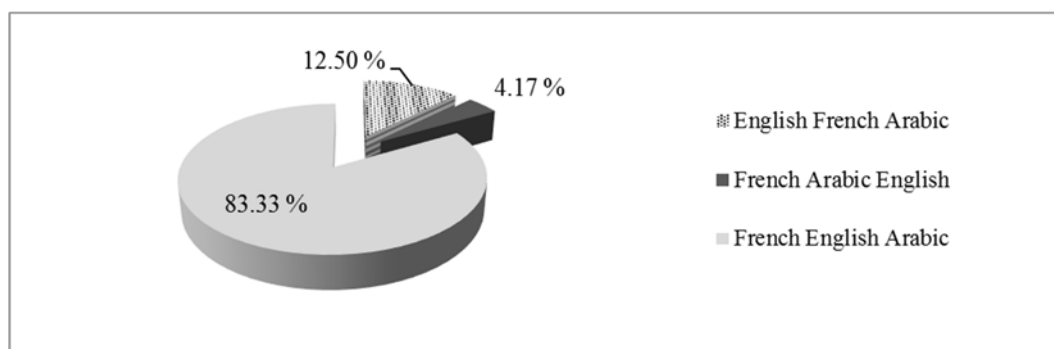


Figure 4.3. The importance of languages to keep abreast of scientific research

**Comments:**

A general examination of figure 4.3 reveals that

- French is the language of research as it is number one for the majority of the teachers.
- Despite its scientific importance, English is the second one for the majority, and the first one only for 12.50 % of the sample.
- Arabic is the last one for the majority.

7) How do you manage in order to understand texts written in English?

As to the way CE teachers deal with English texts, 50 % of them mentioned that they rely directly on online translation programmes, 37.50 % stated that they resort to translation programmes indirectly (after reading texts) whereas, 12.50 % said that they use a dictionary.

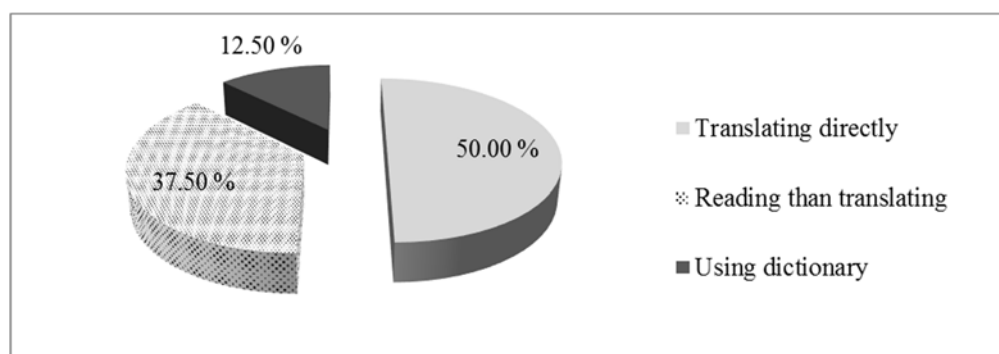


Figure 4.4. Teachers' reading habits

**Comments:**

The previous findings reveal that

- the use of translation programmes prevails among CE teachers with slight differences,
- only a minority uses dictionaries,
- and more than one third of the informants read and then translate the texts.

8) Do you often need to produce texts in English?

Concerning producing texts in English, all the CE teaching staff (100 %) agree upon this issue by stressing the need for writing in English.

9) For what do you need to write in English?

When seeking to figure out the reasons behind this desire, the investigation reveals that there are two main factors with the same degree of importance: the need for publishing articles, and participating in international conferences. Nevertheless, one teacher stated that he uses English written texts to prepare lectures for students.



## 10) How do you manage to write texts in English?

The results elicited from the inquiry about the way the participants manage to write in English revealed that 41.67 % of them (10 participants) lean to software translation programmes, 50.00 %, i.e., 12 teachers receive human assistance in addition to using translation programmes in the meantime, 8.33% or two informants search for human assistance only for revision after translating manuscripts.

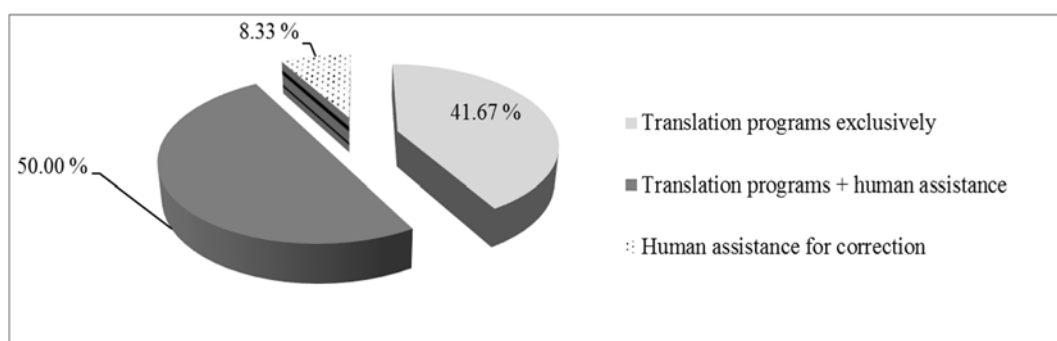


Figure 4.5. Researchers' writing habits

**Comments:**

Figure 4.5 reveals that translation programmes are, first and foremost, the researchers' primary tool for producing English written manuscripts. Nevertheless, human aid is also necessary because of the shortcomings of the software programmes of translation.

**4.3.1.4 Learning strategies and study skills**

## 11) Classify the language skills with regard to their importance to you.

As for the results obtained for the importance of the language skills, reading and speaking are evenly essential for 33.33% of the participants (eight participants) as they ranked them as the most important ones (the same rate for both skills). Slightly more than one fifth (20.83 %, i.e., five teachers) chose listening, and 12.50 % (three informants) considered writing as the first one. Meanwhile, 33.33 % classified writing the last one.

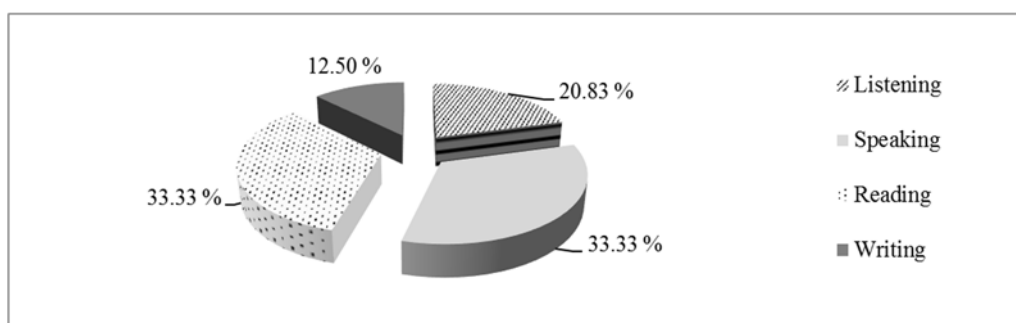


Figure 4.6. Language skills' importance

12) Classify the grammatical categories with regard to their degree of difficulty to you.

Teachers' responses as to the difficulty of grammatical categories show that verbs are classified the first on the scale of difficulty for 45.83 % of the teaching team, nouns are the second with 25.00 %, prepositions are the third (16.67 %), and adjectives are the last with 12.50 %.

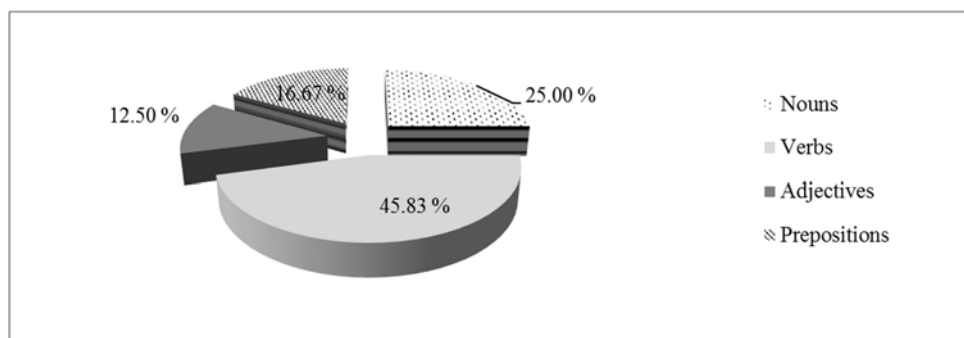


Figure 4.7. Grammatical categories' degree of difficulty

13) What are the difficulties that you face in English learning?

An open question was addressed in order to figure out the most significant impediment that the participants encounter for learning English. Their responses turned mainly around three main points. The first one is the lack of specialized language schools which fulfil their special needs, the second one is the problem of pronunciation associated with English, and the third one is the problem of discontinuity in taking courses due to their busy schedules.

#### 4.3.1.5 Interest and importance

14) Are you ready to afford the necessary time and money for learning English?

Approximately, all the respondents showed interest in affording both, time and money, for learning English (95.83 % or 23 participants) whereas, one researcher (4.17%) gave a negative response.

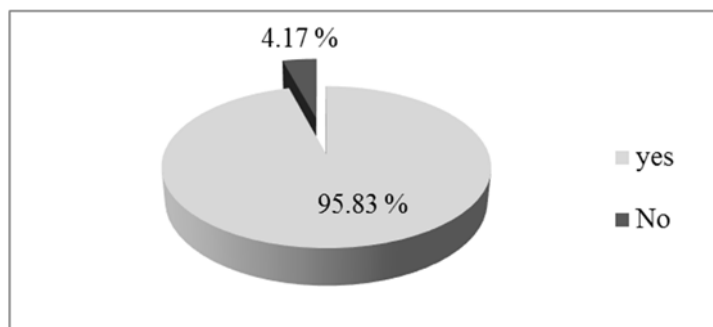


Figure 4.8. The desire for learning English

15) Rank English with regard to its importance for you (the first, the second, or the third).

As for the results related to English's degree of importance, 75 % of the sample population rank English the first. However, it is the second one for 20.83 %, and the third for the rest (4.17 %).

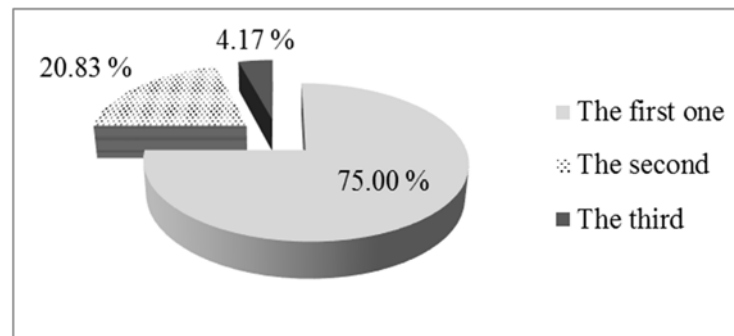


Figure 4.9. English's grade of importance

#### Comments:

The results obtained from the two questions 15 and 16 demonstrate that not all those who show interest in learning English (95.83 %) consider it as their priority. The percentage of the participants who declared that they are disinterested in learning English equals that of those who rank English in the third grade (4.17%). Yet, 20.83 % classify English in the second position on the scale of importance in spite of their desire to learn it.

16) What is your proficiency level in English?

When the informants were asked to assess their English level the results were as follows: Up to 37.50 % of them (nine participants) stated that they are per-intermediate, 25% or six teachers declared that they have an intermediate level, both upper-intermediate and low levels have the same rate 16.67% (four participants); yet one teacher claimed having a high level.

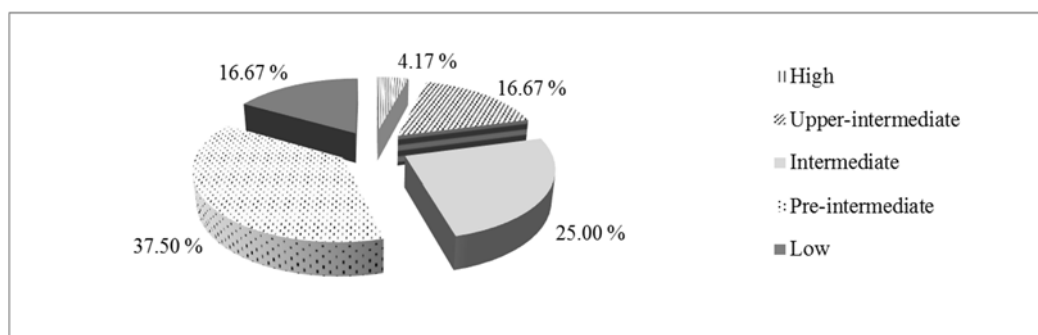


Figure 4.10. Researchers' self-assessment of English level

#### 4.3.1.6 Teaching methods

This part of the questionnaire survey considers the teaching methods that CE teachers and researchers favour for receiving the ESP course.

17) How do you prefer the instructional materials to be delivered?

Three choices were given to the participants. The results show that 79.17 % of them prefer using a mixture between classical and modern methods, 16.67 % opt for modern tools, and 4.17 % choose classical methods.

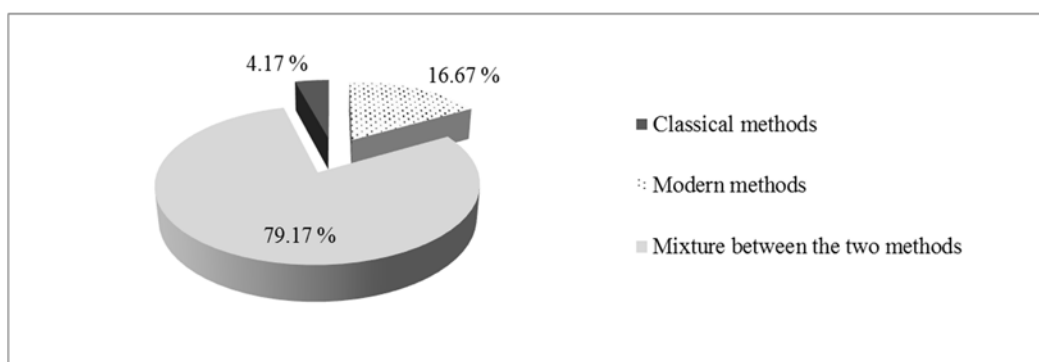


Figure 4.11. Teaching methods

#### **Comments:**

The participants do not prefer classical techniques as teaching methods for the ESP course. Instead, the majority (79.17 %) prefer a mixture between classical and modern teaching ones. Nonetheless, some of them (16.67%) opt for using modern methods exclusively. Yet, one participant adds that the outcome is rather more important than the means.

#### 4.3.1.7 Teaching materials

The last question in the present questionnaire survey considers teaching materials.

18) Which sorts of materials do you propose the course should contain?

Four choices were given to the teachers, and their answers were as follows: Nearly, 91.67 % of them (22 teachers) suggest using a mixture of materials whereas, 8.33 % (two participants) choose using workplace materials.

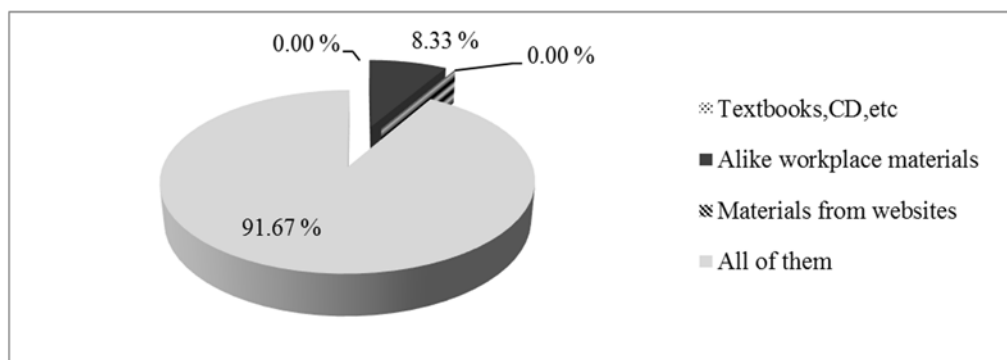


Figure 4.12. Teaching materials

#### Comments:

These findings confirm the results obtained in question 17 concerned with teaching methods. Approximately, 91.67 % of the teachers opt for using all kinds of materials, and two participants chose using workplace materials.

#### 4.3.1.8 Summary

To sum up, an important number of the participants do admit that they are weak in English, yet they show great enthusiasm for learning it. For this reason, French is their primary medium to keep abreast of new scientific research. Additionally, the participants rely heavily on translation software programmes for reading English written texts as well as producing manuscripts.

On the other hand, a great deal of agreement over the issue of writing in English is shown. This can be assumed to publishing purposes and the desire for participating in international conferences.

Despite the importance of writing skills for CE teachers, the results demonstrate that researchers' wants also stress speaking and reading first and then listening. Yet, concerning teaching materials and methods, the results confirm that teachers do opt for using a mixture of materials and a combination of methods; nevertheless, they focus more on the end-product rather than the tool or the way of attaining the objective.

### **4.3.2 Interviews with CE teaching staff**

Interviews are the second type of instruments used with subject matter teachers to elicit data regarding their views to English teaching for CE field. The followings include the methodology, analysis, and summary of the findings.

#### **4.3.2.1 Methodology of the interviews**

The interviews undertaken with the teaching team of CE particularly the head of Department, supervisors of the specialities, supervisor of the Field, supervisor of the Domain, as well as the dean of the Faculty of Science and Technology aim to probe their attitudes towards teaching English for CE students. This pertains also the objectives of teaching English, the skills needed for their students to develop, their views to the ESP teacher, etc.

The interviews consist of six main questions:

- Questions One: Teachers' views to the objectives sought behind teaching students the ESP course.
- Questions Two: The importance of English for learners.
- Questions Three: The status of the module of English with regard to its importance.
- Questions Four: The particular language skills that CE students need.
- Questions Five: The ESP teacher and the ways of overcoming the problem of the lack of teachers.

#### **4.3.2.2 The analysis of the interviews**

The interviews conducted with the supervisors revealed insightful information. The analysis of the results is as follows:

- Questions One, Two, and Three: The reasons behind implementing the English course and its importance

The interviewees consider that English is taught to CE students because it is the language of science and technology; therefore, it is necessary for students to master. They added also that it is of great importance for learners' future professional life. However, subject matter teachers confessed that it is not given the importance that it should have which can be noticed from the number of hours devoted to teaching English.

- Question Four: The language skills

As for the particular language skills that students need, teachers' views swing between reading and all the four skills. However, a subject matter teacher provided an interesting classification when he stated that BE learners need to develop their reading skills (reading comprehension). Master students have, in addition to the first one, to enhance their listening skills. However, Doctorate students are required to develop their productive competence, i.e., writing and speaking skills.

- Questions Five: The ESP teacher

The last questions probe the issue of the ESP teacher. The interviewees confirmed that there is a lack of specialized teachers. This leads the supervisors to look for any instructor who can fill in instead. The head of Department stressed that two CE teachers, sometimes, volunteer to be in charge of this module; one of them has a BA degree in English and the second one has some language competence as she carried out her post-graduation studies in English. In some cases, Master students from the Department of English teach their CE peers, affirmed an ex-head of the Department of Science and Technology.

#### **4.3.2.3 Summary**

Subject matter teachers see that the English course is included in CE curriculum because English is the language of science and technology. However, its actual status, the number of reaching hours, and the problem of specialized ESP teachers are the main impediments to be as such.

#### **4.3.3 The researcher as an ESP teacher**

The researcher taught second year BE and first year Master students from the beginning of October till mid-December. This experience enabled him to approach the study population in the academic context. Thus, several points were brought to light as to students' attitudes towards English, the evaluation of teaching materials and human resources, etc.

The 11 lectures delivered during the first semester helped the researcher check students' attitudes towards English through their attendance of regular sessions. Out of 70 BE students, 41.43%, in the best case, attended English classes. The least percentage is 14.71% whereas, the average of students' attendance is 19.82%. In other terms, less than one fifth of the class usually attended regular English sessions.

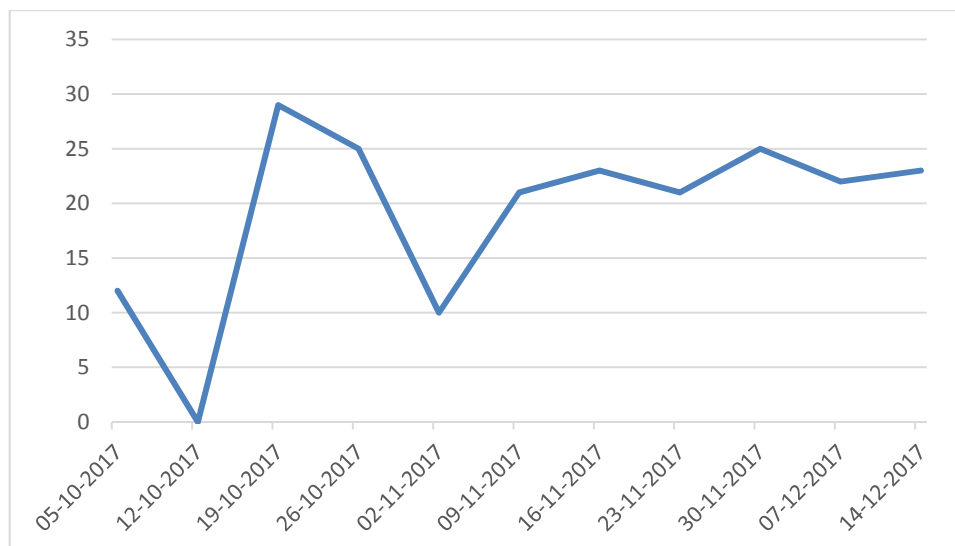


Figure 4.13. BE students' attendance of English classes

The highest rate recorded for Master students' attendance is 23.53%; of course, this percentage is computed out of 68 students. On the contrary, the lowest percentage is 4.41%, but the average score is 13.37%. These results demonstrate that Master students' interest in learning English is rather weak.

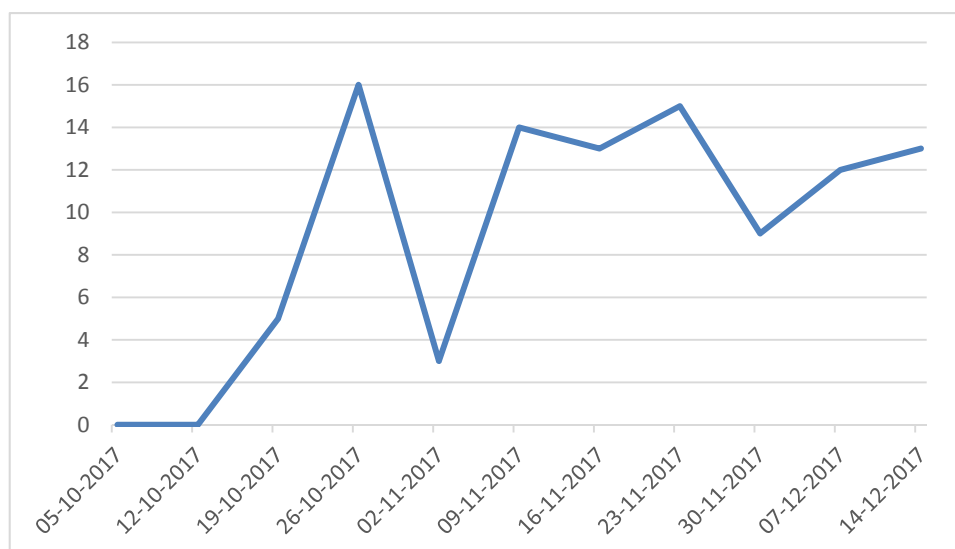


Figure 4.14. Master students' attendance of English classes

These low rates of attendance are partially due to the fact that English is not a mandatory module. Besides, students do not need to use it so as to conduct everyday academic tasks, as claimed some subject matter teachers. Additionally, the students do not have clear professional perspectives including their needs for English in the future.



As for material resources among which classrooms are of great importance, the regular sessions were conducted in an amphitheater. This last was impractical to give group activities and communicative exercises. Since the number of students was limited, the researcher tried to look for a medium size classroom. Unfortunately, this was impossible because of the lack of classrooms.

For both classes of CE, the module of English is meant only for one semester. The sum of 11 sessions taught to students is 16 hours and a half. This number of hours is all that a CE student receives in one cycle in terms of English. Actually, this may not be sufficient taking into consideration that students need their previous knowledge to be refreshed after having a break of two semesters.

#### **4.3.4 The most frequent tasks**

In the academic environment, there are a number of recurring tasks and activities. The latter can be seen as either teaching related activities or researching related tasks. The first ones embrace preparing courses, activities, and research projects; however, the second one includes writing scientific manuscripts, attending international conferences, etc.

To keep abreast of the latest research works CE researchers and university teachers are bound to deal with English written articles and documents. The particular reading skill required depends on the specific purpose in mind to be achieved. For instance, researchers may want to prepare courses, look for new research projects, back up a research paper with a literature review or at least update one's knowledge. When preparing courses and projects to students for research, teachers have to read carefully English written text, understand the content and the main ideas. In case the purpose is to feed one's literature review of a manuscript intensive reading is more beneficial.

Unlike the previous activities which rely only on reading, crafting a manuscript depends on writing technics, strategies and skills. Additionally, other language sub-skills such as summarizing, paraphrasing, etc. are also of high importance. The language of the manuscript is as important as the scientific craft; for this reason, the quality of the language should fit the international standards of scientific and academic writing.

Participating in international conferences is one of the most challenging tasks for CE teachers and researchers especially if the language of communication is English. In much of

the cases, participants' contribution take a fifteen to twenty-minute PowerPoint presentation, followed by a brief discussion.

Presentations may take place in amphitheatres or small size classrooms. The audience can be from all over the world particularly if the conference is held in a foreign country, but the common feature is that they are either interested or specialized in the conference' subject matter. The style of the language of presenting a conference paper is slightly formal whereas, in addition to speaking skills, facial expressions, and body language are also of paramount importance. Teachers can also display posters parallel to the flow of the events of conferences and answer the questions of the attendees.

Researchers often try to benefit from assisting in conferences by doing some networking. This often takes place during coffee breaks, lunch time or when having dinner, during which participants are sitting in a restaurant or scattered in an open space in small groups. Unlike the formal style of the language used when speaking at a conference, building social networks necessitates using informal styles. As these events do not last for a long time, often only for two days, researchers need to be skillful enough to do networking as much as they can.

### **4.3.5 The most demanding tasks**

Among all the tasks and activities that CE teachers and researchers have to undertake, two main ones seem to be the most demanding. The first task is writing scientific manuscripts for publication in indexed journals. The second one is taking part in international scientific conferences.

#### **4.3.5.1 Writing scientific manuscripts**

University teachers and CE researchers find scientific articles difficult to write. This problem stems from the fact that the researchers have to conduct a double job. First of all, they have to write the full manuscript in French as it is the language of research in Algeria. However, publication prerequisites necessitate the manuscript to be written in English.

Scientific articles of CE start often with a literature review and a few glimpses of the previous studies; this part is the easiest one for researchers to produce. As the second part is concerned with presenting the findings, it is usually full of graphs and tables and few sentences or some short paragraphs. Researchers make use of articles of the same topic where similar sorts of sentences can be found and, of course, they are of great help. The most

difficult part for the researcher to write is his/her own interpretation of data which is the last part of the manuscript.

CE teachers and researchers when authoring articles have to read carefully journal's instructions and guides concerning the submission process. The comments and recommendations of the peer-reviewers are to be attentively read, understood and followed. Since the great majority of specialized journals are English written and American based, authors are required to demonstrate near native like proficiency and this is precisely the problem that researchers face.

#### **4.3.5.2 Participating in international conferences**

Presenting a research paper in English in front of a large audience in a foreign country requires considerable preparations. Good speaking skills, among several skills, come at the top of the priorities for any presentation to be successful.

Power point slides have to be carefully considered in order to fit within the allotted time. This entails squeezing the research presentation into a very limited number of slides. In other words, written passages have to be summarized to the most important points in the paper. For this reason, the skills of summarizing text for researchers are crucial in this regard.

Power point presentations often take the form of verbal communications; for this reason slides contents are to be transformed into an oral speech to be delivered. CE researchers endeavour to pronounce correctly their words so that to make themselves clear and understood by the audience. This task necessitates a lot of efforts and preparation including rehearsals. Additionally, the difficulty of such situations lies in the fact that speaking in public necessitates other specific speaking skills such as the spontaneous response, facial expressions, and body language.

#### **4.3.6 Summary**

On the whole, the importance of the academic context at university lies in the fact that it is both a learning environment for students and a professional context for CE teachers and researchers. This duality enabled the researcher to make use of the experience of teachers to examine not only their professional needs but also crosscheck students' wants. Questionnaire surveys elicited valuable quantitative data regarding teachers' attitudes towards English in general and its course in particular. Teachers' deficiencies in English on the one hand and their great enthusiasm for learning it, on the other, reflect the regret they

have because of not being able to craft English manuscripts or take part in international conferences. Teachers do focus on the end-product rather than the way of reaching the desirable level in English; nonetheless, they suggested prioritizing receptive language skills over productive skills gradually with regard to students' level of performance besides, using a combination of teaching methods and materials for the course. Additionally, the interviews with subject matter teachers and managers result in relevant information. In this regard, they expressed their dissatisfaction with the official status of the module of English.

#### **4.4 The Professional Context**

Job related contexts of civil engineers vary remarkably; hence, it is difficult to examine all the situations. However, there are several features, tasks, activities that are common for CE profession. This investigation relies heavily on interviews with Human Resources Managers (HRMs) and CE professionals. The researcher visited the site of the company called *Groupement Touat Gaz* (GTG) so that to report a typical working context.

##### **4.4.1 Interviews with HRMs**

Because of the limited number of the HRMs who agreed to participate, the researcher preferred to conduct face-to-face interviews. The questions asked were open so that to elicit as much as possible of data.

###### **4.4.1.1 Methodology of the interviews**

The interviews carried out with the HRMs aim at probing foreign companies' inclinations as to civil engineers' communicative competence required for them to be recruited. The questions addressed concerns the languages used for communication, the necessary competence, and the types of written documents.

Managers from three foreign companies agreed to participate. The first one is the HRM of the Turkish company *MBD Insaat*; the second one is the HRM of the Chinese company *Shijaizhang*; and the last one is from the Korean company *Samsung Engineering*.

All of these companies are multinational in the way that their employees belong to multiple countries. Although the majority of Shijaizhang employees are Chinese there are also some Algerians. The members of MBD Insaat working staff are from Arab countries, i.e., Lebanon, Jordan, and Algeria. As it is South Korean, Samsung Engineering has the large part of its working staff from South Asian countries, i.e., the Philippines, South Korea, India, in addition to few workers from South Africa and Algeria.

The questions addressed turn around the following axes:

- Question One: Companies' inclination as to the language(s) of communication
- Question Two: The importance of the communication competence
- Question Three: The sorts of the communicative language
- Question Four: The sorts of written language widely used

#### **4.4.1.2 Analysis of the interviews**

The information surfaced from the interviews conducted with the HRMs can be reported and interpreted as follows:

- Question One: Companies' inclination as to the language(s) of communication

The attitudes of company managers towards the languages of communication used vary from one to another. To be more specific, the Chinese managers of Shijaizhang make use of their own language since they are all Chinese. However, they prefer to use the language of the host country with their employees, i.e., Algerian Arabic in this case and translators are hired to facilitate communication tasks. Yet, intra-company technical documents are written exclusively in Chinese; however, French and sometimes Arabic are used when addressing official institutions.

For the staff of MBD Insaat, Turkish is their intimate medium of communication; however, English is the medium of communication with non-Turkish speakers, in company's meetings, and for writing internal documents. On the other hand, external written correspondence can be either in French or in Arabic.

The sub-branch of Samsung specialized in CE constructions adopts English as the official language of communication. Nevertheless, official letters are written either in Arabic or in French.

- Question Two: The importance of the communicative competence

The HRMs emphasized the importance of communicative competence and they rank it just after the professional competence. However, they added that informal face-to-face communication does not require necessarily high level of mastery of language but it is rather sufficient for the communicator to make use of all the contextual clues and means to make himself/herself understood.

- Question Three: The types of the communicative language

In official meetings, the language used is likely to be slightly formal since the attendees are from external institutions and have high level in English. In contrast, everyday conversations are informal particularly when the English level of the foreign employees is intermediate. This led Samsung HRM to report that the language spoken in work site can be said to be a sort of pidgin as it is mainly based on a mixture of vocabulary derived from English, Korean, and French.

- Question Four: The sorts of written texts widely used

Since communicating through Internet is more prevailing, writing email messages is of great importance, stated Samsung HRM. Text messages vary in terms of importance, purpose, and size, that is, they can be short, medium, or long. Although text content should be very clear and accurate, slight grammatical mistakes are, to some extent, implicitly permissible.

MBD Insaat HRM claimed that, unlike spoken discourse and email messages, technical reports should be correct, precise, and concise. The latter have different types, sizes, and purposes. To be more accurate, reports are written on a daily, weekly, and monthly bases, yet the last type is the most important. Each sort of them has a standard form which facilitates writing tasks for engineers.

#### **4.4.1.3 Summary**

To sum up, work contexts define several aspects of the languages used for communication. Therefore, foreign companies' inclination and policies toward this medium are variant. However, the ability to understand and make oneself understood is a necessity for engineers. Despite this, the types, forms, degree of formality and correctness vary remarkably from one situation to another which require from the engineer to be equipped with a multitude of abilities in addition to communicative ones.

#### **4.4.2 Interviews with CE professionals**

As has been mentioned earlier, the lack of informants regarding CE professionals working for English speaking companies drove the researcher to resort to face-to-face interviews based on open questions. This helped him to gain insightful information about their tasks, activities, and work contexts.

#### **4.4.2.1 Methodology of the interviews**

The interviews with CE professionals are meant to identify the duties of the civil engineer and the type of the language used; this entails also describing the work contexts and the English level of the foreign co-workers. These issues are discussed through enquiring about the following points:

- Question One: The tasks and activities of the civil engineer
- Question Two: English level of the foreign co-workers
- Question Three: The medium, channel, and the types of the texts used

#### **4.4.2.2 Analysis of the interviews**

The interpretation of the questions of the interviews results in the following points:

- Question One: The task and the activities of the civil engineer

The duties of the civil engineer vary from one work site to another and from one stage of construction to the following, but they can be divided into three groups:

1. Work site activities such as visiting construction sites, checking the quality of works, evaluating the rate of progress, reporting human and material resources deployed on sites, presiding daily gathering and delivering the order of the day, giving instructions and recommendations about security measures, solving technical problems in-situ.

2. Office related activities, for instance, writing *handovers* and reports (daily, weekly, bi-monthly, and monthly), reading and responding to email messages, reading manuals, written instructions, and office documents.

3. Team works involve attending weekly intra-department meetings (between the members of the same department or between department members and the subcontractor), and monthly inter-departments meetings (between all the departments).

- Question Two: English level of the foreign co-workers

The majority of the co-workers are not native speakers of English as they are from European, Asian, and African countries. Additionally, the pronunciation system associated with English renders mutual intelligibility sometimes at stake especially if the proficiency level of both speakers is pre-intermediate. In this regard, CE professionals stressed that interacting with native speakers is quite easier.

- Question Three: The medium, channel, and the types of texts and discourse

The mediums of using English language vary from one task to another. During official meetings and work site visits listening and speaking skills are rather necessary; however, dealing with reports requires writing and reading skills. Yet, face-to-face interactions and emailing messages are the prevailing channels for communication. Correspondingly, the types of texts that professionals deal with are particularly technical such as reports, guides, and manuals.

#### **4.4.2.3 Summary**

The profession of CE necessitates a wide range of competence, including of course the communicative skills that help the engineer to excel in accomplishing the different duties. Through face-to-face interviews the researcher was able to gain valuable information and determine precisely the obligations of CE engineers. Although some tasks and activities are common in this profession, different contexts have different features and conditions. The following is a description of an instance of a work site; it is the gas complex called Groupement Touat Gaz (GTG Complex).

#### **4.4.3 The work context of “*Groupement Touat Gaz*”**

The project called *Groupement Touat Gaz*, abbreviated as *GTG*, is one of the leading gas complexes that have newly been developed in the region of Adrar. It is a partnership of the national company SONATRACH and the French company Gaz de France (GDF SUEZ) recently labelled as ENGIE. This last, ENGIE, has yielded 65 % of its shares to the British company Neptune Energy and kept 46 %; however, the national partner SONATRACH has 35 % of the total shares (Ismain, 2017).

Nearly 60 km to the North East of Adrar city, GTG Complex area of activity stretches for approximately 3,000 square kilometres; and the exploitation area covers 80 hectares. At the first stage, 25 wells are going to be operated; however, the estimated production is 4.5 billion standard m<sup>3</sup> of gas and 630,000 barrels of condensate annually after the complex start-up date (‘Touat (DZ)’, 2018).



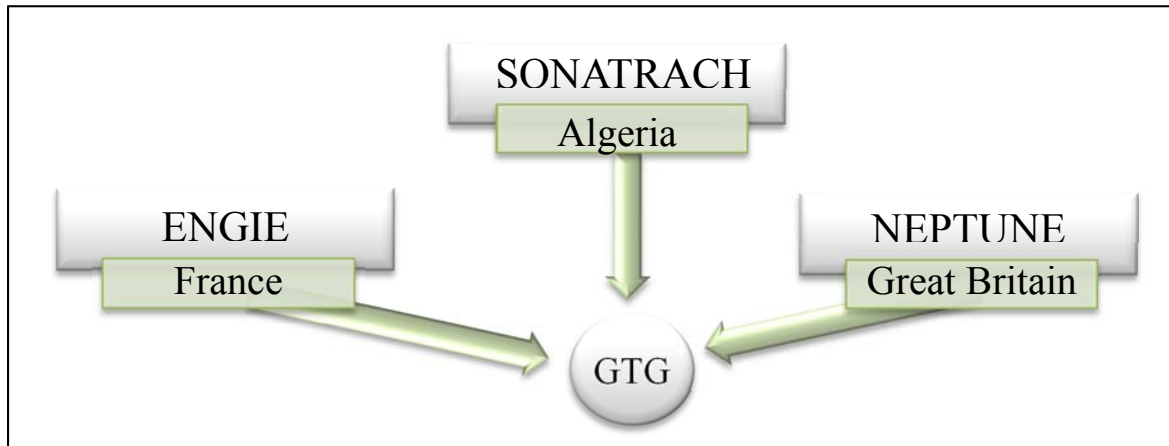


Figure 4.15. GTG contractors

In August 2013, the Spanish-based company *Tecnicas Reunidas* was awarded the contract of developing GTG hydrocarbons complex facilities. This included engineering, construction, commissioning and start-up of gas facilities ('Tecnicas Reunidas', 2018) of the project called *EPC 2*.

The living base, security camp, and guard post were awarded to *Consolidated Contractors Company* (CCC), the largest construction company in the Middle East. The contract includes the design, construction, and equipment of a permanent camp of nearly 24,000 m<sup>2</sup>. The official launch of the project, labelled as *EPC 3*, was September 7<sup>th</sup> 2014 for a duration of 28 months (Khoury, 2014).

A local enterprise called *Entreprise de Travaux de Batiment Triki* was awarded the part of the project called *EPCI* which includes three main parts: the access road that links the field to the city of Adrar on a distance of 60 kilometres, the internal road which joins together the main factory, the aircraft runway, and the living base.

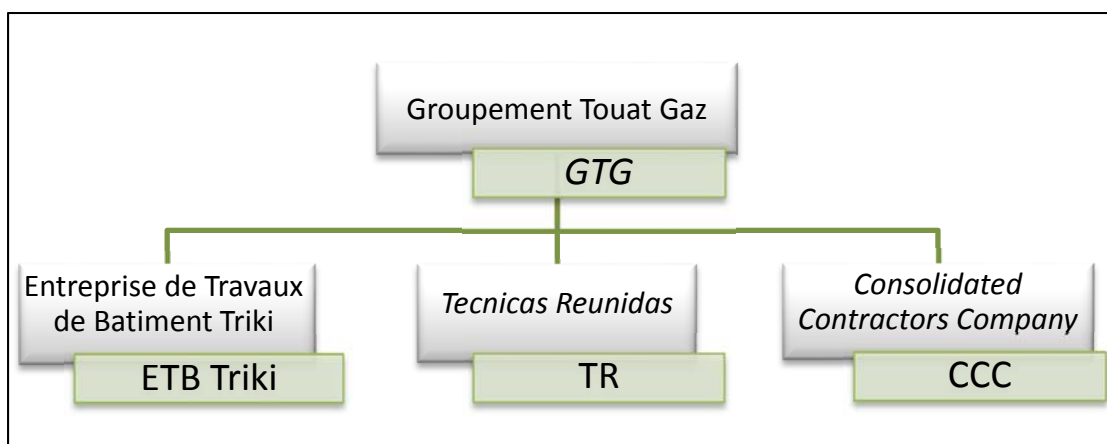


Figure 4.16. GTG subcontractors' network

The Production launch for Touat Gaz field was planned to take place at the end of 2016. Nevertheless, it was delayed until the second half of 2018 because of some financial and technical problems (Ismain, 2017).

#### **4.4.3.1 The company's formal language of communication**

Officially, international contracts state precisely the language of editing documents and exchanging letters between the contractors; thus, both sides decide upon this vital communicative issue. The recognized official language between SONATRACH and the French company ENGIE is French; however, with the coming of the British company Neptune Energy English appears in the language arena of GTG complex.

Although the French prefer their language to be used, this fact has been heavily competed and English became more predominant. This created a new multilingual working context for the technical staff to the extent that one may find some of the documents written in English, others French, or even a mixture between the two languages.

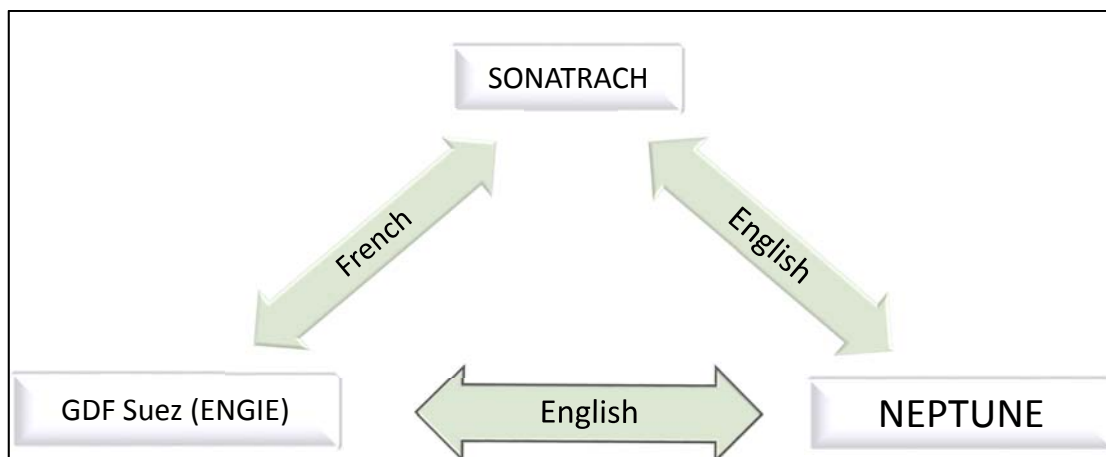


Figure 4.17. The languages used for communication in GTG

#### **4.4.3.2 The company's informal languages of communication**

There are three main parts awarded to different subcontractors. Consequently, each working context has its own specific features in terms of communication.

The enterprise in charge of the project called EPC 1 is local; it is called ETB Triki. Thus, the work context of this facility embraces an important number of Algerian workers. Communication on site is carried out in a mixture of French and different Algerian language varieties but technical documents are mainly written in French.

The Spanish company *Tecnicas Reunidas*, which is in charge of the part called EPC 2, uses English as the main language of communication. Both forms of the language are attested: written and spoken. Additionally, French and a number of language varieties of Algerian Arabic are also spoken among Algerians.

The technical staff of the part labelled as EPC 3 are mainly from Arab countries, i.e., Lebanon, Jordan, and Egypt. Despite the fact that CCC Company adopts English as its official language of communication, everyday discussion is often carried out in Arabic language varieties.

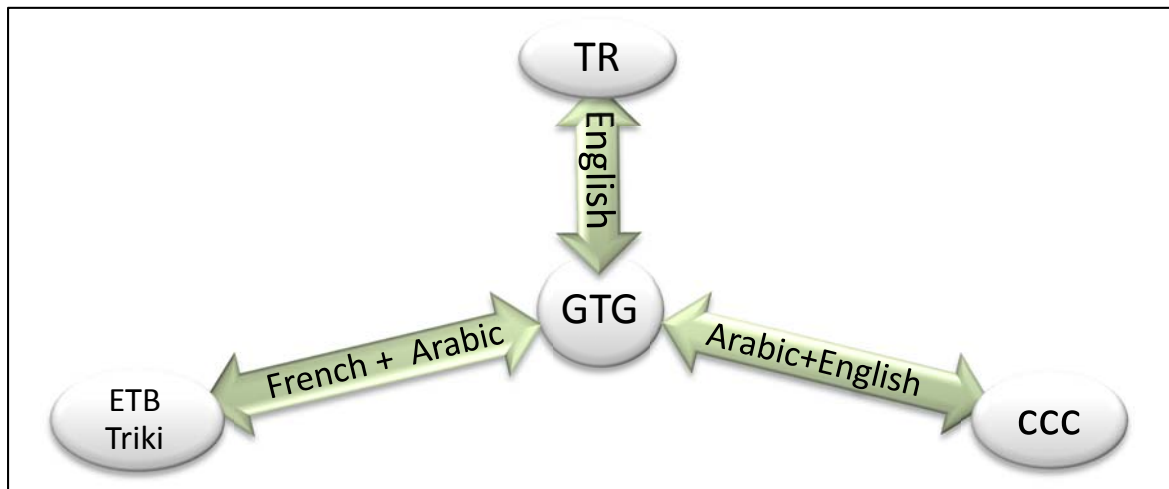


Figure 4.18. Languages of communication between GTG and its Subcontractors

#### 4.4.3.3 Career options

As far as GTG is concerned, civil engineers start their career either as supervisors or inspectors. Gradually, if they promote in the domain of controlling quality they assume the position of coordinators. However, if they prefer the domain of management they can become construction managers. More experienced engineers can soon be site managers afterwards a project manager or a head of a project. The top rank that an engineer can hold is a project director. Therefore, there is a direct correlation between the position that the engineer holds and the language competence he or she should have. Correspondingly, the more the engineer's position is high the more communication abilities required increase.

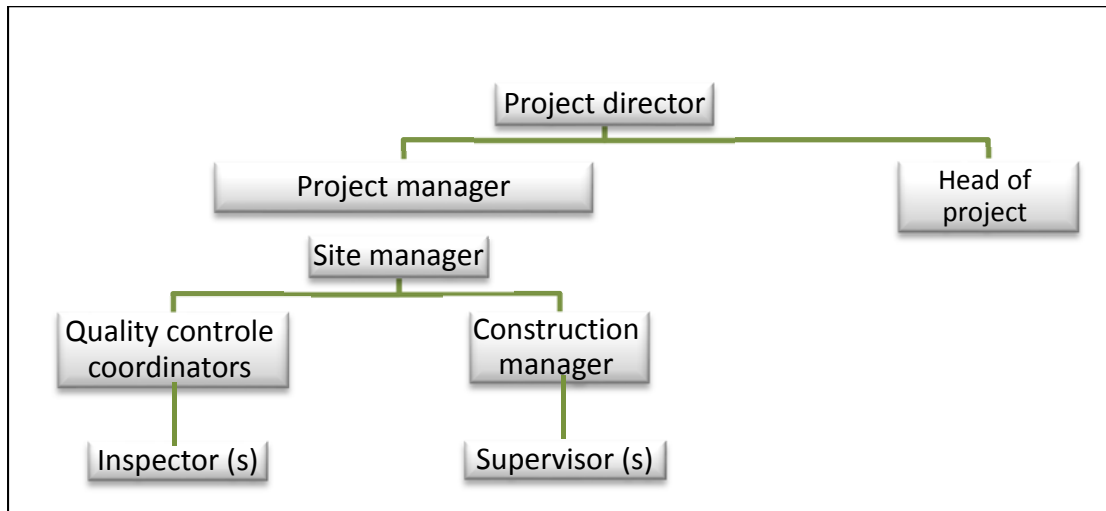


Figure 4.19. The positions of civil engineers in GTG

#### 4.4.3.4 The most frequent situations

- **Place:** GTG construction site
- **People present:** A civil engineer, a site engineer, construction workers, the Health and Safety Executive controller (HSE).

Before getting involved into the work, the civil engineer has to preside a daily meeting with the site engineer, the HSE controller, and construction workers. These kinds of meetings are often held on open air and attended by all the workers on site. Respecting firmly security measures is the most important point that the daily meeting has to stress first; controlling tasks, discussing handicaps, suggesting solutions, giving instructions of further steps come next. In-door meetings of the technical staff can also take place on site if necessary.

The civil engineer's duties involve overseeing construction and checking the conformity of building works with regard to the design. Immediate corrective actions are to be recommended for any problems faced and clear instructions are to be given to the work team as to the following steps.

All the findings, recommendations, and instructions are to be recorded on a site log. This includes the amount of material resources and human resources deployed on site in addition to the rate of progress.

Usually, civil engineers spend the afternoons in the office where they have to report all what is done on site on the daily report and send it to the superiors. Additionally, they consult their professional email boxes and respond to messages. With English speakers,

engineers prefer face-to-face interaction or using email to telephoning so that to avoid any possible misunderstandings or misinterpretations. Internal meetings of the service are often held on a weekly basis with the attendance of all the staff from top to bottom. For the communication to be successful, it is essential for the technical staff to be highly professional, and have both a multilingual competence and a wide knowledge of CE technical terms.

#### **4.4.3.5 The most demanding situations**

Much of the works of civil engineers involve solving problems encountered during the construction phase. Reaching immediate solutions requires a high level of proficiency and a great deal of communicative competence for all the members of the technical crew. Most of the time, the employees are not native speakers of English and, of course, their pronunciations differ to a great extent. This situation puts mutual intelligibility between the technical staff of the crew at stake. To make themselves understood, the engineers use all the cues including tone, intonation, gestures, and even facial expressions.

The meetings held on a monthly basis are official in the sense that they are mostly attended by chiefs and high-ranking representatives of the contractors and sub-contractors. The decisions taken during these meetings concern all the aspects of the project. For this reason, the terms and utterances should be clear and precise. At the beginning, the attendees go over the decisions already taken in the previous meetings. Then, they evaluate the actual situation with regard to the construction schedule. The sub-contractors have to provide the contractors with all the clarifications as to the project development, constraints, problems, etc. Official reports should be carefully written at the end of the meetings which usually last for hours.

#### **4.4.3.6 Summary**

The complex of gaz labelled as GTG is a typical work context for multinational companies. A multitude of partners from diverse countries speaking different languages are involved in the same working environment. Being in the heart of the project, civil engineers are directly affected by this situation. The position that the engineers hold, the duties they assume, the tasks and activities they carry out including also the languages they use, all are determined by the contractor or subcontractor they work for. Hence, civil engineers need to be equipped with the competence that enables them to be accustomed with such situations.

## 4.5 Analysis of CE Texts

The aim behind this analysis is to inform the course design with the particular features of CE writings. This study is divided into two parts as it is quite difficult to study deeply all the three subfield-related books already chosen, *Construction Materials*, *Fundamentals of Structural Engineering*, and *Principles of Geotechnical Engineering*. The first part tackles sentence structures of three samples of texts chosen from the aforementioned sources. However, the second one considers the lexis of the whole corpus composed of the three technical books.

### 4.5.1 Analysis of sentence structures

The investigation concerns text samples of an average size of 4200 tokens from each document. The aim is to determine the different patterns of sentence structures and the specific features of the lexical components, i.e., their parts of speech, types, and rates.

The analysis is based primarily on statistical investigation. Sentence structures are first probed via studying the different types of sentences. Then, word frequency lists of the different grammatical categories are developed: nouns, verbs, adjectives, and adverbs. Afterwards, each grammatical category is analysed so that to determine the specific features of the predominant types.

#### 4.5.1.1 Construction Materials Engineering

The first set of text samples belongs to the field of Materials Engineering. This part is composed of eight subparts and 44 paragraphs. The initial number of running words is 4370 but after text processing through KH Coder and omitting the unnecessary mathematical codes and symbols the number decreased to 2504 tokens. The latter embrace five categories: nouns, verbs, adjectives, adverbs, and others (pronouns, and proper nouns)

##### A) Sentence types

The investigation into the structures of the sentences composing the analysed texts shows that sentences vary in terms of size, type, and grammatical components. The composition of sentence structures embraces a number of elements which range from 4 till 63 words. The four types of sentences are attested, i.e., simple, compound, complex, and compound complex. The sum of sentences is 192 and the number and percentage of each type of sentences is as follows:

- simple sentences 95, that is, 49.48 %,

- compound sentences 33, that is, 17.19 %,
- complex sentences 37, that is, 19.27 %,
- and compound complex sentences 27, that is, 14.06%.

### B) Nouns

Out of 2504 tokens composing this sub-chapter the category of nouns embraces 1093 items, that is, it makes up 43.65% of the entire analysed texts. These lexical items are derived mainly from 255 words with an average of 4.29 tokens produced for each noun. Table 4.1 sums up the results of the frequency list of nouns.

Table 4.1. Frequency of occurrence of nouns

Number	Frequency of occurrence	Number of nouns	Number of tokens	Instances
1	90	1	90	stress
2	71	1	71	material
3	58	1	58	strain
4	38	1	38	failure
5	24	2	48	behaviour, deformation
6	23	1	23	load
7	19	1	19	value
8	17	1	17	cycle
9	16	2	32	fatigue, point
10	15	2	30	region,
11	14	1	14	direction
12	13	2	26	life, range
13	11	2	22	ratio
14	10	5	50	curve, modulus
15	9	4	36	length, work
16	8	3	24	steel, area
17	7	5	35	tension, constant
18	6	7	42	fracture, structure
19	5	12	60	metal, restraint
20	4	15	60	compression, concrete
21	3	34	102	alloy, force
22	2	44	88	hardening, slope
23	1	108	108	deflection, endurance
Total		255	1093	

Table 4.1 shows that the frequencies fall into the interval 90 and one; nonetheless, there is great deal of discrepancy between the top five frequencies (90, 71, 58, 36, and 24). The first four of them include 23.51% of the tokens. The top fifteen words on the list have a sum of 574 tokens, i.e., more than half of the whole sum of tokens (52.52%). These nouns can be grouped under two main groups: general words and technical terms.

Table 4.2. Noun types' frequency of occurrence

Category	Singular	Plural	Countable	Uncountable
Number of tokens	872	221	810	247
Percentages	79.78	20.22	76.63	23.37

Nearly, four fifths of the tokens are in singular form (79.78% or 872 items). Meanwhile, only one fifth take the plural form (20.22% or 221 items). Parallel to this, three quarters are countable (76.63%, i.e., 810 tokens) and only one quarter of the tokens are derived from uncountable nouns (23.37%, i.e., 247 tokens).

### C) Verbs

Verbs are the second category concerned with the analysis, the number of tokens is 573 out of 2504 items with a percentage of 22.88%. Text analysis of this sub-chapter sorts out a number of 135 verbs with an average of 4.24% tokens generated from each verb. Table 4.3 displays 18 cases of frequency of usage included between 140 and one token for each language root.

Table 4.3. Frequency of occurrence of verbs

Number	Frequency of occurrence	Number of words	Number of tokens	Instances
1	140	1	140	be
2	28	1	28	load
3	27	1	27	have
4	17	1	17	show
5	16	1	16	use
6	15	2	30	define, occur
7	13	1	13	call
8	11	1	11	do
9	10	1	10	increase
10	9	1	9	apply
11	8	1	8	reduce
12	7	3	21	cause, give
13	6	5	30	consider, discuss
14	5	8	40	calculate, decrease
15	4	6	24	continue, divide
16	3	12	36	unload, approach
17	2	24	48	appear, bend
18	1	65	65	bear, carry
Total		135	573	



The results displayed in table 4.3 reveal that verb frequency of occurrence varies remarkably, .i.e., between one and 140 whereas, the verbs *to be* and *to have* are among the first three elements on the list. Additionally, the top 12 verbs have more than half of the total tokens (51.31%) but nearly half of the total roots (48.15%) occur only one single time in the texts.

Another perspective to the analysis of verbs can be through considering the forms they take, i.e., with regard to the tense.

Table 4.4. Verb forms' frequency of occurrence (tenses)

The number	Tenses	Number of tokens	%
1	Infinitive	50	7.90
2	Infinitive / passive voice	4	0.63
3	Present simple	233	36.81
4	Present continuous	4	0.63
5	Present / passive voice	54	8.53
6	Present perfect	23	3.63
7	Present perfect/ passive voice	8	1.26
8	Past	2	0.32
9	Past / passive voice	1	0.16
10	Past perfect	2	0.32
11	Past participle	50	7.90
12	Can + verb	15	2.37
13	Can be	4	0.63
14	Must + verb	5	0.79
15	Must be	2	0.32
16	May	1	0.16
17	Might	2	0.32
18	Verb (ing)	73	11.53
19	Future	25	3.95
20	Will be	3	0.47
21	Would	1	0.16
22	Imperative	7	1.11
23	Should be	4	0.63

There are 23 verb forms in the analysed text but verbs occurring in the present simple have the highest rate with more than one third of the tokens (36.81 %). Verbs in ing form occur in the second position with 11.53%. The passive voice of the present simple tense is the third with 8.53%. The participal and infinitive forms of verbs have the same rate, i.e.,

7.90%. The tenses: simple future, present perfect, the passive voice of the present perfect, in addition to the modal verb are successively included between 4 % and 1%. The rest of the forms, 13 cases, have less than 1%.

#### D) Adjectives

The investigation into this part of speech demonstrates that its number of tokens is 371. This makes up 14.82% of the total tokens composing the text samples.

Table 4.5. Frequency of occurrence of adjectives

Number	Frequency of occurrence	Number of adjectives	Number of tokens	Instances
1	31	1	31	elastic
2	12	2	24	constant, ductile
3	11	1	11	different
4	9	3	27	brittle, plastic
5	8	2	16	higher, initial
6	7	1	7	linear
7	6	2	12	common, compressive
8	5	4	20	mild, permanent
9	4	14	56	high, important
10	3	13	39	cyclic, distinct
11	2	22	44	cumulative, convenient
12	1	84	84	considerable, final
Total		149	371	

Tokens of adjectives are derived from 149 lexical items with a rate of 2.49 tokens for each one. Adjectives describing materials are the most frequently used; on their top, for instance, is the term 'elastic' with the frequency 31. The rest are less than 12; on the contrary, items occurring less than four times formulate 60.11% of the total tokens.

Table 4.6. Adjective types' frequency of occurrence

Number	Type of adjectives	Number of words	Number of tokens	%
1	Attributive	115	274	73.85
2	predicative	60	97	26.15
3	Qualitative	26	97	26.15
4	Classifying	76	221	59.57
5	Nationality	0	0	0.00
6	Emphasizing	6	20	5.39
7	Compound	1	5	1.35
8	Comparatives	10	18	4.85
9	Superlatives	3	10	2.70

Table 4.6 reveals that nearly three quarters of the items (73.85%) appear in attributive position and one quarter (26.15%) are in predicative position. On the other hand, classifying adjectives are the most predominant category with 59.57% followed by qualitative adjectives with 26.15%. Emphasizing, comparative, superlative and compound adjectives have respectively the rates 5.39%, 4.85%, 2.70%, and 1.35%.

Concerning the form, some adjectives are formed via combining roots and affixes. Some of them, for instance, have suffixes, such as *ic*, *al*, *ed*, *en*, *near*, *ory*, *ible*, *able*; however, others have prefixes instead, for example, *off*, *tri*, and *in*.

### E) Adverbs

The last part in this text analysis concerns the use of adverbs. Out of the whole lexis, this category formulates 226 tokens, i.e., 9.03%.

Table 4.7. Frequency of occurrence of adverbs

Number	Frequency of occurrence	Number of adverbs	Number of tokens	Instances
1	18	1	18	not
2	16	2	32	therefore, very
3	13	1	13	then
4	12	1	12	more
5	8	1	8	often
6	6	4	24	normally, such
7	5	4	20	only, many
8	4	3	12	much, still
9	3	6	18	sometimes
10	2	10	20	somewhere
11	1	49	49	strictly, usually
Total		82	226	

All the tokens of this class are derived from 82 adverbs, that is, 2.76 tokens produced per adverb. With regard to their frequency of usage, tokens have 11 cases which vary between 18 and one. Nearly, three fifths of the adverbs (59.76%) have the frequency one. The negative adverb *not*, the linking adverb *therefore*, and the focusing adverb *very* are the first three elements on the list.

Table 4.8. Adverb types' frequency of occurrence

Number	Types of adverbs	Number of words	Number of tokens	%
1	Time	9	30	13.27
2	Frequency	8	24	10.62
3	Place	8	11	4.87
4	Manner	25	39	17.26
5	Degree	13	34	15.04
6	Linking	3	23	10.18
7	Negative	2	19	8.41
8	Focusing	9	34	15.04
9	Comparatives	3	9	3.98
10	Superlatives	2	3	1.33
Total		82	226	

Although the rates of all the categories are less than 20%, adverbs of manner are on the top of the list with 17.26% followed by degree and focusing adverbs with 15.04% for each one of them. Time, frequency, and linking adverbs have respectively the following percentages: 13.27, 10.62, and 10.18. The rest of the cases: negative, place, comparative, and superlative adverbs score less than 10%, i.e., 8.41%, 4.87%, 3.98%, and 1.33% respectively.

#### **4.5.1.2 Structural Engineering**

The second set of texts belongs to what is referred to as Structural Engineering. This section of a chapter composed of 45 paragraphs that included initially 4185 tokens. Yet, after text processing and manual refining the number decreased to 2627 tokens containing all the parts of speech.

##### **A) Sentence types**

Structure analysis of 217 sentences reveals that the number of elements per sentence ranges from four to 56 words. All the four types of sentences are attested in the text composition. The followings are the statistics related to the types of sentences:

- simple sentences 147 (67.74%),
- compound sentences 11 (5.07%),
- complex sentences 47 (21.66%),
- and compound complex sentences 12 (5.53%).

**B) Nouns**

The first grammatical category concerned with the analysis is nouns. The statistical investigation shows that this category has 1184 out of 2627 tokens composing this part. Differently expressed, it makes up 45.07% of the entire tokens. Table 4.9 presents the nouns on the basis of their frequency of occurrence in the texts.

Table 4.9. Frequency of occurrence of nouns

Number	Frequency of occurrence	Number of nouns	Number of tokens	Instances
1	88	1	88	structure
2	72	1	72	load
3	41	1	41	design
4	25	1	25	pressure
5	24	1	24	member
6	23	1	23	wind
7	16	2	32	building, force
8	15	3	45	construction, type
9	14	2	28	failure, material
10	13	1	13	example
11	12	2	24	component, life
12	11	5	55	bridge, behaviour
13	10	1	10	engineer
14	9	5	45	stress, velocity
15	8	4	32	function, roof
16	7	7	49	magnitude, reaction
17	6	12	72	case, deformation
18	5	15	75	loading, truck
19	4	23	92	earthquake, incident
20	3	33	99	excitation, facility
21	2	45	90	ductility, duration
22	1	150	150	collision, dam
Total		316	1184	

The results displayed in table 4.9 shows that tokens of nouns are produced from a sum of 316 lexical items; this means that the average is 3.75 tokens for each word. The frequencies of the first three elements on the list (88, 72, and 41) are remarkably higher than the frequencies of the following elements (25, 24, 23, etc.). On the other hand, nearly half of the nouns (47.47%) occur only in one single occasion in the texts. Nouns composing this chapter can be grouped under two main groups: general words and technical words.

Table 4.10. Noun types' frequency of occurrence

Category	Singular	Plural	Countable	Uncountable
number of tokens	786	343	838	347
percentages	69.62	30.38	70.72	29.28

Approximately, more than the two thirds are in singular forms (69.62% or 786 tokens), and less than one third are in plural (30.38% or 343 tokens). Equally important, 70.72% (838 tokens) are countable and 29.28% (347 tokens) are uncountable.

### C) Verbs

Concerning the category of verbs, the total number of tokens is 566 out of 2627 running words formulating the whole Structural Engineering texts. In other terms, this category has 25.01% of the tokens. The examination of their types demonstrates the use of 178 different types, that is, 3.18 token for each one. Nevertheless, the distribution of tokens with regard to their frequency comes up with 11 cases.

Table 4.11. The frequency of occurrence of verbs

Number	Frequency of occurrence	Number of verbs	Number of tokens	Instances
1	115	1	115	be
2	10	2	20	have, illustrate
3	9	1	9	show
4	8	5	40	carry, define
5	7	6	42	apply, associate
6	6	7	42	call, locate
7	5	8	40	result, tend
8	4	14	56	prevent, move
9	3	17	51	handle, reach
10	2	34	68	assemble, act
11	1	83	83	compile, break
Total		178	566	

The highest frequency recorded (115) has more than one fifth of the tokens, i.e., 20.32%. Besides, all the remaining frequencies are less than 10. Slightly less than half of the types (83 types or 46.63%) take the frequency value one with a rate of 14.66%. The interval between the frequencies 10 and 6 embraces 34.10% of the tokens while, the interval between five and two includes 30.92%.

Table 4.12. Verb forms' frequency of occurrence

The number	The tenses	Number of tokens	%
1	Infinitive	54	9.54
2	Infinitive / passive voice	8	1.41
3	Infinitive without "to"	1	0.18
4	Present simple	222	39.22
5	Present continuous	7	1.24
6	Present / passive voice	81	14.31
7	Present perfect	1	0.18
8	Present perfect/ passive voice	1	0.18
9	Past	3	0.53
10	Past / passive voice	4	0.71
11	Past participle	65	11.48
12	Can + Verb	11	1.94
13	Can be	5	0.88
14	Could	1	0.18
15	Must + verb	1	0.18
16	Must be	1	0.18
17	May	11	1.94
18	May be	2	0.35
19	Verb (ing)	76	13.43
20	Future	7	1.24
21	Would	1	0.18
22	Imperative	3	0.53

As to the form, verbs can take one of 22 cases. The present simple is the most predominant with 39.22%. The following set of tenses included between 15% and 9% embraces the passive voice of the present simple, present participle, past participle, and the infinitive. The rest of the cases have less than 2% for each one of them

### D) Adjectives

Concerning the category of modifiers particularly adjectives, the number of tokens is 419 with a percentage of 15.95.

Table 4.13. Frequency of occurrence of adjectives

Number	Frequency of occurrence	Number of adjectives	Number of tokens	Instances
1	23	1	23	structural
2	9	1	9	due
3	8	2	16	civil, different
4	7	1	7	critical
5	6	6	36	natural, seismic
6	5	7	35	external, certain
7	4	7	28	particular, rigid
8	3	19	57	unstable, small
9	2	43	86	axial, thermal
10	1	122	122	allowable
Total	68	209	419	

The sum of the tokens (419) displayed in the text can be grouped under 10 different frequencies. The latter are less than 10 except one value, i.e., 23; it is an outlier with 5.49%. The analysis of the category of adjectives reveals that their number is 209, i.e., two tokens for each item. The least frequency, one, has nearly a third of the tokens (29.12%); however, the frequencies two, three, and four have 40.81% of the tokens. And the interval five and nine includes 24.58% of the running words.

Table 4.14. Adjectives types' frequency of occurrence

Number	Type of adjectives	Number of adjectives	Number of tokens	%
1	Attributive	189	360	85.92
2	predicative	37	59	14.08
3	Qualitative	24	62	14.80
4	Classifying	152	294	70.17
5	Nationality	2	5	1.19
6	Color	0	0	0.00
7	Emphasizing	17	37	8.83
8	Compound	8	13	3.10
9	Comparatives	4	6	1.43
10	Superlatives	1	2	0.48

A general overview of table 4.14 shows that 85.92% of the adjectives occur in attributive position whereas, 14.08% occur in predicative position. On the other hand,



classifying adjectives outnumber all the types with 70.17%. Except qualitative adjectives (14.80%) and emphasizing adjectives (8.83%), the remaining sorts of adjectives rate less than 4%. In terms of form, some adjectives are produced from adding affixes to roots. The list of suffixes used includes *al, ing, ic, er, ive, able, ed, est, ible, ish, ial, ical, like, ary, ful,* and *less*, and the list of prefixes contains *un, an,* and *multi*.

### E) Adverbs

Text analysis demonstrates that the number of tokens is 133. This formulates 5.06% of the whole lexis of the texts of Structural Engineering.

Table 4.15. Frequency of occurrence of adverbs

Number	Frequency of occurrence	Number of adverbs	Number of tokens	Instances
1	16	1	16	not
2	8	1	8	also
3	6	3	18	initially, most
4	5	2	10	generally, more
5	4	3	12	however, properly
6	3	4	12	lastly, possibly
7	2	8	16	later, here
8	1	41	41	partially, safely
Total		63	133	

There are eight frequencies for 63 adverbs with a number of 133 running words. The highest frequency is 16 with 12.03% of the tokens. The rest are less than eight, and the least frequency (one) has 65.08% of the types of adverbs and 47.37% of the tokens. The interval two and eight comprises one third of the types (33.33%) and 57.14% of the tokens.

Table 4.16. The frequency of occurrence of the different types of adverbs

Number	Type of adverbs	Number of words	Number of tokens	%
1	Time	13	26	19.55
2	Frequency	2	4	3.01
3	Place	5	6	4.51
4	Manner	22	38	28.57
5	Degree	7	11	8.27
6	Linking	5	33	24.81
7	Negative	0	0	0.00
8	Focusing	8	8	6.02
9	Comparatives	1	1	0.75
10	Superlatives	1	6	4.51
Total		64	133	100

The distribution of adverbs with regard to their types reveals that manner adverbs rank on the top with 28.57% of the tokens followed by linking adverbs (24.81%) and then adverbs of time (19.55%). The rates of the remaining seven types are less than 10%.

#### **4.5.1.3 Geotechnical Engineering**

The last sample of texts belongs to Geotechnical Engineering. To align with the previous text samples, the number of paragraphs composing this part is 46 and the number of running words is 4118. This number decreased after text processing and manual refining to become 2428 tokens including the five categories of parts of speech.

##### **A) Sentence types**

When considering the structural components of Geotechnical Engineering texts the results show that the number of words per sentence vary between five and 36 elements. Although the four types of sentences are attested, simple sentences are predominant. There are 225 sentences distributed as follows:

- simple sentences 149, i.e., 66.22%,
- compound sentences 13, i.e., 5.78%,
- complex sentences 59, i.e., 26.22%,
- and compound complex sentences four, i.e., 5.78%.

##### **B) Nouns**

The overall number of tokens of this part is 2428. The computation of nouns demonstrates that their rate is 50.91% with 1236 tokens. The number of noun types is 310 with an average of 3.99 tokens for each type. Table 4.17 concludes the findings resulted from the development of word frequency list of nouns.

Table 4.17. Frequency of occurrence of nouns

Number	Frequency of occurrence	Number of nouns	Number of tokens	Instances
1	67	1	67	soil
2	60	1	60	rock
3	51	1	51	particle
4	41	1	41	mineral
5	36	1	36	water
6	33	1	33	clay
7	29	1	29	figure

Table 4.17. (continued)

8	25	1	25	size
9	21	1	21	surface
10	17	1	17	grain
11	16	1	16	sieve
12	15	2	30	atom, sheet
13	13	2	26	analysis, gravity
14	12	3	36	process, unit
15	11	1	11	charge
16	10	1	10	silica
17	9	3	27	hydrometer, quartz
18	8	5	40	layer, magma
19	7	7	49	suspension, reaction
20	6	14	84	result, amount
21	5	16	80	deposition, weathering
22	4	26	104	attraction, molecule
23	3	33	99	aggregate, fraction
24	2	58	116	deposit, evaporite
25	1	128	128	crack, dipole
Total		310	1236	

The whole repertoire of nouns is derived from 310 types and 1236 tokens. This can be distributed on 25 different frequencies that range from one to 67. There are considerable gaps between the top four frequency values, i.e., 67, 60, 51, and 41. More than two fifths of noun types (41.29%) have the frequency value one and nearly the same percentage is witnessed for the rates two, three, four, and five altogether. But the interval six and 67 includes only 15.81% of noun types.

Table 4.18. Noun types' frequency of occurrence

Category	Singular	Plural	Countable	Uncountable
Number of tokens	880	356	865	371
Percentages	71.20	28.80	69.98	30.02

The singular form of nouns exceeds the plural form by more than one third, i.e., 71.20%, that is, the singular form has 28.80%. On the other hand, 69.98% of the tokens are derived from countable nouns and 30.02% are derived from uncountable nouns.

### C) Verbs

Out of the whole lexis (2428 tokens), the statistical investigation sorts out 585 tokens. Differently expressed, this category formulates nearly one quarter of the analysed texts (24.09%). Table 4.19 reports the frequency of occurrence of tokens.

Table 4.19. Frequency of occurrence of verbs

Number	Frequency of occurrence	Number of verbs	Number of tokens	Instances
1	194	1	194	be
2	33	1	33	form
3	22	1	22	show
4	16	1	16	have
5	13	2	26	give, weather
6	10	1	10	call
7	6	10	60	attract, consist
8	5	6	30	break, measure
9	4	4	16	classify, conduct
10	3	18	54	balance, bond
11	2	27	54	express, float
12	1	70	70	adhere, share
Total		142	585	

This study reveals that the sum of tokens (585) are derived mainly from 142 types with an average of 4.12 for each one. However, since these last do not occur with the same rate there are almost 12 frequencies which range between one and 194. The top six frequencies (194, 33, 22, 16, 13, and 10) have 4.23 % of all the types meanwhile, the five followings (six, five, four, three, and two) have 45.77%. Last but not least, the frequency one includes nearly half of the types (49.30%).

Table 4.20. Verb forms' frequency of occurrence (tenses)

The number	The tenses	Number of tokens	%
1	Infinitive	58	9.91
2	Infinitive / passive voice	6	1.03
3	Infinitive without "to"	2	0.34
4	Present simple	345	58.97
5	Present / passive voice	183	31.28
6	Present perfect	2	0.34
7	Present perfect/ passive voice	4	0.68
8	Past	1	0.17
9	Past participle	127	21.71

Table 4.20. (continued)

10	Can + Verb	11	1.88
11	Can be	8	1.37
12	Must + verb	4	0.68
13	Must be	2	0.34
15	May	12	2.05
16	May be	18	3.08
17	Verb (ing)	104	17.78
18	Future	5	0.85
19	Would	1	0.17
20	Imperative	8	1.37
21	Would have +past participle	2	0.34
22	Should be	2	0.34

Table 4.20 shows that the active and the passive voice of the present simple tense are ranked in the first and the second position with 58.97% and 31.28% respectively. The three following ones are the past participle, present participle, and infinitive with the rates 21.71%, 17.78%, and finally 9.91%. The frequencies of the remaining 16 forms are between 0.17% and 3.08%.

#### D) Adjectives

As to the category of modifiers, adjectives have nearly 13.92% of the whole lexis with 338 tokens.

Table 4.21. Frequency of occurrence of adjectives

Number	Frequency of occurrence	Number of words	Number of tokens	Instances
1	16	1	16	chemical
2	14	1	14	specific
3	10	2	20	igneous, metamorphic
4	9	1	9	different
5	8	4	32	negative, present
6	7	3	21	soluble, octahedral
7	6	1	6	mechanical
8	5	5	25	large, new
9	4	4	16	similar, common
10	3	15	45	lateral, various
11	2	22	44	double, dry
12	1	90	90	aeolian
<b>Total</b>		<b>149</b>	<b>338</b>	

Actually, the total number of running words (338) is derived from 149 types; in other terms, 2.27 tokens for each one whereas, there are 12 different frequency values. The

frequency value one is recorded for 60.40% of the adjectives, the interval two and five contains 30.87%, but the interval six and 16 embraces 8.72%.

Table 4.22. Adjectives types' frequency of occurrence

Number	Type of Adjectives	Number of adjectives	Number of tokens	% (tokens/category)
1	Attributive	132	294	86.98
2	predicative	30	44	13.02
3	Qualitative	11	33	9.76
4	Classifying	109	251	74.26
6	Color	2	2	0.59
7	Emphasizing	18	25	7.40
8	Compound	4	6	1.78
9	Comparatives	4	19	5.62
10	Superlatives	1	2	0.59

The classification of adjectives with regard to their position reveals that 86.98% are attributive and 13.02% are predicative. Their distribution according to their types shows that 74.26% are classifying, 9.76% are qualitative, 7.40% are emphasizing, and 5.62% are comparative adjectives. The rates of the remaining types are less than 2%. In terms of form, the investigation demonstrates that some adjectives are affixes-based in the sense that some of them are formed by adding prefixes, such as *well*, *un*, *like*, *over*, *high*, *di*, *dis*, *non*, *low*, *iso*, and *double*; others are produced by adding suffixes, for instance *ic*, *er*, *ive*, *ary*, *al*, *ous*, *ian*, *ing*, *ar*, *ed*, *en*, *ous*, *y*, and *able*.

### E) Adverbs

Concerning the use of adverbs, out of 2428 tokens composing this part 97 running words belong to this category and formulates 4.00% of the whole lexis.

Table 4.23. Frequency of occurrence of adverbs

Number	Frequency of occurrence	Number of adverbs	Number of tokens	Instances
1	14	1	14	generally
2	13	1	13	also
3	5	1	5	mostly
4	4	2	8	not, sometimes
5	3	5	15	then, very
6	2	4	8	only, thus
7	1	34	34	rather, often
<b>Total</b>		<b>48</b>	<b>97</b>	

Adverbs are classified into seven frequencies and derived from 48 types with a percentage of 2.02% for each one. Five frequency values are less than five and two values

(14 and 13) are outliers. More than two thirds of the adverbs (70.83%) appear for one single occasion in the texts but they have 35.05% of the sum of tokens. The interval two and five includes 37.11% of the tokens but the frequencies 13 and 14 have 27.84%.

Table 4.24. Adverb types' frequency of occurrence

Number	Types of adverbs	number of words	number of tokens	%
1	Time	4	6	6.19
2	Frequency	6	22	22.68
3	Place	3	3	3.09
4	Manner	9	9	9.28
5	Degree	9	12	12.37
6	Linking	5	22	22.68
7	Negative	2	5	5.15
8	Focusing	5	9	9.28
9	Comparatives	3	3	3.09
10	Superlatives	2	6	6.19
<b>Total</b>		<b>48</b>	<b>97</b>	

Both frequency and linking adverbs share the first position with 22.68%. The next rate (12.37%) is for degree followed by manner and focusing modifiers with 9.28% for each one. The percentage 6.19 is shared between time and superlatives. However, negative adverbs have 5.15% and the last value (3.09%) is for place and comparatives.

#### 4.5.2 Analysis of lexical patterns

The study of the sentence structures demonstrates that these last vary in terms grammatical components and size, that is, there are up to 64 lexical items per sentence. Aiming to generate a data bank of lexis to inform the vocabulary course, the researcher carried out an investigation so that to determine the most frequent lexical patterns in the whole corpus (244.827 tokens).

Corpus processing tools such as Wordsmith can generate lists of word clusters. This facility enables the researcher to identify reoccurring syntactic constructions and multiword units. The aim at this stage is to select all the frequent constructions in the three branches of CE to be term candidates for a glossary of CE terms. Word clusters are classified with regard to the number of constituents and their grammatical classes.

### 4.5.2.1 Construction Materials Engineering

The book chosen for this study is entitled *Construction Materials* (Domone & Illston, 2010). This source consists of 134.728 tokens and the analysis sorts out 771 different lexical units that can be grouped under three categories. Each one of them, in its turn, is divided into sub-categories with a total number of 29 types. Table 4.25 sums up the findings (see Appendix ZZ).

Table 4.25. Types of lexical units related to Materials Engineering

Number	Number of constituents	Grammatical components	Number of units
1	Two	Noun noun	346
2		Adjective noun	254
3		Ved noun	40
4		Ving noun	32
5		Noun ving	10
6		Adjective ving	5
7		Verb noun	1
8	Three	Noun noun noun	22
9		Adjective noun noun	20
10		Noun ved noun	6
11		Adjective adjective noun	5
12		Ving noun noun	4
13		Prefix-noun noun	3
14		Number noun noun	3
15		Adverb adjective noun	2
16		Prefix- adjective noun	2
17		Adjective ved noun	2
18		Noun ving noun	1
19		Noun noun ved	1
20		Ved ved noun	1
21		Ving noun noun	1
22	Four	Adjective noun noun noun	3
23		Noun noun noun noun	1
24		Noun noun ved noun	1
25		Adjective adjective ved noun	1
26		Adjective ved noun noun	1
27		Prefix-adjective adjective noun	1
28		Adjective adjective noun noun	1
29		Noun ving noun noun	1
Total			771



### 4.5.2.2 Structural Engineering

The field related book meant for text analysis is called *Fundamentals of Structural Engineering* (Connor & Faraji, 2012). The total number of 55.255 tokens composing this corpus embraces 436 different units. The latter are divided into four categories and 39 subcategories. The main findings are listed in table 4.26 (see Appendix AAA).

Table 4.26. Types of lexical units related to Structural Engineering

Number	Number of constituents	Grammatical components	Number of units
1	Two	Noun noun	130
2		Adjective noun	122
3		Ved noun	19
4		Ving noun	15
5		Adjective ving	11
6		Noun ving	10
7		Noun ved	1
8		Ved ving	3
9	Three	Noun noun noun	27
10		Adjective noun noun	24
11		Adjective adjective noun	6
12		Ving noun noun	4
13		Adverb adjective noun	7
14		Ved noun noun	3
15		Adverb ved noun	3
16		Noun ved noun	3
17		Noun adjective noun	3
18		Number noun noun	3
19		Adjective adjective ving	2
20		Ving noun noun	2
21		Ving ving noun	1
22		Ved noun ving	1
23		Adjective noun ved	1
24		Adjective ving noun	1
25		Adjective ved noun	1
26		Adjective noun noun noun	15
27		Adverb ved nun noun	3
28		Adjective noun noun noun	2
29		Noun noun noun noun	2
30		Adjective noun adjective noun	2
31		Adverb ved noun ving	1
32		Adverb ved adjective noun	1
33		Noun adjective noun noun	1

Table 4.26. (continued)

34		Adjective ving noun noun	1
35		Adverb adverb ved noun	1
36		Noun ved adjective noun	1
37		Adverb adjective noun noun	1
38	Five	Adjective noun adjective adjective noun	1
39		Adjective adjective noun adjective noun	1
Total			436

#### 4.5.2.3 Geotechnical Engineering

This section of the corpora is based on the book named *Principles of Geotechnical Engineering* (DAS, 2010) which contains 54.844 tokens. The results sort out 424 lexical units divided into three categories and 24 sub-categories (see Appendix BBB).

Table 4.27. Types of lexical units related to Geotechnical Engineering

Number	Number of constituents	Grammatical components	Number of units
1	Two	Noun noun	144
2		Adjective noun	116
3		Ved noun	17
4		Ving noun	10
5		Adjective ving	3
6		Noun ved	1
7	Three	Noun noun noun	36
8		Adjective noun noun	31
9		Adjective adjective noun	16
10		Ving noun noun	6
11		Adverb adjective noun	2
12		Ved noun noun	4
13	Four	Adjective noun noun noun	15
14		Noun noun noun noun	7
15		Adjective adjective noun noun	4
16		Ved adjective noun noun	3
17		Adverb adjective noun noun	2
18		Ved ved adjective noun	1

Table 4.27. (continued)

19		Ved noun noun noun	1
20		Ving noun noun noun	1
21		Noun adjective noun noun	1
22		Adjective adjective adjective noun	1
23		Adjective noun ving noun	1
24		Adverb ved adjective noun	1
Total			424

### 4.5.3 Summary

As can be seen, some features are recurrent in the three texts. As to sentence structures, the order of their types in terms of importance is as follows: simple sentences, complex ones, compound, and finally compound complex sentences. Concerning the grammatical category of nouns, singular forms are predominant compared to plural forms whereas, countable nouns are more frequent than uncountable nouns. In the meantime, the study of verb forms and their frequencies results in the following classification: present simple, passive voice of the present simple, past participle, present participle (ing form of the verbs), and infinitive. However, the analysis of modifiers reveals that the occurrence of adjectives in attributive position is more frequent; their classification in terms of importance is as follows: classifying, qualitative, emphasizing, compound, comparatives, and superlatives. As for the category of adverbs, their order is as follows: manner, degree, focusing, and lastly frequency adverbs.

On the other hand, the study of the lexical patterns occurring in a corpus of 244 827 tokens, by using Wordsmith processing tools, helps offer handy teaching materials and sort out the followings:

- 1290 lexical units of two-word constituents,
- 260 lexical units of three-word constituents,
- 79 lexical units of four-word constituents,
- and two lexical units of five-word constituents.

Additionally, these constructions vary remarkably; nevertheless, the combinations based on *noun + noun* and *adjective + noun* are more frequent.

## 4.6 Conclusion

Having seen the PNA and the requirements of the target situation, it can be said that each one of them has its own specifications. On the one hand, the material resources, human resources, time allotted, and students' attitudes, require careful attention so that to meet the necessities of the target situation. On the other hand, the latter are remarkably varied but they can be grouped under two main types: academic needs and professional ones. Academic needs can be interpreted in terms of some important language skills; however, professional necessities can be seen as some vital communicative proficiencies.

The ideal treatment of both kinds of needs requires determining the common features between them. Then, a sort of compromise should be set so that to ensure a balance between the requirements of the target needs, specifications of learning context, and considerations of the present situation. This is the objective of the syllabus design which is the concern of the following chapter.

# **Chapter Five**

## 5.1 Introduction

The analysis of needs related to the present situation, target situation, and learning context is the main objective of the two previous chapters. The investigation reveals that the students are aware of the importance of English for their field of study. Nevertheless, the diagnostic test shows that the performance of the participants is high in a few language items, intermediate in others, and remarkably low in a considerable number of them. The questionnaire surveys demonstrate that all language skills are crucial for civil engineers with slight differences. The results, also, reveal that the course content should be based on CE texts and inspired from a mixture of scientific materials and job related documents. Additionally, the participants tend to prefer a combination of approaches concerning teaching materials.

It is important to bear in mind that an English syllabus for CE students should be better conceived and designed with the collaboration and cooperation of all the actors involved in the teaching and learning operation. This includes all the decision makers from top to bottom, i.e., from the Ministry of Higher Education to the teaching staff, including ESP teachers, and even students inside classrooms. In other terms, designing a syllabus is first and foremost a teamwork. However, being part of a doctorate study, the present framework of the syllabus is proposed only by the researcher himself; simultaneously, several sets of suggestions are recommended for each actor in the teaching and learning operation.

This chapter includes general recommendations as to the syllabus and the course of English. These contain the language skills to focus on, types of language materials, and preferred teaching methods and techniques. The description of a typical course conception as well as a sample unit of a language course.

## 5.2 The Administrative Level

All the results revealed so far are to be interpreted into concrete actions to consider when designing the syllabus of English. The final aspect of the course is not defined only by the teacher and the students inside the classroom but also by a number of crucial actors outside classrooms. To simplify things, let us consider the term the administrative level as an umbrella term to refer to all the external actors.

The community of CE at Adrar University, and the Department of Science and Technology in its heart, should give more importance to ESP teaching and learning and go beyond viewing the English course as a marginal module for the students to take. Thus, putting this actively into practice requires the revision of several measures that include the status of the module itself, the material resources necessary for the ESP course, and some considerations as to the English teacher.

First of all, the actual status of the English course is an optional module, i.e., student's presence is not mandatory, which makes learners less motivated to attend English classes. Additionally, being in the transversal unit with one as coefficient, the value of the English course becomes effectively worthless in the students' view. For these two reasons, the researcher suggests to classify the English course as a compulsory module, upgrade the unit of inclusion from the transversal unit to the methodological one, and increase its coefficient, and the number of teaching hours.

University classes concerned with the English course and the number of hours devoted to its teaching necessitate drastic reforms. Practically, adequate coverage in terms of language knowledge related to CE involves continuous English teaching throughout all the CE curriculum, i.e., BE, Master, and even Doctorate level. The lecturing of the course should take place at least once a week for at least one hour and half or two hours and should be in the form of training sessions with a limited number of 25 students maximum rather than lecture classes delivered to all the students at once. This facilitates the task of carrying out communicative activities including dialogues, teamwork exercises, etc.

The English community at university, with the collaboration of the community of CE, can take part in the enlightenment of students with the importance of ESP for their field. This can be achieved through seminars and workshops.

### **5.3 The Role of the EST Teacher**

As far as ESP is concerned, the EST teacher should be a catalyst, consultant and guide so that to create a positive learning atmosphere inside the ESP classroom. Beside this, some knowledge as to the basic principles of the subject matter and working contexts of engineers is needed for him/her to teach the language materials effectively (Hutchinson & Waters, 1987). And, even learners will be more enthusiastic if they feel that the EST course mirrors real life situations. This can be achieved through the cooperation and collaboration

with the teachers of the subject-matter (Allouche, 2012). If this does succeed it is better for the teacher to try to do so with his/her CE students.

Since it is not an easy task to find a specialised EST teacher, it is possible to call for the help of subject matter teachers. Despite the fact that some researchers argue that the students who are taught English by subject matter teachers often fail to grasp necessary skills and language components (Allouche, 2012), Adrar University CE students acknowledged the success of a similar experience. Two CE teachers have already experienced this with their students. One of these teachers received her post-graduation instruction in English when she was abroad and the second one had a BA degree in English. Being what they are enables them to be aware of both the subject matter and English for CE. However, what they lack is just some knowledge about EST teaching and learning. In this regard, it is highly recommended to suggest a sort of a teacher-training programme as to what to teach and how.

CE tasks involve a great deal of teamwork which requires specific skills. These range from simple verbal communicative skills to problem solving, and team working. It is for the EST teacher to integrate these strategies into classroom activities.

The field of CE is diverse and ever-growing; hence, it is almost impossible for any language course to cover, in a very limited span of time, all the aspects of the communicative situations that a CE student might encounter. For this reason, CE students should be equipped with the necessary skills to be in charge of their own learning. Lifelong Learning Approach is concerned with developing and promoting such competences and skills. Furthermore, promoting autonomous learning inside the classroom can drive the students to build their own language knowledge.

### **5.3.1 Developing the receptive skills**

Despite the fact that the investigation of needs reveals that all the four language skills are needed for students to master, applied linguists stress that receptive skills are prior to productive skills for any language to be learned (Krashen, 1985). In other terms, listening and reading which are seen as receptive or passive skills contribute to the development of productive or active skills, i.e., speaking and writing.

The findings of the questionnaire surveys reveal that both BE and Master students' subjective views tend towards classifying listening and speaking prior to reading and writing. Instead, CE teachers put speaking and reading first then listening and finally writing.



Furthermore, students at the primary stages need to decipher written terms and read some technical texts. For this reason, it is necessary, first, to familiarize students with the vocabulary related to CE. With the use of intensive reading strategies and listening activities students will enhance their comprehension skills, increase their knowledge of vocabulary, and learn new grammatical structures. Gradually, this will contribute to the development of their speaking and writing skills.

The development of language skills should be framed with regard to the short term needs of the academic context and the long term prerequisites of the professional environment. In this sense, Blue (2001, p. 37) mentions a list of skills which are used in both situations. This can facilitate the task for course designer to respond to both the academic and professional needs simultaneously.

Table 5.1. Study and professional activities (Blue, 2001, p. 37)

<b>Study Activities</b>	<b>Skills Required</b>	<b>Professional Activities</b>
Lectures	Listening to understand content, listening for key words and phrases, making notes, asking questions	Presentations
Seminars	Asking and answering questions, understanding and expressing different points of view, reporting on work done, making notes	Meetings
Practicals	Understanding instructions, asking questions, understanding informal language, recording results	Fieldwork
Reading textbooks, articles, etc.	Understanding the overall content, distinguishing main points from supporting detail, skimming, scanning, evaluating, making notes	Reading reports
Writing essays, dissertation	Construction of reasonably accurate sentences and paragraphs, good organisation of ideas	Writing reports, letters, etc.

### 5.3.2 Promoting translation

The present syllabus is based mainly on the communicative approach that rejects the use of L1 as language of instruction. Yet, the idea of using only the target language for teaching might not be so effective namely, with pre-intermediate students. The use of French, the language of instruction, can be of great importance in facilitating the teaching and learning process. In other terms, translation can develop not only the four language skills but also accuracy, clarity, and flexibility (Duff A. , 1994). Therefore, translation is often referred to as the fifth skill along with the four language skills (listening, speaking, reading, and writing), (Ross, 2000).

Far from the controversial views towards the use of translation as a pedagogical tool in the EFL classrooms its use in the present CE academic context is a fact. CE students and even teachers are bound to render at least short texts, i.e., abstracts, either from French into English or the opposite. Master students are required to translate at least the summary of their dissertations into English. Additionally, CE teachers are bound to write their scientific articles initially in French; then, they have to translate them into English so that to be published in academic journals.

Equally important, the TSA demonstrates that CE professionals are rarely, or rather never, employed in monolingual contexts. Foreign companies prefer using English; however, the Algerian institutions and staff prefer using French or Arabic. Under such circumstances, the phenomena of code-switching and code mixing become very common. Hence, the engineers' multilingual competence is of paramount importance in order to cope with such situations.

In order to maintain students' interest along the course, the language materials of the pedagogical activities of translation ought to be authentic, diverse, and related to the students' knowledge. These activities should not be presented in isolation but they should rather be as an inherent part of the different tasks of the learning course.

At the first stage, translation activities can be used to enrich students' knowledge in terms of vocabulary. It is necessary to clarify the meaning of the technical concepts and the new terms so as to ease the transfer of knowledge from the initial language of instruction, i.e., French into the target language, i.e., English. The exercises can take several forms, such as matching words, providing the equivalents of simple terms, etc. Gradually, students will be required to carry out more difficult activities.

At the advanced stages, students might be asked to translate short texts. One of the widely used pair work activities is called back-translation activity. Each pair of students are asked to translate two different texts from L2 into L1; then, after exchanging their translations they have to translate back the texts into L2. Finally, all the translations are compared with the source texts.

### **5.3.3 Teaching methods and materials**

Generally speaking, students have different styles of learning, so varying the methods of teaching and the ways of presenting can help a big majority of them to succeed. On the other hand, the NA demonstrates that BE and Master students and even CE teachers tend to prefer mixed methods and materials for the language course, i.e., a mixture between classical and multimedia based methods in addition to a combination of language materials.

As far as ESP course is concerned, all the methods which seem important for the teaching and learning operation can be used. This embraces all the materials developed and used in communicative classes, for instance, flash cards, videos, audio recordings, etc. The materials used in CE real life situations can be beneficial also, such as drawings, charts, diagrams, etc.

Real life communicative situations can remarkably reinforce learning. With the help of the dean of the Faculty of Arts and Languages, the researcher endeavoured to establish a sort of cooperation between the university and some of the foreign companies working in Adrar, such as Groupement Touat Gaz (GTG Complex), and Groupement Nord Reggane. The aim is to enable university students to pay visits to work-sites and companies' laboratories. Students' interactions with the technical staff and professionals on site can raise learners' awareness of the challenges they might encounter in the future and, thus, increase their motivation. Simultaneously, this can constitute a best test for the communicative competence of the students as they have to call back for what they have already learned inside the classroom context.

### **5.4 The Role of the Students**

CE students should be prospective enough to be aware of their actual purposes and future needs for learning English. For instance, they are required to focus on their learning, make use of their knowledge of the subject matter, and bring to the task all the learning strategies they have already learned.

As autonomous learners, the students should have outreached the “total dependence on teacher” and attained the stage where they can evaluate information and make also decisions about alternative procedures for learning. Thus, they ought to be incorporated in choosing course contents, teaching methods, and teaching materials. This can cultivate maximum commitment and motivation of the learners (Javid, 2015).

### **5.5 Suggested Syllabus**

As far as ESP is concerned, designing an appropriate syllabus for CE students is not, actually, an easy task. Additionally, the poor or rather absence of any real and effective experience and practices of teaching ESP in the Department of Science and Technology makes things more difficult so as to find concrete ground upon which the forthcoming suggested syllabus will be based.

Theoretically speaking, the present syllabus is based on the results surfaced from the NA. The goals and the objectives of the teaching and learning operation are conceived with regard to the potential uses in the target situation and the time allotted for instruction. The students' needs, teaching methods, and teaching materials upon which the syllabus is framed result from the PSA. The overall perspective or approach to the syllabus design adopted is, of course, the communicative approach; however, since no single view on its own can exclusively be perfect to cater for students' needs, the researcher opted for the Eclectic Approach to syllabus design.

The four language skills are proved, from the NA, to be crucial for CE professionals. In order to reflect this in the syllabus the skill based theory is chosen. On the other hand, the Task Based Approach to language teaching and learning is seen as being very practical in determining the CE profession in terms of tasks and duties that engineers should accomplish. These last are further segmented into a set of notions and functions as derived from the related theoretical approach. The Grammar Based Approach help organize the language materials gradually, i.e., simple language items are presented first then the more difficult ones are tackled; additionally, it can ensure the coverage of all the necessary grammatical items. The Lexical Approach, on the other hand, is used to enrich student lexis in terms of CE terminology.

The general framework of the English course deriving from the present syllabus is composed of three main parts; each of which is devoted to a particular university level. Nevertheless, few introductory lectures can also be added so as to gauge students'

performance, refresh their previous knowledge, prepare them to receive the instruction, and enable the teacher to set the tone of the course with regard to students' performance. Thus, the number of sessions devoted for this stage and the course contents should be decided by the ESP teacher.

As far as syllabus design is concerned, the same theoretical approach is used for all grades but with slight differences in terms of contents and focus. The first stage is dedicated to BE students; it focuses on engineering vocabulary, elementary grammar rules, and simple sentence structures. Thus, vocabulary selection should consider the two contexts: academic and professional. That is, the terms chosen, for instance, can be related to measurements, dimensions, numbers, calculation, as well as materials, construction sites, monuments, design, etc. However, grammar rules and sentence structure should be based on text analysis results and presented gradually to the students. Additionally, basic functions should also be implemented, such as introducing oneself, asking questions, giving information, describing, etc. Receptive skills should be prioritized through implementing listening activities and using different reading strategies.

The second stage is concerned with Master classes; students are oriented towards three branches, i.e., Structural Engineering, Materials Engineering, and Geotechnical Engineering. The specialized corpora already elaborated feed each branch with its specific lexis. More advanced points in grammar rules and sentence structures should be taught, for instance, the types of sentences, clauses, phrases, and gerund. In terms of functions students should learn how to estimate, describe processes, and express cause and effect besides, they should develop their receptive skills in addition to elementary productive skills.

At the end of the third stage, Doctorate students should have acquired not only sound receptive skills but also good productive skills that enable them to craft manuscripts and take part in international conferences. For this reason, more advanced points in grammar, sentence structures, writing skills, and communicative abilities should be implemented.

## **5.6 Course Design**

Since there has been no previous practical investigation into the way an English course for CE at Adrar University should be, the current course is designed from scratch. The diagnostic test which is the most important part in PSA considers only a limited number of students. As a result, this course fits specifically to the needs, lacks, and wants of the

members of the sample. For this reason, for any reproduction of this language materials to be fruitful it is preferable to carry out previously a brief test.

### **5.6.1 Topics**

Choosing appropriate topics is the first step of conceptualizing contents and, hence, articulating course objectives with the actual teaching and learning operation in class. In this particular context, the learners are second year under-graduate student. The NA shows that the majority of students prefer the English course to be based on CE texts and the content to be inspired from a mixture of scientific materials, professional documents, and modern technology. Accordingly, the course topics should be tightly linked to CE field of study or any of its subfields and subject matters. Thus, the topics should be related to Construction Materials, Geotechnics, or Structural Engineering, that is, the subfields of CE taught at Adrar University. Additionally, this can also include texts about Physics, Geometry, Computing, etc. which are subjects of interest for all engineering students.

### **5.6.2 Text selection**

Having chosen the appropriate topics of the course, the following task is to take decisions about text selection. As no single approach can stand alone to fulfil the needs, several theoretical perspectives are considered to develop the language materials of this course.

The issue of authenticity of material heavily stressed in the Content-Based view is adopted in order to demonstrate 'real' language use. But finding an authentic text which fits precisely students' level at the current situation was proved to be difficult. Generally speaking, CE texts contain most of the time long sentences and complex vocabulary usually made up of compound nouns. This led the researcher to resort to his own experience as a field expert (an architect) and tried to develop appropriate language materials. Instead of starting everything from scratch, the researcher leaned on adopting and adapting already existing materials, a technique advised by several researchers (Hutchinson & Waters, 1987). He retrieved a number of texts which deal with the same topic from websites, omitted useless details, simplified sentences, and changed compound nouns when necessary.

Seeking to stimulate the learning process as the Process-Oriented Approaches suggest the texts were developed on the basis of two criteria. Being appropriate is the first feature that the texts should have. This umbrella term means that the text should attract learners'

interest, meet their language level, and be familiar to students. The second one is that the tasks should be enjoyable. To realize this feature students should be given more opportunity to play an active role in reflecting on their learning by choosing the extracts of texts they want to study for example. In the meantime, the language materials in general should be flexible so as to be used as for cultivating several skills.

To give credit to the sources used, some basic definitions were retrieved from encyclopaedias and few web sites. Then, they were adopted and adapted to fit the task of the activity.

### **5.6.3 Language activities**

The types of classroom activities of the language course reflect to a great extent the theoretical stance towards the teaching and learning operation and the course design. Thus, the Eclectic Approach used in the present course design is also used when designing related activities and tasks. The process oriented tasks determine the activities to be initiated during the process of education. The product-oriented tasks have more to do with what students will be able to do after receiving instruction.

Different sorts of activities were developed so as to enhance students' communicative competence. Information gap exercises in the present context help transfer information from graphic forms to written ones or vice versa. Additionally, dialogues, picture stories, and matching activities are also used to stimulate learners' ability to exchange information, take parts in dialogues, recognize matching items, etc.

Since language proficiency is the consequence of mastering the four language skills four types of activities are proposed; each one is devoted to cultivate one single skill, i.e., listening, reading, writing, or speaking.

Group work is favoured in the sense that students will be required to undertake the activities in pairs or small groups in a way that learners will be more comfortable to speak to their classmates. This engaging way can help them practice actively what they learn.

### **5.6.4 Listening comprehension**

It is important to know that appropriate activities of listening comprehension are essential for foreign language learning. The listening activity of the language course should suit precisely learners' level. The basic objective of teaching listening is the discrimination

of sounds and learning pronunciation; however, its ultimate aim is to develop students' speaking ability. The journey between the two edges can be gradually and theoretically divided into four perspectives to listening. Each one frames the underlying theoretical basis of the listening activities of one of the four stages proposed within the overall CE syllabus of English.

The first stage of activities of listening are meant to enable students to discriminate English sounds and pronounce them correctly. The theoretical model adopted for this stage is called *Listening and Repeating*. The students will be asked to listen carefully to words, phrases, sentences, etc.; then, try to imitate them; and finally memorize them for any potential future use.

The following set of activities of listening corresponds to BE students' course of English. *Listening and Answering Comprehension Questions* is the theoretical model suggested for this stage. The students' task is to answer questions, for instance, and elicit discrete pieces of information after listening to an oral text. Such activities of listening are similar to reading comprehension exercises and do not require advanced communicative skills.

The kinds of listening activities of the second stage are designed for CE Master Students. The exercises of the course are based on the theoretical perspective called *Listening and Doing*. A step further is taken to teach students to react and do something after listening. The purpose is to enable students to derive instructions from spoken discourse and make use of them.

Last but not least, the model called *Interactive Listening* is used to develop aural/oral skills for Doctorate students. The learners are required to take part in discussion activities of small groups. The communicative competence to enhance includes very precisely interacting skills with more focus on transacting abilities.

### **5.6.5 Reading comprehension**

The NA demonstrates that CE students need reading skills to carry out a number of tasks. These last vary greatly but they can be grouped under two categories: academic tasks, and professional ones. Being pedagogic in nature, a great deal of academic tasks might take place simultaneously with the English course, i.e., students might need to read English written texts to conduct research projects. In contrast, job-related tasks, such as reading



professional reports, business letters and emails, manuals, etc. are often part of students' future professional life.

Different tasks of reading require, of course, different approaches for the teaching and learning process to be efficient. On the other hand, reading is not simply one monolithic skill but it is rather composed of a large number of sub-skills. These range from basic sub-skills of mastering letter-sound correspondence to highly developed ones such as skimming and scanning a written text.

Reading comprehension activities should fit precisely students' proficiency level. Although the diagnostic test shows that CE students' level in reading comprehension is intermediate, introductory activities are crucial to make up any deficiencies students have in terms of basic sub-skills. In other terms, in the present CE syllabus of English reading activities are conceived to fit different students' proficiency levels.

The introductory lectures are meant to check students' overall ability to read and comprehend texts of GE. The teacher's role is to anticipate any deficiencies students may have, such as associating letters and sounds, recognizing words pronunciation, and reading sentences of GE. Then, their background knowledge should be consolidated to be ready for the next stage.

- Stage One is devoted to BE students of CE, i.e., second and third years. As it is the first time for CE students to encounter technical texts in English, the topics and contents of the text chosen should be part of learners' background knowledge. This would facilitate for students the task of understanding the text and guessing the meaning of some words.

- Stage Two is dedicated to respond to CE Master students' needs who are particularly required to present dissertations at the end of the eighth semester. For this reason, students need to learn how to use English references including how to discover an author's purpose, understand main ideas, and extract necessary information. The language materials to use is a mixture of journal articles, CE books, etc.

- The needs of post-graduate students are the subject of Stage Three. CE Doctorate students are required to read English written texts to carry out more advanced tasks. The diversity of these last necessitate from students to learn a variety of reading strategies so as to understand written texts. To do so, the learners have to be familiarized with the patterns of the academic discourses, i.e., essays, reports, articles, etc. On the other hand, learning how

to elicit and gather information from different sources is highly beneficial to students, such as using the technique of surveying, skimming, and scanning.

### **5.6.6 Vocabulary activities**

Lexical competence is a prerequisite for any communicative task to be successfully achieved. In the status quo vocabulary teaching focuses on explicit learning and few strategies of implicit learning. In a systematic way, students are encouraged to recognize clues to words meanings in contexts and use monolingual dictionaries as much as they can.

Having already been taught GE for more than seven years, students should have acquired a considerable amount of GE lexis. To really meet their current special needs, the focus now is on high frequency words of CE field. As this last is very large and so its vocabulary a special consideration is given to the terms related to the subfields taught at Adrar University because they are more likely to be encountered by students either during their academic studies or in their future professional life.

Two strategies are adopted so as to increase students' lexis. The first method considers the morphology basis which allows to group vocabulary in terms of families. Each one of these last turns around one single root plus all its derivations, i.e., "root + affixes". The second strategy is based on semantic relations between the words; this includes synonyms, antonyms, and semantic field-related terms. This method is not used only to teach vocabulary within one single category but also between two different grammatical categories, for example, nouns and verbs or nouns and adjectives etc.

### **5.6.7 Grammar activities**

Grammar instruction is a must for any teaching and learning operation to be successful. Accurate writing and speaking, which are the utmost objectives of grammar tutoring, lie in the heart of the communicative competence. However, the Communicative Approach to language teaching focuses on meaning instruction and pays little attention to form. Nevertheless, more eclectic view to grammar instruction is adopted in this course through combining teaching of communication with teaching of grammatical structures. Practically, the teachers' role in the classroom is to achieve this by making students aware of grammatical forms while engaging in communicative tasks.

The results of the questionnaire survey carried out with CE students concerning the PSA already mentioned earlier in Chapter Two reveal that students and even CE teachers

complain of English verbs in general. This finding dictates that suitable grammar instructions should pay more attention to all that is related to verbs in English. This automatically should include tenses, modals, moods, etc.

The grammatical items objects of the course are defined with regard to the results obtained from the analysis of some CE documents. What students have already been taught was deduced from their middle and secondary school textbooks.

The issue of sequencing is one of the critical points of the Communicative Approach. Yet, an attempt is made to combine the linear order with the cyclical organization of items. The linear sequencing of materials suggests teaching easy and known items first then gradually moving to the more difficult and new ones. On the other hand, the cyclical order of items allows the possibility of tackling one single element several times depending on its importance.

As far as the Communicative Approach is concerned, all the methods of teaching can be used to present the grammatical activity. Since students prefer a mixture of methods over one single method of teaching, varying the ways of tackling grammar can provide richness to the activities of grammar and keep learners' interest.

The language materials chosen for this course are derived from different sources. As far as CE is concerned all sorts of CE written texts can be a source of inspiration for the course, such as scientific articles, manuals, books, etc. The same material used for reading comprehension can be used to feed grammar activities. The objective behind this is to enable learners to discover the same language material from several facets. Additionally, this will help them to see how grammatical structures function in authentic situations.

The results surfaced from the text analysis shows that some grammatical items are more frequent than others. Although this list is not exclusive, the following items are the most important ones:

- Articles; the, a/an
- Countable and uncountable nouns
- Adjectives: attributive, predicative, qualitative, superlative, comparative, Classifying, Emphasizing, compound
- Quantifiers: some, few, etc.
- Using the verbs to be and to have to express state (present/past; affirmative and negative forms)

- Tenses; Present simple, past simple, present perfect, future simple, present continuous, past perfect.
- Adverbs: time, frequency, place, manner, degree, linking, focusing
- Modal verbs; can, must, may, might, would, and should.
- Imperative
- Conditionals
- Infinitive
- The Passive voice: present, past, and infinitive passive voice
- Asking questions: WH words/ yes and no questions
- Gerund: ing/ ed
- Prepositions: of, in, to, for, by, with, etc.
- Types of sentences, clauses, phrases;
- Multi-word terms: noun + noun, adjective + noun

Concerning the functions that CE students should learn, they are as follows:

- Describing facts, processes, or sequences
- Expressing possibility, absence of possibility
- Expressing necessity
- Expressing cause and effect
- Estimating and evaluating
- Expressing approval
- Expressing disapproval
- Suggesting
- Advising
- Reporting, informing
- Asking for information
- Opposing
- Expressing agreement
- Expressing disagreement
- Showing satisfaction
- Showing dissatisfaction
- Greetings
- Expressing regret or congratulation
- Introducing oneself or other people

On the other hand, the list of notions suggested for the course includes expressing

- time, duration,
- space, dimensions,
- frequency,
- numerals, calculations,
- sequence,
- location,
- certainty,
- possibility,
- obligation,
- quality,
- frequency,
- existential.

### **5.6.8 Language use**

At the end of any language course, especially in the field of EST, students are expected to transfer and put what they have been taught into practice. CE profession can be better conceived in terms of very precise tasks that one should execute on site and in the office. These communicative tasks, in their turn, can be detailed as a set of functions and notions which deal with specific topics. The Skill-Based Approach can further determine those tasks in terms of particular sub-skills. All those approaches along with the grammatical view and vocabulary teaching frame the overall grille which underpins the course design. Coordinating different language categories to form a coherent and cohesion language course is the designer's task.

## 5.7 A Sample Unit

This unit is meant for first year under-graduate CE students, at the beginning of the academic year and after refreshing the learners' knowledge as to General English. The general aims and objectives of the suggested course are as follows:

**Aims:** The overall aim of the present unit is to develop students' language competence as to naming things in English; since the interest of this syllabus is CE, more importance is given to technical terms namely construction materials. After having this course, the learners should be able to understand some basic CE terminology related to construction materials, know their equivalent in French, and produce correct and accurate sentences in the target language.

**Objectives:** At the end of the course, the students should be able to

- use effectively nouns in the target language,
- comprehend some vocabulary of concrete,
- read and understand a wide variety of texts related to concrete technology,
- communicate about topics related to concrete,
- write correct and accurate sentences,
- translate technical texts from English to French and vice versa,
- and elicit information from English written texts.

**The Selected Topic:** Civil Engineering Discipline.

### Unit Map

#### Grammar

- The use of the present simple tense to express state.
- Affirmative form
- Negative form
- This + to be + adjective + noun
- This + nouns + to be + adjective

#### Vocabulary

- Basic vocabulary related to the discipline of civil engineering

**Functions**

- Describing
- Giving information
- Asking yes/no questions
- Listening
- Listening for specific information

**Reading**

- Reading for specific information
- Skimming
- Scanning

**Writing**

- Writing short sentences

**Part One: Listening Comprehension**

Listen carefully to text 1 and answer the questions.

**Text 1**

Civil engineering is the professional engineering that deals with the design, construction, and maintenance of the built environment. This includes public works, such as roads, bridges, canals, dams, airports, sewerage systems, pipelines, structural components of buildings, and railways. Civil engineering is divided into a number of sub-disciplines. It is considered among the oldest engineering disciplines and it is defined to distinguish non-military engineering from military engineering. Civil engineering takes place in the public sector from municipal to national governments, and in the private sector from individual homeowners to international companies.

**Task One**

1. Write an appropriate title for the text.
2. Listen to the text and answer the following questions:
  - a. What does civil engineering discipline deal with?
  - b. What are the works that civil engineering includes?

- c. What are the sub-disciplines of civil engineering that you know?
- d. Why is civil engineering called as such?

### **Task Two**

Listen again to the text and try to find as many features as possible to civil engineering discipline.

### **Task Three**

Listen again to Text 1 and

- a. Write down the terms that you have never heard before.
- b. Find out their meaning in a dictionary.
- c. Give their synonyms in French.

## **Part Two: Reading Comprehension**

- a) Read the following text and do the exercises bellow.

### **Civil Engineering**

Civil engineering is the application of physical and scientific principles for solving the problems of society. Its history is intricately linked to advances in the understanding of physics and mathematics. Because civil engineering is a wide-ranging profession, including several specialized sub-disciplines, its history is linked to knowledge of Structures, Materials Science, Geography, Geology, Geotechnics, Hydrology, Environment, Mechanics and other fields.

Throughout ancient and medieval history most architectural design and construction was carried out by artisans, such as stonemasons and carpenters. Knowledge was retained in guilds and seldom supplanted by advances. Structures, roads, and infrastructure that existed were repetitive, and increases in scale were incremental.

Ancient civil engineering projects include the roads of the Roman Empire, the Great Wall of China, the Cliff Dwellings at Mesa Verde and Mayan ruins at Copan, Palenque and Tikal. Many early civilizations built monuments to their rulers or gods, such as the Pyramids of Giza and Stonehenge.



**Task One**

Answer the following questions after reading the text.

1. What is the relationship between civil engineering and the scientific disciplines?
2. How do advances in physics and mathematics affect civil engineering?
3. State some of the ancient projects?
4. Why did people in the past build monuments?

**Task Two**

Read the text and put next to each statement 'true', 'false' or 'not mentioned'.

1. Specialized engineers undertook the architectural design and construction during ancient history.
2. The discipline of civil engineering has no relationships with other sub-disciplines.
3. Applied sciences are used to solve social problems.
4. Some monuments were built to the memory of rulers.

**Task Three**

In which paragraph is it mentioned that during the ancient history applied sciences were not widely used in civil engineering?

Write the sentences that illustrate this.

.....

**Part Three: Vocabulary Acquisition and Practice****Task One**

Find in the text words, phrases or expressions that are close in meaning to

- a- old
- b- rarely
- c- applied

Use the synonyms in sentences of your own

Pick up from the text words, phrases or expressions that are opposite to

a- narrow

b- superstructure

c- military

Use the opposites in sentences of your own.

Find in the text words, phrases or expressions whose definitions are

a- The systems that involve electric power, oil and gas, water and wastewater, communications, transportation, and the collections of buildings.

b- The branch of civil engineering concerned with the study and modification of soil and rocks.

### Task Two

Match the list in column A with the appropriate title in column B.

A	B
Geography, Geology, Hydrology	master builders
artisans, stonemasons, and carpenters	natural disasters
floods, hurricanes, earthquakes	works of arts
clay, rocks, wood	disciplines
the Colosseum, the Pantheon, the Hoover Dam	building materials

### Task Three

Put the following words in their appropriate places in the paragraph.

increasing demands, building industry, activity, alternative materials, waste materials, natural resources, innovative techniques

Civil engineering is an .....that essentially relies on exploiting..... However, the ever-growing demand for materials by the .....cannot be fully met by natural resources or traditional materials. Hence, there is a need to develop .....and .....to solve the .....of building construction. The response to this issue can be found in the reuse of.....

## Part Four: Language Work

### Naming things (Types of nouns)

a) Study these nouns: a carpenter, knowledge, a pyramid, technology.

Carpenter and artisans are countable nouns. We say a carpenter and carpenters.

*Geography* and *Geology* are uncountable nouns. They have no plural and we cannot use them with *a* or *an*.

Nouns starting with vowels should be preceded by *an*; however, those which start with consonants are preceded by *a*.

Example:

An----- **an** artist, **an** architect.

A ----- **a** wall, **a** dam.

b) Study this paragraph.

Nowadays, larger groups of people live together in towns and cities. These populations need reliable sources of clean water, a means to dispose of waste, a network of streets and roadways.

We use a **plural noun** with **no article**, or **an uncountable noun**, when we talk about things in general.

Example:

- Scientific **knowledge** is necessary for engineering **students**.
- Construction **technology** is very developed.

We use *a/an* when we mention a countable noun for the first time.

- Civil Engineering is **an** interesting **discipline**.

When we mention the same noun again, we use *the*.

- On site, the engineer has to wear **a helmet**. **The helmet** is part of security measures.

We use *the* with countable and uncountable nouns to refer to specific things.

- **The** management of constructions.
- **The** height of buildings.
- **The** properties of materials.

c) Here are some common nouns related to civil engineering technology. Divide them into countable and uncountable nouns by using a dictionary (countable nouns are marked C and uncountable ones are marked U).

- a. material .....
- b. waste .....
- c. network .....
- d. structure .....
- e. water .....
- f. physics .....
- g. resource .....
- h. clay .....
- i. monument .....
- j. construction .....

d) Fill in the gaps in this paragraph with *a/an* or *the* where necessary.

The theatre was ..... important part of Greek culture. The Odeon of Herodes Atticus is .... stone theatre structure. It was settled on the southwest slope of the Acropolis in Athens, Greece. Athenian magnate Herodes Atticus built ..... structure in remembrance of his wife. In ..... first place, it had ..... front wall and ..... wooden roof.

Table summarizing the use of the definite article *the* (Adopted and adapted from Swan (2009))

+ <b>the</b>	<b>Example</b>	- <b>the</b>	<b>Example</b>
already mentioned	... <b>the boy</b> is 14	with possessives or demonstratives	my <b>brother</b> , this <b>man</b>
which is meant	who is <b>the girl</b> with John	with singular proper names	<b>Khaled</b> lives in Adrar
the only one around	<b>the sun</b> , <b>the moon</b>	things in general	<b>books</b> are expensive
physical environment	<b>the town</b> , <b>the country</b>	with most	most <b>birds</b> can fly
superlatives	<b>the oldest</b> , <b>the next</b> , <b>the same</b>	noun modifies another noun	floor four
the well known	She married Fodhil, <b>the engineer</b>	after both and all	both <b>cars</b> , all <b>lectures</b>
talking in general (singular countable nouns)	School should pay more attention to <b>the child</b> .	after the amount / number of	the number of <b>molecules</b>
to refer to well-known groups	<b>the Russians</b> , <b>the Americans</b>	the meaning is the day, month before or after the current one	see you on <b>Friday</b>
in classifying expressions of this kind	<b>the wheel</b> of a car	television as entertainment	what is on TV
with names of particular days, weeks, and months	He quit the company on <b>the Thursday</b> after	in titles	queen, president
television set	The cat is on <b>the TV</b>	parts of someone's body	her <b>arm</b>
prepositional phrases related to the object	She hit him in <b>the stomach</b>		
in measuring expressions beginning with by.	He sells eggs by <b>the dozen</b>		

Table summarizing the use of indefinite articles *a/an* (Adopted and adapted from Swan (2009))

+ a/an	Example	- a/an	Example
not knowing which one is meant	<b>a French manager</b>	plural nouns	Few <b>documents</b>
any one member of a class	<b>a doctor</b> must like people	uncountable nouns	some <b>concrete</b>
to classify people and things	<b>an engineer</b>	an adjective alone	It is <b>nice</b>
after prepositions, fractions, or negative expressions	<u>with a coat</u> , <u>3/4 of a mile</u> ,...	with a possessive	He is <u>my</u> <b>teammate</b>
generalize by talking about one example of a class	<b>A child</b> needs plenty of love.	generalize about all of the members of a group together	<b>the tiger</b> is in danger of becoming extinct
when we talk about particular days or months	We worked on <b>a wet Friday</b> .	the day or month either before or after this one	See you on <b>Saturday</b> / in <b>March</b> .
in exclamations after what	<u>What</u> <b>a big company!</b>	in exclamations with uncountable nouns	what <b>nonsense!</b>
relate one measuring unit to another	30 <u>miles</u> <b>an hour</b>	after kind of, sort of,	<u>what kind</u> of <b>person</b> is he?

### Describing a noun

Generally speaking, adjectives are used in order to identify or describe something in more details.

Adjectives can be in attributive positions, such as

	Affirmative form	Negative form	interrogative form
Singular	This is a <b>large</b> building	This is not a <b>large</b> building	Is this a <b>large</b> building?
Plural	These are <b>large</b> buildings	These are not <b>large</b> buildings	Are these <b>large</b> buildings?

They can also occur in predicative positions, for instance

	Affirmative form	Negative form	Interrogative form
Singular	This building is <b>large</b>	This building is not <b>large</b>	Is this building <b>large</b> ?
Plural	These buildings are <b>large</b>	These buildings are not <b>large</b>	Are these buildings <b>large</b> ?

#### Task One

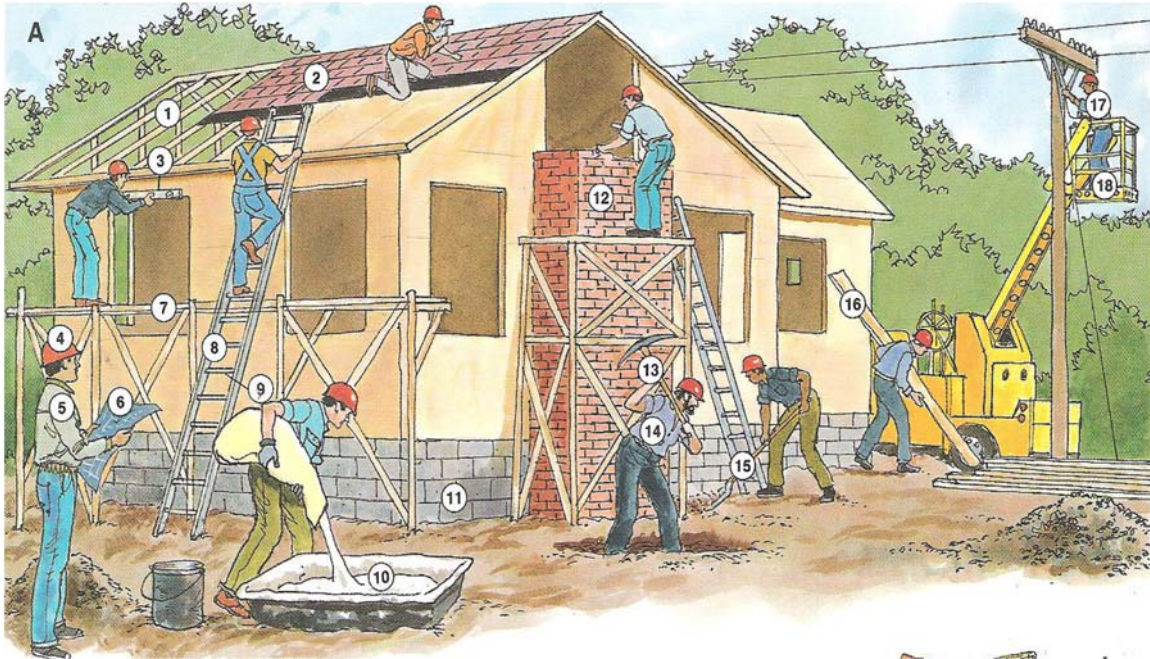
Using the list below, write sentences with nouns and adjectives which correspond to each other. Do not forget to use the appropriate determiner.

	Nouns	Adjectives			Noun	Adjectives
1	roof	wooden		17	part	hydraulic
2	area	vertical		18	purposes	important
3	structure	attractive		19	treatment	individual
4	test	long		20	material	initial
5	components	basic		21	change	fresh
6	axes	thorough		22	process	internal
7	energy	small		23	state	opposite
8	properties	large		24	stone	residential
9	chain	short		25	behaviour	raw
10	metal	high		26	arc	free
11	shapes	complex		27	solide	local
12	text	opposite		28	impact	waste
13	tasks	famous		29	wall	longitudinal
14	temperature	constant		30	quantities	low
15	phase	continuous		31	glass	foreign
16	landmark	short		32	applications	dynamic

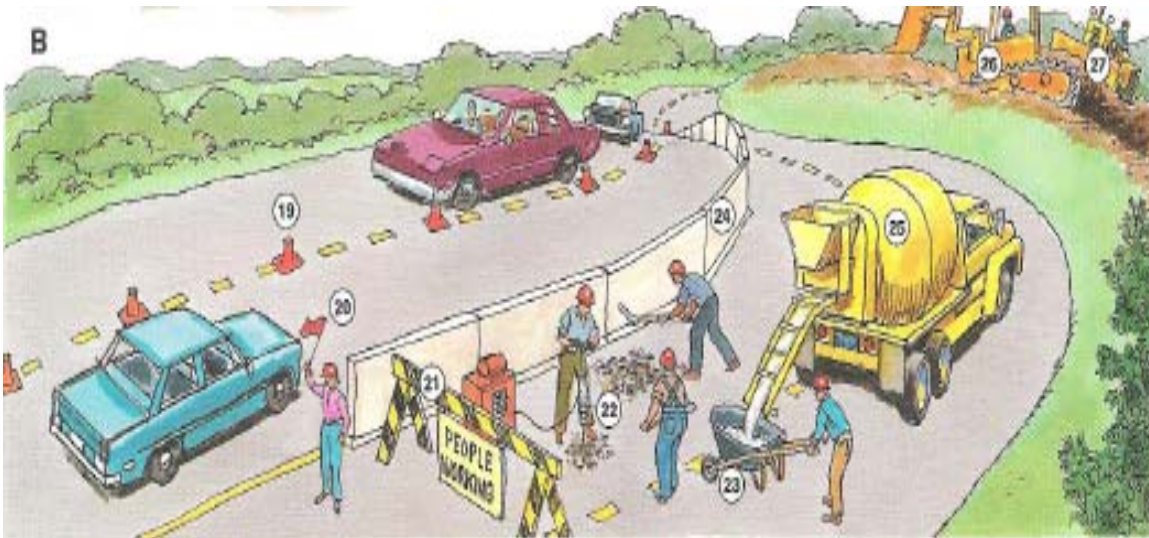
### Task Two

- Look at the pictures and listen carefully to text 1.

Picture One: Construction site



Picture Two: Road work



Adopted from (Parnwell, 1988, p. 82)

- What are the words which correspond to the numbers in picture one and two  
 rafters- shingle- level – hard hat- builder- blueprints- scaffolding- ladder- rung-  
 cement- foundation- bricks- pickax- construction worker- shovel- board- linesman- cherry  
 picker.



By using a dictionary try to find the verbs which correspond to the actions carried out by the workers in both pictures.

## Part Five: Translation & Writing

### Task One

Translate the following paragraph into French

#### Eiffel Tower

The Eiffel Tower is a famous landmark in Paris. It was built between 1887 and 1889, for the 100<sup>th</sup> year of the French Revolution. The total height of its structure is 324 m. It was built by Gustave Eiffel. When the tower was built, it was only meant to be kept for 20 years. People did not like the Eiffel Tower and wanted it taken down. After 20 years, the tower became the property of Paris again. By this time, the city had learned that the tower could be used to help with communications. The military used the tower to communicate during battle. Nobody wanted it to be taken apart.

Retrieved and adopted From (Eiffel Tower, 2019)

### Task Two

Use each of the group of words to formulate a correct sentence.

2. structures, are, skyscrapers, impressive

.....?

1. numerous, established, throughout, have, history, projects, been.

.....?

3. beautiful, are, bridges, big, and, structures

.....?

4. and, to connect, designed, was, Panama canal, the Atlantic, Pacific ocean.

.....

5. the largest, in the world, Lake Kariba, is, reservoir.

.....

6. bridges, their, suspension, steel, in, cables.

.....

### Task Three

In groups of two or three students try to write a paragraph of about 8 to 10 lines in which you describe a monument or a famous building in your hometown. Exchange the texts you have written with your mates of the other groups. After reading carefully the other's texts highlight and correct their mistakes. Finally, each group retrieves back its text.

### Task Four

Translate the following passage into English.

Construire en adobe


L'adobe est une technique ancestrale de brique en terre crue auparavant moulée à la main, elles peuvent être très décoratives. Mélange de terre argileuse, de paille et d'eau, malaxée et moulée dans un cadre en bois pour former des briques ensuite séchées au soleil.

(Lallier, 2009)

### Task Five

Read the following text.

## The Work is Interesting



Just like engineering studies, engineering jobs also are interesting. For software developers, there are challenges of writing new code to create a product or to solve a problem. Automobile engineering work involves the design of innovative vehicles. Civil engineers get the opportunity to introduce creative designs for roads, buildings, bridges, expressways. They also are responsible for designing the water supply system in houses. Electrical engineers work in public and private power corporations, power plants. Mechanical engineers work in the field of machines as well as automobiles.

Adopted from (Jonassen, Strobel, & Lee, 2006)

Read the text and

1. Cite the different engineering jobs that are mentioned in the text.
2. Make a list of the duties that each one of them involves.
3. As a civil engineering student, do you believe that working in your field is the most challenging job? In a short paragraph try to justify your choice.

### Part Six: Aids to Communication

When we want to ask for information we use Wh-words. The answer is not yes or no and the questions begin with what, when, where, who, whom, which, whose, why and how.

Wh- questions are formed as follows:

**wh- + an auxiliary verb (*be, do or have*) + subject + main verb?**

or with

**wh- + a modal verb + subject + main verb?**

- **to be**

What **are** you **reading**?

- **to have**

Where **have** you **been**?

- When the main verb is lexical the auxiliary verb to do is used.

Why **do** you **sleep** early?

How **do** you **feel**?

When **does** the bus **leave** the station?

- Auxiliary verbs are not used when *what, who, which* or *whose* is the subject or part of the subject. The order of words is as follows: **subject + verb**

Which car **won** the race?

Who **wrote** this?

Whose phone **is** this?

- How to enquire about a person as a subject

**Who** is in charge of the project management? **The civil engineer** is in charge of the project management.

- How to enquire about something as an object

**What** field do you study? I study **civil engineering**.

- How to enquire about an object in a limited set of possibilities

**Which** university did you come from? I came from **Adrar University**.

- How to enquire about ways and methods

**How** do engineers check the suitability of soil for construction? Engineers check the suitability of soil for construction via geotechnical soil tests.

- How to enquire about the height of something

**How** tall is Eiffel tower? Eiffel tower is 324 metre in height.

- How to enquire about time

**When** does the academic year start? The academic year starts in September.

- How to enquire about locations

**Where** do students live? Students live in a campus.

### Task One

- Use the following sentences and formulate questions to enquire about the words in bold (use wh-words).

The Eiffel Tower was built **between 1887 and 1889**

.....?

**Gustave Eiffel** designed this landmark monument.

.....?

The Eiffel Tower was built **in Paris**

.....?

Civil engineering jobs are **interesting**

.....?

Civil engineers are responsible for **designing water supply systems**

.....?

The engineer **bases** the computation on loads.

.....?

The technical staff **undertakes** routine tasks.

.....?

The architect **oversees** engineering work.

.....?

The earthquake **destroys** structures.

.....?

Building materials **have** specific characteristics.

.....?

### Task Two

Try to write sentences through pairing the verbs with the appropriate nouns. Then, formulate interrogative sentences by using wh-words.

	<b>verbs</b>	<b>nouns</b>		<b>verbs</b>	<b>nouns</b>
01	design	engineering	12	install	technology
02	sketch	construction	13	overwork	wall
03	fix	building	14	rise	ground
04	compute	public work	15	expand	Castle
05	check	ground	16	add	concrete
06	improve	work	17	have	structure
07	do	road	18	rest on	iron
08	make	area	19	pay	metals
09	carry out	canal	20	solve	problems
10	measure	project	21	bridge	buildings
11	use	dam	22	manage	wood

## 5.8 Conclusion

The aim behind this concluding chapter is to interpret the findings of the previous chapters into a set of recommendations which help frame the theoretical outline of an appropriate English syllabus for CE. From top to bottom, the reforms concern the administrative level, ESP teacher's role, students' role, and some sort of suggestions concerning the syllabus of English.

As for the course design, the researcher has provided a thorough description of the elements of the course design including choosing topics, selecting texts, writing different types of activities, promoting receptive skills, teaching vocabulary, and using translation as a pedagogical tool.

At the end, all those theoretical assumptions were exemplified in a sample unit of a course that covers the language skills seen as crucial for CE students with the hope that this will meet their needs.

# **General Conclusion**

## General Conclusion

The present thesis aims to determine and fulfil Adrar University CE students' academic and professional needs in terms of English. The choice of this topic was initially motivated by the economic reasons that the Province of Adrar is facing vis-à-vis job opportunities in CE. University graduates are not industry ready by virtue of communication deficiencies which preclude them from meeting international companies' job requirements. Therefore, being a foreign language in the Algerian context, English is just a language module taught to students without any clear use; thus, the ESP course is totally neglected and students are not motivated

Adrar University is not an exception in the Algerian situation. All scientific modules are exclusively French-based whereas, English is a medium of instruction only in the Department of English. Although its courses are taught in almost all the fields at tertiary levels including CE this language is still underestimated. The module of English is classified under a transversal educational unit (*unité transversale*), with a very limited number of teaching hours, no specialized teachers or predetermined courses, and no suitable teaching materials. As a result, the English course has become rather unappealing to the students. At the same time, students, as stated in the *canvas*, are required to be able to read field related texts, communicate ideas, and proceed with their studies in English.

Seeking to examine this issue, the present study revolves around three main research questions, sequenced as follows:

1. What are the students' views about CE and the English Language?
2. What are the specific students' needs concerning academic life and future professional career?
3. What kind of syllabus and language materials that would be appropriate to meet the students' needs?

In order to answer the previous research questions, the following hypotheses have been put forward:

1. Civil engineering is an interesting field of study, and job opportunities beckon students to study it. Besides, English is the medium for science and technology and its importance for this field is undeniable.

2. In academic life, graduate students need basic reading skills so that to comprehend technical vocabulary and short English written texts. In professional life, university teachers



and professionals working for foreign companies need to have a sound level in the four language skills.

3. An eclectic syllabus that considers students' academic needs as a short-term objective and their future professional needs as a long-term goal can help both boost students' interest in learning English and facilitate the ESP teacher's role in attaining course aims.

The present thesis consists of five chapters. Chapter One reviewed the theoretical background of this study linking ELT with its two major branches ESL and EFL detailing also the particularities of the Algerian context. Then, some ESP classifications were reported from which English for Science and Technology is an important sub-branch. Afterwards, different standpoints to Needs Analysis theory were provided, and fundamental approaches to syllabus design were explored. Evaluation was the concluding point of this opening part. Chapter Two recounted the research methodology and the overall design of the study. The issue of sampling, data collecting, and diagnostic testing were thoroughly explained. Chapter Three presented the results surfaced from the PSA; students' lacks and wants were investigated through diagnostic tests and questionnaire surveys respectively. Chapter Four, however, concerned itself with the analysis of both the target situation and learning needs. Face to face interviews were the primary means of collecting data from worksites meanwhile, text analysis, official documents, questionnaires, and interviews were used to probe the learning context and the CE profile. On the light of the results obtained, the researcher, in Chapter Five, suggested a set of recommendations containing a syllabus design for CE and a sample unit of the course of English.

The researcher adopted the case study strategy as an overall plan of the study. This decision was taken with regard to the specifications of the topic, statement of the problem, and research questions. This enabled him to describe and explore the subject of study quantitatively as well as qualitatively. NA theory constituted the underlying framework of the investigation. Sample population selection was based on purposive sampling. Triangulation of methods enabled the researcher to collect a variety of data and, simultaneously, cross-check the findings.

As far as the PSA is concerned, several worth-mentioning points surfaced from the investigation. CE students do agree upon the importance of English for their field of study; nevertheless, they do not attend its classes. On the other hand, students' views to their field are so variant; one fifth of BE students and nearly 10% of Master students chose it because

of job opportunities while, more than one fourth of BE and Master learners did it because it was the best choice available. This means that an important number of students had no predetermined ideas about their field of study; hence, this is reflected in their views to their future occupations as more than one fourth of BE students have no idea. A very limited number of BE participants showed intentions for working for foreign companies or teaching at university; in both cases English is a vital medium of communication. Master students, on the other hand, show interest in teaching at university but they lack motivation in learning English. For the first hypothesis, students do claim that English is important for CE, yet what is said and what is done are not the same.

Students' needs were determined in terms of wants, lacks, and necessities. The questionnaire surveys administered to examine students' wants revealed that the classification of language skills with regard to their importance is as follows: listening, speaking, reading, and writing. As for the parts of speech, verbs are seen as being the most difficult. As to the course design, they suggested to be based exclusively on academic and professional texts of CE besides using a mixed methods approach to teaching materials and teaching methods. A subject matter teacher with some competence in English is the students' best choice for teaching ESP; this can be seen as a positive evaluation of the experience they had with CE teachers whose courses of English were mainly based on CE vocabulary which confirms the previous findings.

Students' lacks were investigated through a diagnostic test; the findings demonstrated that the performance of the participants is high in 14 language items, intermediate in 11 items, and low in 49 others. The course designer's task is to consider these indications by refreshing students' knowledge as to what they already master, consolidate the second set of items, and examine carefully the third category. The order and the treatment of the language items should consider the learnability, coverage, and usefulness. Besides, students' necessities were grouped under two types: academic and professional. The results which emerged from the students' questionnaires showed that half of the participants sometimes used English for their studies; however, subject matter teachers disconfirmed this. An interesting view was provided by a subject matter teacher who argued that BE students needed to develop basic reading skills, Master learners should develop their listening skills in addition to the previous ones, and Doctorate students had to boost their speaking and writing competencies additionally. CE teachers and professionals need to develop the four language skills. In this regard, the most demanding tasks for teachers are crafting

manuscripts and participating in international conferences; however, for professionals, dealing with reports and taking part in meetings seem to be the most demanding activities. Thus, the investigation confirmed the second hypothesis.

The evaluation of the learning needs unveiled that some vital elements are missing and should be ensured so that for the course of English to attain its objectives, for instance revising the status of the English module, increasing the number of teaching hours, hiring EST teachers, developing teaching methods, and providing necessary materials. Additionally, the students' academic and professional needs are different; however, there are some common features between the two. Both of them can be interpreted into tasks and activities, functions and notions, specialized terms and grammar items, as well as receptive skills and productive skills. Each perspective can help cater for a specific aspect of students' communicative needs. Correspondingly, an Eclectic Approach to syllabus design that considers students' wants, lacks, and necessities with regard to the learning needs seems to be the most appropriate way so as to attain the desirable objectives; thus, this confirms the third hypothesis.

In light of what has been noted, the researcher acknowledges that this case study suffers from certain limitations, such as the limited number of informants. The present study targets all levels of the CE community whereas the researcher undertook the investigation with second year BE and first year Master students only due to the difficulty of the administration process of the questionnaire surveys and the problem of access. Equally important, the target situation was not thoroughly examined due to the problem of access to worksites. The researcher was granted access to one single site of the company called GTG Complex for less than 9 hours. Hence, the number of informants was so limited and this precluded the researcher from having different opinions of managers at various levels so as to conceive a holistic perspective to their views about the issue of language and communication. The data gathered were based mainly on few interviews with CE professionals and one single manager. The researcher tried to compensate for the necessary data by meeting managers from other companies. Discourse or text analysis was restricted to three academic books; neither fieldwork related documents nor oral discussions were studied because of the companies' strict regulations and time restraints.

This study has drawn only the general outline of the English syllabus for CE; hence, future perspectives can be the specification of its contents, the number of hours, human resources, and materials resources required for all levels. Correspondingly, the

implementation of this language course necessitates a prior experimental study as an action research so as to examine its strengths and weaknesses before any official adoption. Nevertheless, preparing special training sessions for subject matter teachers and CE researchers concerning academic writing would be one of the primary outcomes of this project.

In conclusion, this study has attempted to examine and meet the needs of CE students at Adrar University. The aim of this research is to bring to light the underlying reasons behind the pressing needs for an urgent and appropriate English course. However, such action necessitates some changes and careful consideration from top to bottom, i.e., from the Ministry of Higher Education and Scientific Research down to students and teachers in classrooms. In this regard, reforms should consider all the aspects of the course including training programs for ESP teachers with the collaboration of the Department of English.

# REFERENCES

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## References

- Abbott, G. (1983) 'Responses to "teacher training for EST"', *The ESP Journal*, 2, pp. 33–36.
- Alderson, J. C. (2000). *Assessing reading*. Cambridge University Press.
- Akbari, R. (2012). Validity in language testing. In R. Akbari, *The Cambridge guide to second language assessment*. Cambridge University Press.
- Allouche, W.-S. (2012). *Designing and implementing an ESP course for medical students: A step towards building up a knowledge society*. Unpublished Magister Thesis. Abou Bekr Belkaid university, Tlemcen.
- Azeroual, D. (2015). *Implementing general English reading courses in teaching English for science and technology to promote the reading proficiency of students of electronics*, University of Constantine. Unpublished Doctorate Thesis. University of Mentouri, Constantine.
- Heaton, B. J. (1990). *Writing English language tests*. Longman Group UK Limited.
- Bachman, L. (1990). *Fundamental considerations in language testing*. Oxford University Press.
- Bachman, L. (2000). Modern language testing at the turn of the century: Assuring that what we count counts. *Language Testing*, 17(1).
- Bachman, L. F., & Palmer, A. (1996). *Language testing in practice: Designing and developing useful language tests*. Oxford University Press.
- Bassey, M. (1999). *Case study research in educational settings*. Open University Press Buckingham.
- Basturkmen, H. (2008). *Ideas and options in English for specific purposes*. Taylor & Francis e-Library.
- Basturkmen, H. (2010). *Developing courses in English for specific purposes*. Algrave Macmillan.

- Batty, A. (2012). Identifying dimensions of vocabulary knowledge in the word associates Test. *Vocabulary Learning and Instruction*, 1(1), 70–77.
- Belcher, D. (2006). English for specific purposes: Teaching to perceived needs and imagined futures in worlds of work, study, and everyday life. *TESOL Quarterly*, 40(1), 133.
- Benedictine, S.-K., Macquarie, D., & Moore, S. (2015). *Language for specific purposes*. Palgrave and Macmillan.
- Berwick, R. (1989). Needs assessment in language programming: From theory to practice. In R. Berwick, *The second language curriculum* (pp. 48-62). Cambridge University Press.
- Blue, G. (2001). Determining the language learning needs of students of art and design. *University of Southampton: Alladin Edition.*, 1-15.
- Bowker, L., & Pearson, J. (2002). *Working with specialized language*. Taylor & Francis e-Library.
- Broughton, G., Brumfit, C., Flavell, R., Hill, P., & Pincas, A. (2003). *Teaching English as a foreign language* (2<sup>nd</sup> ed.). (J. Eggleston, Ed.) Taylor & Francis e-Library.
- Brown, J. (1996). *Testing in language programs*. Prentice Hall Regents.
- Brown, J. (2012). Choosing the right type of assessment. In J. Brown, C. Coombe, B. O'Sullivan, & S. Stoyhoff (Eds.), *The Cambridge guide to second language assessment*. Cambridge University Press.
- Brown, J. D. (1995). *The elements of language curriculum a systematic approach to program development*. Heinle and Heinle Publishers.
- Carver, D. (1983). Some propositions about ESP. *The ESP Journal*, 2(2), 131-137.
- Chambers, F. (1980). A re-evaluation of needs analysis in ESP. *The ESP Journal*, 1(1), 25-33.
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education* (6<sup>th</sup> ed.). Taylor & Francis e-Library.
- Connor, J., & Faraji, S. (2012). *Fundamentals of structural engineering*. Springer.

- Coombe, C., Davidson, P., O'Sullivan, B., & Stoyhoff, S. (eds) (2012). *The Cambridge guide to second language assessment*. Cambridge University Press.
- DAS, B. (2010). *Principles of geotechnical engineering* (7<sup>th</sup> ed.). Cengage Learning.
- Dawson, C. (2002). *Practical research methods*. How To Books Ltd.
- Domone, P., & Illston, J. (Eds.). (2010). *Construction materials* (4<sup>th</sup> ed.). Spon Press.
- Dörnyei, Z. (2003). *Questionnaires in second language research construction, administration, and processing*. Lawrence Erlbaum Associates, Publishers.
- Direction du Logement de la Wilaya d'Adrar. (2019). *Bilan de la 3<sup>ème</sup> trimestre*.
- Dörnyei, Z. (2007). *Research methods in applied linguistics*. Oxford University Press.
- Douglas, D. (2000). *Assessing languages for specific purposes*. Cambridge University Press.
- Dudley-Evans, A., & Johns, T. (1980). An experiment in team-teaching of overseas postgraduate students of transportation and plant biology. In *Team teaching in ESP (ELT Documents 106)* (pp. 6-23). The British Council.
- Dudley-Evans, T. (2001). English for specific purposes. In T. Dudley-Evans, R. Carter, & D. Nunan (Eds.), *The Cambridge guide to teaching English to speakers of other languages*. Cambridge University Press.
- Dudley-Evans, T., & St John, M. (1998). *Developments in English for specific purposes: A multi-disciplinary approach*. Cambridge University Press.
- Duff, A. (1994). *Translation: Resource books for teachers*. Oxford University Press.
- Eiffel Tower. (2019, 10 16). Retrieved from *Vikidia, the encyclopedia for children, teenagers, and anyone else*: [https://en.wikidia.org/wiki/Eiffel\\_Tower](https://en.wikidia.org/wiki/Eiffel_Tower)
- English language. (2019, 10 16). Retrieved from *Wikipedia*.
- Council of Europe. (2001). *Common European framework of reference for languages: Learning, teaching, assessment*. Cambridge University Press.
- Farhady, H. (2012). Principles of language assessment. In H. Farhady, C. Coombe, P. Davidson, B. O'Sullivan, & S. Stoyhoff (Eds.), *The Cambridge guide to second language assessment*. Cambridge University Press.



- Fulcher, G. (2010). *Practical language testing*. Hodder Education, An Hachette UK Company.
- Fulcher, G., & Davidson, F. (2007). *Language testing and assessment: An advanced resource book*. The Taylor & Francis e-Library.
- Gavioli, L. (2005). *Exploring corpora for ESP learning*. John Benjamins Publishing Company.
- Graves, K. (1996). A framework of course development processes. In K. Graves, *Teachers as course developers*. Cambridge University Press.
- Graves, K. (1996). Teachers as course developers. In K. Graves, *Teachers as course developers*. Cambridge University Press.
- Griffiee, D. (2012). *An introduction to second language research methods design and data* (eBook ed.). TESL-EJ Publications.
- Gunnarsson, B.-L. (1997). Language for special purposes. *Encyclopedia of Language and Education*, 4, 105-117.
- Gupta, K., Sleezer, C., & Russ-Eft, D. (2007). *A Practical guide to needs assessment*. Pfeiffer.
- Hamp-Lyons, L. (2001). English for academic purposes. In L. Hamp-Lyons, R. Carter, & D. Nunan (Eds.), *The Cambridge guide to teaching English to speakers of other languages* (pp. 126-130). Cambridge University Press.
- Harmer, J. (1998). *How to teach English: An introduction to the practice of English language teaching*. Longman.
- Harmer, J. (2001). *The practice of English language teaching* (3<sup>rd</sup> ed.). Longman.
- Henning, G. (1987). *A Guide to language testing development, evaluation, research*. Foreign Language Teaching and Research Press.
- Hirvela, A. (2013). ESP and reading. In A. Hirvela, B. Paltridge, & S. Starfield (Eds.), *The Handbook of English for specific purposes*. John Wiley & Sons, Inc.
- Howard, J. (2007). Curriculum development. *Center for the Advancement of Teaching and Learning*, 1-7.

- Howard, R. (1997). *Teacher education for languages for specific purposes*. Multilingual Matters
- Hughes, A. (2003). *Testing for Language Teachers* (2<sup>nd</sup> ed.). Cambridge University Press.
- Huhta, M., Vogt, K., Johnson, E., & Tulkki, H. (2013). *Needs analysis for language course design: A holistic approach to ESP*. Cambridge University Press.
- Hutchinson, T., & Waters, A. (1987). *English for specific purposes: A learning-centred approach*. Cambridge University Press.
- Hyland, K. (2006). *English for academic purposes: An advanced resource book*. Taylor & Francis e-Library.
- Ismain. (2017). Projet TOUAT-GAZ : Les Français d'Engie cèdent 35% de leur participation. Retrieved from *Reflexion* website:  
[https://www.reflexiondz.net/PROJET-TOUAT-GAZ-Les-francais-d-Engie-cedent-35-de-leur-participation\\_a47033.html](https://www.reflexiondz.net/PROJET-TOUAT-GAZ-Les-francais-d-Engie-cedent-35-de-leur-participation_a47033.html). (17/03/2018).
- Javid, C. Z. (2015). English for specific purposes: Role of learners, teachers and teaching methodologies. *European Scientific Journal*, 17-34.
- Johns, A. (2006). Languages for Specific Purposes: Pedagogy. *Encyclopedia of Language & Linguistics* (2000), 684-690.
- Johns, A., & Dudley-Evans, T. (1991). English for specific purposes: International in scope, specific in purpose. *TESOL Quarterly*, 25(2), 297.
- Johnson, K. (2009). Foreign language syllabus design. In K. Knapp & B. Seidlhofer (Eds.), *Handbook of foreign language communication and learning* (pp. 309–340). Mouton de Gruyter.
- Jonassen, D., Strobel, J., & Lee, C. (2006). Reasons to choose engineering course. Retrieved from *Everyday problem solving in engineering: Lessons for engineering educators*: <http://doi.wiley.com/10.1002/j.2168-9830.2006.tb00885.x>. (19/10/2019).
- Jordan, R. (1997). *English for academic purposes: A guide and resource book for teachers*. Cambridge University Press.
- Kachru, Y. (2011). World Englishes: Contexts and relevance for language education. In Y. Kachru, & E. Hinkel (Ed.), *Handbook of research in second language teaching and learning*. Taylor & Francis e-Library.

- Kachru, Y., & Smith, L. (2008). *Cultures, contexts, and world Englishes*. Taylor & Francis e-Library.
- Kim, D. (2008). *English for occupational purposes: One language?* Continuum.
- Kossakowska-Pisarek, S. (2017). Exploring learner needs: Needs analysis in the global workplace. *Kwartalnik Neofilologiczny*, LXIV,(2), 167-180.
- Kotzé, T. (2007). *Guidelines on writing a first quantitative academic article*. University of Pretoria
- Krashen, S. D. (1985). *The input hypothesis: Issues and implications*. Laredo.
- Lallier, T. (2009). Construire en adobe. Retrieved from *Ma terre première à la cité des sciences*: <http://www.cite-sciences.fr/au-programme/expos-temporaires/ma-terre-premiere/decouvrir/construire/adobe.php> . (19/10/2019).
- Lewis, M. (1993). *The lexical approach*. London: Language Teaching Publications.
- Lakehal-Ayat –Benmati, K. (2008). Is the Algerian educational system weakening? Mentouri University Constantine.
- Long, M. (Ed.). (2005). *Second language needs analysis*. Cambridge University Press.
- Long, M. H., & Crookes, G. (1993). Units of analysis in syllabus design - The case for task. *Tasks in a pedagogical context: Integrating theory and practice*. Clevedon, UK: Multilingual Matters.
- Mack, N., Kathleen, M. M., Woodsong, C., Guest, G., & Namey, E. (2005). *Qualitative research methods: A data collector's field guide*. Family Health International.
- Makhloufi, A., & Bouhania, B. (2018). Adrar university civil engineer's handicap vis-a-vis English academic writing. *Afaq Ilmia*, 358-372.
- Makhloufi, A., & Bouhania, B. (2018). A corpus-based approach to civil engineering nominal compounding. *Adhakira*, 25-40.
- Mattoussi, Y. (2018). *Testing usefulness of reading comprehension exams among first year students of English at the tertiary level in Tunisia*. Springer International Publishing.
- McDonough, J., & McDonough, S. (1997). *Research methods for English language teachers*. Hodder Arnold.
- McNamara, T. (2000). *Language testing*. Oxford University Press.

- Miller, M., Linn, R., & Gronlund, N. (2009). *Measurement and assessment in teaching* (10<sup>th</sup> ed.). Kevin M. Davis.
- Nation, I., & Macalister, J. (2010). *Language curriculum design*. Taylor & Francis Group
- Nunan, D. (1988). *Syllabus design*. Oxford University Press.
- Nunan, D. (2001). Syllabus Design. In D. Nunan, & M. Celce-Murcia (Ed.), *Teaching English as a second or foreign language* (3<sup>rd</sup> ed.). Heinle and Heinle Publishers.
- Orna-Montesinos, C. (2012). *Constructing professional discourse: A multiperspective approach to domain-specific discourses*. Cambridge Scholars Publishing.
- O'Sullivan, B. (2012). The Assessment development process. In C. Coombe, P. Davidson, B. O'Sullivan, & S. Stoyhoff (Eds.), *The Cambridge guide to second language assessment*. Cambridge University Press.
- Paltridge, B., & Starfield, S. (Eds.). (2013). *The handbook of English for specific purposes*. A John Wiley & Sons, Ltd., Publication.
- Parnwell, E. C. (1988). *The new Oxford picture dictionary*. Oxford University Press.
- Rajaei Nia, M., Abbaspour, E., & Zare, J. (2013). A critical review of recent trends in second language syllabus design and curriculum development. *International Journal of Research Studies in Language Learning*, 2(2), 63-82.
- Read, J. (2012). Piloting vocabulary tests. In *The Routledge Handbook of Language Testing* (pp. 307–320). Routledge Taylor and Francis Group.
- Rezig, N. (2011). Teaching English in Algeria and educational reforms : An overview on the factors entailing students in learning foreign languages at university. *Procedia - Social and Behavioral Sciences*, 29, 1327–1333.  
<https://doi.org/10.1016/j.sbspro.2011.11.370>
- Richards, J. (1990). *The language teaching matrix*. Cambridge University Press.
- Richards, J. (2001). *Curriculum development in language teaching*. Cambridge University Press.
- Richards, J., & Rodgers, T. (2001). *Approaches and methods in language teaching* (2<sup>nd</sup> edition). Cambridge University Press.

- Richards, J. (2013). Curriculum approaches in language teaching: Forward, central, and backward design. *RELC Journal*, 44(1), 5-33.
- Ross, N. J. (2000). Interference and intervention: Using translation in the EFL classroom. *Modern English Teacher*, 61-66.
- S. Madsen, H. (1983). *Techniques in Testing*. Oxford University Press.
- Sárosdy, J., Poor, T., & Vadnay, M. (2006). *Applied Linguistics for I for BA Students in English*. BÖLCSÉSZ KONZORCIUM.
- Schmitt, N. (2010). *Researching vocabulary: A vocabulary research manual*. Palgrave Macmillan.
- Seifert, K., & Sutton, R. (2009). *Educational psychology* (2<sup>nd</sup> ed.). Global Text
- Slougui, D. (2009). *A social-context approach to writing for international publication: The case of Algerian scientists*. Mentouri University, Constantine.
- Soneira, B. (2015). *A lexical description of English for architecture*. (M. Gotti, Ed.) Peter Lang AG.
- Songhori, M. (2008). Introduction to needs analysis. *English for Specific Purposes World*, 4(4), 1-25.
- Swales, J. (1985). *Episodes in ESP*. Pergamon Press Ltd.
- Swan, M. (2009). *Practical English usage*. Oxford University Press.
- Le conseil national de l'ordre des architectes*. (2018).
- Touat (DZ). (2018). *NEPTUNE energy*.  
<https://www.neptuneenergy.com/en/activities/development-projects/touat-dz>. (19/03/2018).
- Trace, J., Hudson, T., & Brown, J. (2015). An overview of language for specific purposes. In J. Trace, T. Hudson, & J. Brown, *Developing courses in languages for specific purposes* (pp. 1-23). University of Hawai'i at Mānoa.
- Tecnicas Reunidas gets a one thousand million dollars contract in Algeria. (2018).  
*Tecnicas Reunidas*. <http://www.tecnicasreunidas.es/en/news/news/tecnicas-reunidas-gets-a-one-thousand-million-dollars-contract-in-algeria.html>. (19/03/2018).

- West, R. (1994). Needs analysis in language teaching. *In Language teaching*. Cambridge University Press.
- Widdowson, H. (1983). *Learning purpose and language use*. Oxford University Press.
- Wilkins, D. A. (1976). *Notional syllabuses: A taxonomy and its relevance to foreign language curriculum development*. Oxford University Press.
- Willis, D. (1990). *The lexical syllabus*. COLLINS E.L.T.
- Woods, A., Fletcher, P., & Hughes, A. (1986). *Statistics in language studies*. Cambridge Scholars Publishing.
- Yahia, F. Z. (2013). *The teaching/learning of English for specific purposes (ESP) in the Algerian higher education. Case study: the national institute of commerce*. Higher College of Teachers Bouzareah, Algiers.
- Yin, R. (2003). *Case study research design and methods* (3<sup>rd</sup> ed.). SAGE Publications, Inc.

# **APPENDICES**

## Appendix A

A checklist for evaluating test usefulness (Bachman & Palmer, 1996, p. 150)

<b>Questions for logical Evaluation of usefulness</b>	<b>Extent to which Quality is satisfied</b>	<b>Explanation of how quality is satisfied</b>
<b>Reliability</b>		
1. To what extent do characteristics of the test setting vary from one test administration to another?		
2. To what extent do characteristics of the test rubric vary in an unmotivated way from one part of the test to another, or on different forms of the test?		
3. To what extent do characteristics of the test input vary in an unmotivated way from one part of the test to another, from one task to another, and on different forms of the test?		
4. To what extent do characteristics of the expected response vary in an unmotivated way from ones part of the test to another, or on different forms of the test?		
5. To what extent do characteristics of the relationship between input and response vary in an unmotivated way from one part of the test to another, or in different forms of the test?		
<b>Construct validity</b>		
6. Is the language ability construct for this test clearly and unambiguously defined?		
7. Is the language ability construct for the test relevant to the purpose of the test?		
8. To what extent does the test task reflect the construct definition?		
9. To what extent do the scoring procedures reflect the construct definition?		
10. Will the scores obtained from the test help us to make the desired interpretations about test takers' language ability?		
<b>Possible sources of bias in the task characteristics</b>		
11. What characteristics of the test setting are likely to cause different test takers to perform differently?		
12. What characteristics of the test rubric are likely to cause different test takers to perform differently?		
13. What characteristics of the test input are likely to cause different test takers to perform differently?		
14. What characteristics of the expected response are likely to cause different test takers to perform differently?		
15. What characteristics of the relationship between input and response are likely to cause different test takers to perform differently?		



<b>Authenticity</b>		
16. To What extent does the description of the tasks in TLU domain include information about the setting, input, expected response, and relationship between input and response?		
17. To what extent do the characteristics of the test task correspond to those of TLU tasks?		
<b>Interactiveness</b>		
18. To what extent does the task presuppose the appropriate area or level of topical knowledge, and to what extent can we expect the test takers to have this area or level of topical knowledge?		
<b>Suitability of test tasks to the personal characteristics of the test takers</b>		
19. To what extent are the personal characteristics of the test takers included in the design statement?		
20. To what extent are the characteristics of the test tasks suitable for test takers with the specified personal characteristics?		
21. Does the processing required in the test task involve a very narrow range or a wide range of areas of language knowledge?		
<b>Involvement of language functions in the test tasks</b>		
22. What language functions, other than the simple demonstration of language ability, are involved in processing the input and formulating a response?		
<b>Involvement of the test takers' metacognitive strategies</b>		
23. To what extent are the test tasks interdependent?		
24. How much opportunity for strategy involvement is provided?		
<b>Involvement of test takers' affective schemata in responding to the test tasks</b>		
25. Is this test task likely to evoke an effective response that would make it relatively easy or difficult for the test takers to perform at their best?		
<b>Impact</b>		
<b>Impact on Individuals</b>		
Impact on test takers		
26. To what extent might the experience of taking the test or the feedback received affect characteristics of test takers that relate to language use (such as topical knowledge, perception of the target language use situation, areas of language knowledge, and use of strategies)?		
27. What provisions are there for involving test takers directly, or for collecting and utilizing feedback		

from test takers in the design and development of the test?		
28. How relevant, complete, and meaningful is the feedback that is provided to test takers?		
29. Are decision procedures and criteria applied uniformly to all groups of test takers?		
30. How relevant and appropriate are the test scores to the decisions to be made?		
31. Are test takers fully informed about the procedures and criteria that will be used in making decisions?		
32. Are these procedures and criteria actually followed in making the decisions?		
Impact on teachers		
33. How consistent are the areas of language ability to be measured with those that are included in teaching materials?		
34. How consistent are the characteristics of the test and test tasks with the characteristics of teaching and learning activities?		
35. How consistent is the purpose of the test with the values and goals of teachers and of the instructional program?		
<b>Impact on society and education systems</b>		
36. Are the interpretations we make of the test scores consistent with the values and goals of society and the education system?		
37. To what extent do the values and goals of the test developer coincide or conflict with those of society and the education system?		
38. What are the potential consequences, both positive and negative, for society and the education system, of using the test in this particular way?		
39. What is the most desirable positive consequence, or the best thing that could happen as a result of using the test in this particular way, and likely is this to happen?		
40. What is the least desirable negative consequence, or the worst thing that could happen as a result of using the test in this particular way, and how likely is this to happen?		
<b>Practicality</b>		
41. What type and relative amount of resources are required for: (a) the design stage, (b) the operationalization stage, and (c) the administration stage?		
42. What resources will be available for carrying out (a), (b), and (c) above?		

## Appendix B

Table of the types of tests adapted from Bachman (1990)

	<b>The criterion</b>	<b>Category/Type/Domain</b>	<b>Characteristics</b>	<b>instances of test types</b>
I	The purpose	In research	Comparing performance of learners	
		In education	Admission decisions	selection, entrance, readiness
			Identifying instructional level	placement, diagnostic
			Evaluating program's objectives and attainments	progress, achievement, attainment, mastery
II	The content	Based on theory of language proficiency	A set of language abilities	proficiency, placement, etc.
		Based on specific domain of contents	Such as a syllabus	achievement, progress
III	The frame of reference	Norm-referenced tests	Interpretation with regard to a norm group	language proficiency
		Criterion-referenced tests	Interpretation with regard to a criterion	achievement , diagnostic
IV	The scoring method	Subjective method	Scoring depends on the scorer decision	essays, etc.
		Objective method	Scoring depends on a predetermined clear cut criteria	multiple-choice items
V	The testing method	Varies according to the techniques they employ	Settings, materials, mediums, etc.	oral interviews, dictation, etc.





## Appendix D

Table of Reading Comprehension Tests Types Adapted from B. Heaton (1990, pp. 105–134)

	Category	Type	Purpose	Features or tasks
I	<b>Initial stages of reading: Matching tests</b>	Word matching	Word recognition	Test takers are given a word followed by a group of words, then they are required to underline the word in the group which is similar in form to the word on the left
		Sentence matching	Sentence recognition	It is the same as word recognition except that it deals with sentences
		Pictures and sentence matching	Sentence comprehension	Test takers are given pictures and one sentence or the opposite, then they are asked to match up the appropriate picture with the appropriate sentence.
II	<b>Intermediate and advanced stages of reading: Matching tests</b>	Type 1	Comprehension of definitions	Test takers are asked to link a dictionary definition to the appropriate shape
		Type 2	Comprehension of definitions	Test takers are asked to write the word from a text next to the suitable definition
		Type 3	Word recognition	Testees are given a diagram with its parts numbered and their task is to put the suitable words, extracted from a text, next the right parts
		Type 4	Phrase comprehension	Test takers are asked to link the paraphrase of a sentence with its original version in the text.
III	<b>True/false reading tests</b>	Type 1	Comprehension	Sentences are given to testees and asked to circle the suitable letter ( T for true and F for false)
		Type 2	Comprehension	A text followed by a number of statements are provided; the task of test takers is to determine the true statements and the false ones
IV	<b>Multiple choice items (A): short texts</b>	Type 1	Vocabulary meaning in text comprehension	Test takers are required to choose among several words the most appropriate one for a given context in a text.

		Type 2	Grammatical structure comprehension	The task is to identify the right paraphrase of a sentence in a set of four or five choices.
		Type 3	Text comprehension	Test takers have to choose one answer, among several ones, for a question asked about a text given before.
V	<b>Multiple choice items (B): Longer texts</b>	Type 1	Recognizing a specific feature in a text	It measures test takers' ability to recognize features in a text. For instance, test takers might be asked to determine the reference of a given pronoun in a text while they are given a number of choices.
VI	<b>Completion items (similar to open-ended questions)</b>	Type 1	Recalling (remembering)	The testees are asked to write a word or a short phrase in blank spaces in a text
		Type 2		The blank spaces to fill are in items following a text
VI	<b>Rearrangement items</b>	Type 1	The ability to understand a sequence of steps in a process or events	The testees are required to arrange jumbled sentences (put the letters of the sentences in the right order)
		Type 2		A reading text containing clues is provided for the testees so that to arrange the jumbled sentences by putting the letters in the right order.
VII	<b>Cloze procedure</b>	Type 1	Reading difficulty level of a text	Test takers are asked to fill in blank spaces in a passage. These later are deleted systematically unlike blank fill in tests in which words for deletion are chosen subjectively.
VIII	<b>Open-ended and miscellaneous items</b>	Type 2	Comprehension	This type of items is subjective, i.e the scoring system is subjective. Test takers are addressed questions which requires responses that may vary from one word to several sentences.
IX	<b>Cursory reading</b>	Type 1	Testing reading strategies	Reading quickly: the testees should receive a special training and preparation before taking speed reading tests
		Type 2		Skimming tests: test takers have to read a text and answer questions related to the major points in the passage.
		Type 3		Scanning tests: the questions are given first, and then the testees are required to look for specific information in a text

## Appendix E

Table of Tests of vocabulary Tests Types Adapted from (B. Heaton, 1990, pp. 51–63)

	Category	Type	Purpose	Features or tasks
<b>I</b>	<b>Multiple-choice item (A)</b> Give a word in context	Type 1	Word recognition	The stem is a picture
		Type 2	Word recognition	The stem is a definition
		Type 3	Word recognition	The stem is a lexical item
			Word recognition	The stem is a sentence
<b>II</b>	<b>Multiple-choice item (B)</b> provide only the context	Type 1	Word recognition	Only the context is provided
<b>III</b>	Sets (Associated words)	Type 1	Recognition	A list of words is provided and the odd word should be circled (the aim is that the familiarity with a range of associations is measured)
		Type 2	Production	Writing the word-related subject of a group of terms
<b>IV</b>	Matching items	Type 1	Appropriateness	Putting the correct word in the appropriate place in a paragraph
		Type 2	Appropriateness verb phrases	Completing sentences with phrasal verbs
		Type 3	Appropriateness verb phrases	Completing sentences with adverbs
		Type 4	Word knowledge	Looking for synonyms of words from a text; that is, it is based on reading comprehension
<b>V</b>	More objectives items	Word formation test items	Knowledge of word formation	Putting the correct form of the word
		Item involving synonyms	Production	Replacing a word with its synonym
		Rearrangement items	Writing ability and word meaning knowledge	Making up a word out of some letters and use it in a sentence
		Definitions	Writing ability and word meaning knowledge	Showing word meanings by using them in sentences
<b>VI</b>	Completion items	Type 1	Production	Completing incomplete words in a paragraph
		Type 2	Production	Filling in gaps in a dialogue



Envoyer ce formulaire 24 heures avant votre départ à :

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Si vous ne recevez pas d'e-mail de confirmation prendre contact avec votre chargé d'affaires

1 - Informations liées au déplacement - المعلومات المتعلقة بالسفر

1.1 - Informations sur le demandeur - تفاصيل عن الطالب

Nom - الاسم	Société - الشركة	Position - الوظيفة	Téléphone - الهاتف	Date - التاريخ
CHELHI Mohammed	GTG	ING GC TNF		11/03/2018

1.2 - Motif du déplacement - أسباب السفر :

visite du site dans le cadre de prise en fin d'un mission DICTER

1.3 - Description du déplacement - تفاصيل الرحلة

Trajet - مسار	De - موقع المغادرة	Date - تاريخ المغادرة	Heure - وقت المغادرة
Départ - الذهاب	ADRAR	13/03/2018	07 h 00
Arrivée - الوصول	OUED-ZINE	13/03/2018	08 h 00

1.4 - Détails du déplacement - تفاصيل الرحلة

Itinéraire - خط سير الرحلة	Date - تاريخ المغادرة	Heure - وقت	Itinéraire - خط سير الرحلة	Date - تاريخ المغادرة	Heure - وقت الوصول
ADRAR	13/03/2018	08 h 00	OUED-ZINE	13/03/2018	
OUED-ZINE	13/03/2018	17 h 00	ADRAR	13/03/2018	

Le responsable JMP du lieu de départ contacte le responsable JMP du lieu d'arrivée au départ du véhicule / Le responsable JMP de l'arrivée contacte le responsable JMP du départ à l'arrivée du véhicule

المسؤول عن الـ(JMP) في مكان الإقلاع يتصل بالمسؤول عن الـ(JMP) في مكان الوصول عند وصول السيارة. / المسؤول عن الـ(JMP) في مكان الوصول عند إقلاع السيارة. / المسؤول عن الـ(JMP) في مكان الإقلاع يتصل بالمسؤول عن الـ(JMP) في مكان الوصول عند وصول السيارة.

2 - Informations sur véhicule et chauffeur - السيارة/تفاصيل عن السائق

Immatriculation - رقم السيارة	Marque - الموديل	Nom chauffeur - اسم السائق	Chargement et transporteur - حمولة/شركة النقل
03453-112-01	HYUNDAI Accent	MAKHOULFI Abdelkrim	

3 - Noms des passagers - أسماء المسافرين

Nom - اسم العائلة	Prénom - الاسم	Position - الوظيفة	N° tél. - رقم الهاتف	Instructions - تعليمات
				Vérification du véhicule avant départ التحقق المركبة قبل المغادرة
				Véhicule, Kit de secours, Kit de survie, eau سيارة، معدات الطوارئ، والمعدات بقاء، الماء

Emergency Phones - Appel d'urgence - رقم هاتف الطوارئ

Gendarmerie - 1055 - الدرك الوطني

Police - 1548 - شرطة

Médecin - طبيب	ADRAR : 07 70 50 28 37	ODZ : 06 61 59 33 03	SIE : 06 60 40 29 53	OLC ODZ : 06 60 17 69 56

Instructions - تعليمات

Les Equipements de Protection Individuelle(EPI) sont obligatoires sur site, GTG interdit la circulation de nuit, Aucun départ ne sera autorisé après le coucher du soleil, vous serez appelé à rester sur site jusqu'à 6 heures du matin le jour suivant. Si un véhicule n'arrive pas sur site 1 heure après l'heure d'arrivée estimée, le demandeur de ce formulaire alerte le chef de base GTG.

يجب على جميع الزوار ارتداء معدات الحماية الشخصية (PPE). لا يوجد برنامج السفر الليلي عند شركة GTG. على جميع السيارات العودة بنصف الساعة قبل الغروب ولايسمح بالمغادرة بعد حلول الظلام ولكن يجب عليه البقاء في الموقع حتى الساعة السادسة صباحا لليوم التالي. إذا لم تصل السيارة في موعدها المحدد و بعد مرور (60) دقيقة سوف تجرى اتصالات مع المصدر.

Signature - امضاء

Demandeur - صاحب	Supérieur - المدير	Validation TouatGaz
CHELHI Mohammed		K. LAITHEM DOP.

ABIDA Hocine  
Groupement TOUATGAZ  
Assistant Sécurité Interne

11/03/18

## Appendix G

## استبيان

اعد هذا الاستبيان في اطار التحضير لشهادة الدكتوراه و هو يهدف الى دراسة و تحديد الحاجيات اللغوية الحقيقية للمهندسين المدنيين فيما يتعلق باللغة الانجليزية ضمن ما يسمى بتدريس اللغة الانجليزية بالأهداف ، وهذا من خلال تقييم الامتحان التشخيصي الذي اجري انفا. يرجى ملا الفراغات ، وضع اشارة ، او دائرة حول الاجابة عند الاقتضاء.

**للتذكير:** المعلومات الشخصية الواردة تعتبر سرية و لا تستعمل الا في حدود البحث العلمي.

## 1/المعلومات الشخصية

الجنس : ذكر / انثى : السن : سنة : التخصص و المستوى الجامعي :

## 2/ معيار الثبات

(1) هل كانت التعليمات المتعلقة بالتمارين واضحة؟

واضحة جدا ..... واضحة بعض الشيء ..... غير واضحة تماما .....

(2) كيف كانت التمارين بالنسبة اليك؟

سهلة جدا ..... في المتناول ..... صعبة .....

## 3/ معيار الصدق

(3) هل كان السؤال الواحد يقيس كفاءة لغوية واحدة؟

نعم او لا

## 4/ معيار الاصاله

(4) الى اي مدى يرتبط المحتوى اللغوي للامتحان بالهندسة المدنية؟

مرتبط كلياً ..... مرتبط جزئياً ..... غير مرتبط تماماً .....

(5) الى اي مدى يرتبط المحتوى اللغوي للامتحان باللغة الانجليزية العامة؟

مرتبط كلياً ..... مرتبط جزئياً ..... غير مرتبط تماماً .....

## 5/ معيار التفاعل

(6) الى اي مدى يعتبر هذا الامتحان التشخيصي مهم لطالب الهندسة المدنية؟

مهم جدا ..... مهم بعض الشيء ..... هم مفيد تماماً .....

(7) هل المحتوى او المضمون اللغوي للامتحان مفيد بالنسبة اليك؟

مفيد جدا ..... مفيد بعض الشيء ..... غير مفيد تماماً .....

## 6/ معيار التأثير

(8) هل اخبرتم مسبقا بهذا الامتحان التشخيصي؟

نعم او لا

(9) هل اخبرتم بهدف هذا الامتحان التشخيصي؟

نعم او لا

## 7/ معيار التطبيق العملي

(10) هل كان الوقت المتاح للامتحان كافيا ؟

نعم او لا

(11) هل كان جو الامتحان ملائماً ؟ ملائم جدا ..... مناسب ..... غير ملائم .....

## Appendix H

Book map of 1<sup>st</sup> year Middle school

Week	Grammatical Content
1	auxiliary: to be Personal pronouns : I/you possessive adjectives : My/your
2	auxiliary: to be Personal pronouns : I/you Hello. Nice/glad
3	auxiliary: to be Demonstrative pronouns : it/ this/ that Cardinal numbers (adjectives)
4	possessive adjectives: his / her prepositions: in/ from Where...from? To be in all forms
5	Auxiliary: to have Qualifiers: tall/ dark...
6	Numbers Personal pronouns :he/ she Articles a/an How.../ What...? To be in all forms
7	Auxiliaries : have/ be Personal pronouns
8	Prepositions of place: near/next, to/on the, right/left
9	The present simple Personal pronouns : we / they
10	Prepositions : at + time The present simple Ordinal numbers
11	The present simple tense (all forms)
12	The present simple tense Adverbs of Frequency
13	The present continuous tense
14	The future simple tense "will" (all forms)
15	The future simple tense Adjectives/pronouns (object) : me/us
16	The present simple tense Adjectives
17	The comparative of superiority
18	The Imperative

## Appendix I

Book map of 2<sup>nd</sup> year Middle school

Week	Grammatical Content
1	The present simple tense
	Adjectives
2	The past simple tense (regular/irregular verbs)
	Time references
3	The past simple tense + ago
4	The Genitive (" 's", "s' ")
	Whose
5	Can
	Could
	Possessive Pronouns
6/7	Prepositions
8	Demonstrative pronouns : these/those
	How much...?How many...?
8	Have got
	The Imperative
	Can/ Can't
9	How much/many...?
10	Some/ Any - a / an (countables)
	Must/ Mustn't
11	Should
12	Adverbs of manner
	The passive form
13	Do you...?
	Would you...?
	Going to?
14	How much...?
15	Which one/ ones...?
	The present perfect tense
16	The present perfect tense
17	Adverbs of frequency
18	The past simple tense
	Would you like ...?
16	Wh-questions

## Appendix J

Book map of 3<sup>rd</sup> year Middle school

Week	Grammatical Content
	To have / to be
	The present simple tense
	Qualifiers
	Linking words : but - and with qualifiers
	The relative pronouns (who/which)
	Auxiliary questions
	Wh-questions/ what is she like? what does she look like ?
	Would
	The modals : may/ could
	The present continuous tense with future meaning
	Wh-questions (review and expansions: How far...)
	Prepositions of movement (to show directions)
	Question word : How ( asking about means of transport)
	Prepositions of location
	Auxiliaries ( Do / will/ would )
	The imperative
	Should and must
	The past simple tense
	The past simple and the past continuous
	Time conjunctions (as/ when/ while)
	cause and effect conjunctions (so/ because/ as a result)
	the present perfect + since / for
	The passive voice ( is located/ bordered...)
	Prepositions of place (country/ location)
	The comparison : superiority/ equality / the superlative
	Interjection : what a ...!, How + adjective...!
	Which one/ ones...?
	The present perfect tense
	Adverbs of frequency
	The past simple tense
	Would you like ...?
	Wh- questions

## Appendix K

Book map of 4<sup>th</sup> year Middle school

Week	Grammatical Content
	The imperative
	Sequencers
	Tag questions
	Comparative and superlative of adjectives (Equality, Inferiority, Superiority)
	Can / Could/ May
	Can / Could/ Be able to/ May / Might
	Must/ Have to / Need
	Mustn't
	So/ Neither
	The future "will"
	Time clause (when/ while/ as soon as/ before/ after/ until / till)
	The present simple / the future tense (will)
	Conditional type 1
	Modals
	Auxiliaries
	The imperative
	The past simple
	Semi modal: used to
	Relative pronouns: who, which
	Conditional type 2
	Might/ Would/ Could
	If I were ...
	Might
	The past simple and continuous tense
	When/ While/ As
	The present perfect tense
	Present perfect/ past simple/ past continuous

## Appendix L

Book map of 1<sup>st</sup> year Secondary school

Unit	Sequence	Language Forms	
Unit 1: Getting Through	Sequence one	The imperative	
		Sequencers: first, next, etc.	
		Comparatives of adjective and adverbs prefer something to •something else, etc. in order to/so as to, etc.	
		Frequency adverbs: rarely/seldom...	
	Sequence two	Degree adverbs: very, quite,,etc.	
		Reflexive pronouns: myself...	
		Modals: have to/had to	
	Sequence three	Prepositions of time and place: in /in the north .../on /at	
		Link words: to/in order to ...	
	Sequence four	Neither ...nor I either...or	
		Definite and indefinite article	
		have to I had to...	
		from..to I until...	
Unit 3: Our Findings Show	Sequence one	Adjectives ending in '-ly'	
		Degree adverbs; quite/absolutely...	
	Sequence two	Direct/reported speech: S/he asked if/where/when/ what/where...	
	Sequence three	Quotation marks	
		Reporting verbs: suggested/ordered...	
		Direct/reported speech: orders/requests... Direct/reported speech transformations	
	Sequence four	Adverbs of manner Suffixes 'ful' /-'less	
		Punctuation and capitalisation	
		Adverbs of manner.	
	Unit 4:Eureka	Sequence one	Have you got any idea who ... ? Can you tell me who...?
Link words ; however, though , even though, etc .			
Sequence three		What is its height/width ..? How wide/deep is...? Preposition: in, with ... articles: the, a, an, etc. So + adjective +that future perfect	
		Sequence four	Relative pronoun: who, whom and which
			The imperative
Modal auxiliaries: should, shouldn't, etc.			
Unit 5: Back to nature		Sequence one	- If- conditional
		Sequence two	Link words; as a result, consequently, Sequencers; firstly, secondly...
	Sequence three		I think... I agree/ I disagree You're right... In my opinion Could/ can I...? Conditionals types 0,1 and 2 Suffixes; -able/-al...
		Sequence four	Quantifiers; all, some, a few, etc. Prefixes; il-, ir-, dis, etc.

## Appendix M

Book map of 2<sup>nd</sup> year Secondary school

Unit	Grammar
Unit 2 / Make peace	<ul style="list-style-type: none"> <li>- Modals can/ could</li> <li>- Verb idiom: was/ were able to/ will be able to/ has/have been able to</li> <li>- Modals: must/have to/ need to</li> <li>- Should have + past participle ...</li> </ul>
Unit 3 / Waste not Want not	<ul style="list-style-type: none"> <li>- The present simple passive</li> <li>- The past simple passive</li> <li>- The future simple passive</li> <li>The present perfect simple passive</li> <li>- The passive with modals: must, can, may and should</li> </ul>
Unit 4 / Budding Scientist	<ul style="list-style-type: none"> <li>- If-conditional: type zero</li> <li>- If-conditional: type one (revision)</li> <li>- The comparative adjectives (revision)</li> </ul>
UNIT6 : No man is an island	<ul style="list-style-type: none"> <li>- Reported speech (present perfect and the past simple)</li> <li>- Reported speech (present simple and future)</li> <li>- Reported speech (orders, requests ...)</li> <li>- Link words: for, since</li> <li>- Punctuation marks</li> </ul>



Appendix N  
Book map of 3<sup>rd</sup> year Secondary school

Unit	Grammar
Unit1: Gotten Gains never Prosper	<ul style="list-style-type: none"> <li>• present simple and present continuous passive ... (in describing)</li> <li>• should, ought to, had better + bare infinitive... (asking for and giving advice and warning)</li> <li>...had better...</li> <li>...had better not...</li> <li>• must, have to, mustn't... (expressing obligation and necessity)</li> <li>• due to, for, as, since, so + adjective + that, such + adjective + noun + that, so, as a result, consequently, thus. ... (expressing cause and result)</li> <li>...so + adj + that</li> <li>...such + noun phrase + that</li> <li>...so...</li> <li>...as a result...</li> <li>...as a consequence (consequently)...</li> <li>• as long as, provided that, providing that, if-conditional (type 2) ... (expressing condition)</li> <li>...will...providing that..</li> <li>...will...as long as...</li> <li>• verbs for expressing opinion (think, believe..-)</li> <li>• I wish, it's high time + subject + past simple and past perf... (expressing wish and desire)</li> <li>...wish...Ved..</li> <li>...wish...Would V..</li> <li>it's high time... Ved</li> <li>it's about time... Ved</li> </ul> <p><b>Word building</b></p> <p>Forming nouns from adjectives</p> <ul style="list-style-type: none"> <li>· Suffix -ty :</li> </ul> <p>E.g. honest – honesty, responsible – responsibility</p> <p>Forming opposites</p> <ul style="list-style-type: none"> <li>· Prefixes dis- il-</li> </ul> <p>E.g. legal – illegal, honest – dishonest, approve – disapprove</p>
Unit 2: Safety First	<p><b>Grammar</b></p> <ul style="list-style-type: none"> <li>• present simple ... (to describe a present state)</li> <li>• the gerund Ving,</li> <li>• because of, due to, owing to, as, for... (expressing cause and effect)</li> <li>• so, as a result, that's why, as a consequence... (expressing cause and effect)</li> <li>• may, might, can, could... (expressing possibility and remote possibility)</li> <li>may, may not, could, can</li> <li>will certainly, ... (expressing certainty)</li> <li>be probable... (expressing probability)</li> <li>• though, although, admittedly, etc. ... (expressing concession)</li> <li>• if-conditional (type 1 )... (expressing hypothesis or condition)</li> <li>• might have, must have... (expressing deduction)</li> <li>• too much , too many, not ... at all, a large amount of a large number of, enough + noun ... (expressing quantity)</li> <li>too few, too little</li> </ul> <p><b>Word Building</b></p> <ul style="list-style-type: none"> <li>• verb + preposition</li> </ul> <p>E.g. accuse X of Y</p> <ul style="list-style-type: none"> <li>- complain about X to Y</li> <li>- protect X from Y</li> <li>- provide X with</li> <li>- suffer from X</li> </ul> <p>for, about,</p>

	<ul style="list-style-type: none"> <li>forming adjectives with -y E.g. - greed – greedy, speed- speedy, milk – milky</li> </ul> <p>Forming nouns by adding suffixes to verbs :-er, -tion, -ing, -ment</p>
<p>Unit 3: It's a Giant Leap for Mankind</p>	<p><b>Grammar</b></p> <ul style="list-style-type: none"> <li>present simple with non- conclusive verbs E.g. see, believe, know, suppose ...</li> <li>Stative verbs, dynamic verbs</li> <li>what is it used for? ...(describing the functions of objects) - used for +verb+ing ...used for Ving... ...used to V...</li> <li>- How far/how big? ...(asking and answering questions about measurements ) Height, weight, tall, temperature, distance, area, speed, volume,</li> <li>think so, suppose so</li> <li>May+stem , might +stem modals and adverbs expressing probability : may, might, probably possibly, perhaps</li> <li>comparatives with short and long words : - adjective+er+than - more+adjective+than...(expressing superiority) - less + adj+than ...(expressing inferiority) - as+adj+as...(expressing equality) - while, whereas...(expressing contrast) - like, unlike, in contrast to</li> <li>if-conditional ...(making hypotheses / suppositions) if-conditional: type 2, suppose</li> </ul> <p><b>Word building</b></p> <ul style="list-style-type: none"> <li>forming nouns from nouns: E.g. science-scientist, - astronomy - astronomer</li> <li>forming nouns from verbs and adjectives :E.g. weigh ( v) weight (n), -hot (adj.) - heat (v and n)</li> <li>forming singular and plural nouns from verbs: E.g. believe (v) – belief (n. sing) -beliefs (n.pl.)</li> </ul> <p>Adjectives and adverbs Adjectives: remote (from) -distant (from) -near/close to -long -short - large. Adverbs: (travel, orbit, rotate) slowly / fast/ quick...</p>
<p>Unit 4: We are a Family</p>	<p><b>Grammar</b></p> <ul style="list-style-type: none"> <li>present simple</li> <li>enjoy / like / dislike + verb+ ing (gerund), - avoid + verb+ ing</li> <li>I'd rather do X. I'd rather do X than Y, I'd prefer X to Y</li> <li>should, ought to, if I were you asking for and giving advice (should, ought to) expressing obligation and necessity (must, mustn't, have to, don't have to)</li> <li>past simple, past perfect</li> <li>articles : omission before abstract nouns E. g anger, humour</li> <li>quantifiers: a lot of, a great deal of, few, little, some of us, all of us...(expressing quantity)</li> <li>each other, one another.(using reciprocal pronouns )</li> </ul> <p><b>Word building</b></p> <p>Forming adjectives from nouns with : -ous,- ful, -ic; E.g. courage – courageous, faith- faithful</p> <ul style="list-style-type: none"> <li>forming new words with self- E.g. self-centred</li> <li>forming nouns with -ness and -ty, E.g. kind – kindness...Loyal – loyalty</li> <li>forming verbs with -en, E.g.: Tight – tighten</li> </ul>

## Appendix O

### The Baccalaureate Exam Marks of CE students of the test sample

Number	Student's nickname	Mark/20
1	Ben mohamed Khadija	5.5
2	Amer Aicha	5.5
3	Dimane Nacira	5.5
4	Ben Ali Aicha	6.5
5	Bamoussa Fadila	7.0
6	Hamadi Aziza	7
7	Meftah Saliha	7.5
8	Daoudi Hicham	7.5
9	Lassri Amina	8.0
10	Darrar Abdellah	8.5
11	Ghani Fatma	8.5
12	Messadia Fatima Zohra	8.5
13	Khalil Ikram	9
14	Modjahed Abdalia	9
15	Saleh Salima	9.5
16	Idrissi fatma	10.5
17	Kadid Zeyneb	10.5
18	Djaber Fatima Zohra	11.0
19	Hadji Ahmed Saliha	11
20	Ben mabrouk Khadidja	11.5
21	Barrani Abdelghani	12.5

## Appendix P

### The Diagnostic test Marks of CE students of the test sample

Number	Student's nickname	Mark/93
1	Ben mohamed Khadija	43
2	Amer Aicha	43
3	Dimane Nacira	43
4	Ben Ali Aicha	42
5	Bamoussa Fadila	43
6	Hamadi Aziza	49
7	Meftah Saliha	45
8	Daoudi Hicham	51
9	Lassri Amina	57
10	Darrar Abdellah	34
11	Ghani Fatma	61
12	Messadia Fatima Zohra	48
13	Khalil Ikram	56
14	Modjahed Abdalia	54
15	Saleh Salima	41
16	Idrissi fatma	25
17	Kadid Zeyneb	42
18	Djaber Fatima Zohra	43
19	Hadji Ahmed Saliha	54
20	Ben mabrouk Khadidja	38
21	Barrani Abdelghani	54

## Appendix Q

## Test 01: Determiners

Put a tick ( ✓ ) in front of the correct phrases

**A**-----

1. An architects
2. An architect
3. Architect
4. A architect

**B**-----

1. A sun
2. An sun
3. The sun
4. Sun

**C**-----

1. A scissors
2. An scissors
3. Scissors

**D**-----

1. The roofs of the buildings
2. A roofs of the buildings
3. An roofs of the buildings
4. Roofs of the buildings

**E**-----

1. Adrar
2. An Adrar
3. The Adrar

**F**-----

1. This days
2. These days
3. That days
4. Those day

**G**-----

1. His office
2. He office
3. Him office
4. Hers office

## Appendix R

Table of Students' Scores in Test 1 (Determiners)

N°	How to express	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%
1	a noun in indefinite singular	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	5	23.81
2	a noun in definite singular	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	19	90.48
3	a noun in indefinite plural	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	1	0	0	0	0	7	33.33
4	a noun in definite plural	0	1	1	1	1	0	1	0	1	1	0	1	0	0	0	0	1	1	1	0	0	11	52.38
5	a proper noun	1	1	1	1	1	0	0	0	1	1	0	1	0	1	1	1	1	0	0	0	1	13	61.90
6	How to refer to particular things (demonstratives)	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	4	19.05
7	How to mention possession (possessive adjective)	0	0	0	0	1	1	0	1	1	1	1	0	0	0	1	0	0	0	0	0	1	8	38.10
<b>Total</b>		2	3	4	3	5	3	3	3	5	6	3	4	1	1	3	2	4	3	4	1	4	67	

NB: The numbers on the instruction row refer to students.

## Appendix S

## Test 02: Quantification of nouns

Put a tick ( ✓ ) in front of the correct phrases

**H**-----

1. A few information
2. An few information
3. A little Information
4. An little Information

**I**-----

1. Both student
2. Both an students
3. Both a students
4. Both students

**J**-----

1. Many companies
2. Much companies
3. Many company
4. Much company

**K**-----

1. Ten buildings
2. A ten buildings
3. Ten a buildings
4. Ten the buildings

## Appendix T

Table of Students' Scores in Test 2 (Quantification of nouns)

N°	The function	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%
1	quantification of uncountable nouns	0	1	1	1	0	1	0	0	0	1	0	1	0	1	1	0	0	0	1	0	0	9	42.86
2	quantification of countable nouns (a)	0	1	1	0	1	0	0	1	1	0	0	0	0	0	0	0	1	1	0	0	1	8	38.10
3	quantification of countable nouns (b)	1	1	1	0	1	0	0	1	1	0	0	1	0	1	1	0	0	1	1	0	0	11	52.38
4	an exact number of things	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4	19.05
<b>Total</b>		1	3	4	1	3	1	0	2	2	1	1	2	0	2	2	0	1	2	2	0	2	32	



## Appendix U

## Test 03: Adjectives

Put a tick ( ✓ ) in front of the correct phrases and sentences

**A**-----

1. An hard job
2. A job hard
3. A hard jobs
4. A hard job

**B**-----

1. A helpful program
2. A help program
3. A helping program

**C**-----

1. A horizon distance
2. A horizontal distance
3. A horizontally distance

**D**-----

1. Omar is intelligently.
2. Omar is intelligent.
3. Intelligent Omar is.

**E**-----

1. Laptops are good than desktops.
2. Laptops are much good than desktops.
3. Laptops are better than desktops.
4. Laptops are more good than desktops.

**F**-----

1. Amine is 18 years old. He is the youngest student in the class.
2. Amine is 18 years old. He is the younger student in the class.
3. Amine is 18 years old. He is the most young student in the class.

Appendix V  
Table of Students' Scores in Test 3 (Adjectives)

N°	How to	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%
1	describe a noun (adjectives in attributive position)	0	0	1	1	1	0	1	1	1	0	1	0	1	1	0	1	0	1	1	1	1	14	66.67
2	form an adjective (a)	0	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	5	23.81
3	form an adjective (b)	0	1	1	0	0	0	0	1	1	1	1	1	0	1	0	1	1	1	0	1	0	12	57.14
4	describe a noun (adjectives in predicative position)	0	1	1	1	1	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	17	80.95
5	express comparison	0	1	0	0	1	1	1	1	0	0	0	0	1	0	0	1	0	0	0	0	1	8	38.10
6	express uniqueness (using superlatives)	0	0	0	0	1	0	1	1	0	0	1	1	0	1	0	0	0	0	1	0	0	7	33.33
<b>Total</b>		0	3	4	2	5	2	4	5	3	2	3	4	3	4	0	4	2	3	4	3	3	63	

## Appendix W

## Test 04: Adverbs

Put a tick ( ✓ ) in front of the correct sentences

**A-----**

1. He speaks confidently.
2. He speaks confidence.
3. He speaks confident.

**B-----**

1. The operation goes well very.
2. The operation very goes well.
3. The operation goes very well.
4. The operation well goes very.

**C-----**

1. The dinner is very bad prepared.
2. The dinner is very prepared badly.
3. The dinner is very badly prepared.
4. The dinner is very prepared bad.

**D-----**

1. The car is moving unusual fast.
2. The car is moving unusually fast.
3. The car is unusual fast moving.
4. The car is unusually fast moving.

Appendix X  
Table of Students' Scores in Test 4 (Adverbs)

N°	How to form	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%
1	an adverb from an adjective	0	0	0	0	1	0	1	1	1	0	0	1	0	0	0	1	1	0	0	1	0	8	38.10
2	an adverb modifying an adjective	0	1	1	1	1	0	0	0	1	0	1	1	1	1	0	0	0	1	0	1	1	12	57.14
3	an adverb modifying another adverb (a)	0	1	0	0	1	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	5	23.81
4	an adverb modifying another adverb (b)	1	0	0	0	1	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	1	7	33.33
<b>Total</b>		1	2	1	1	4	2	1	2	2	1	1	2	1	1	2	1	2	1	0	2	2	32	

## Appendix Y

## Test 05: Using Tenses

**Part 01**

Put a tick (✓) in front of the correct sentences

**A-----**

1. Mohamed are an engineer.
2. Mohamed is an engineer.
3. Mohamed be an engineer.

**B-----**

1. Teachers has a meeting today.
2. Teachers had a meeting today.
3. Teachers have a meeting today.

**C-----**

1. Khaled were a student last year.
2. Khaled to be a student last year.
3. Khaled was a student last year.

**D-----**

1. Leila have a baby yesterday.
2. Leila has a baby yesterday.
3. Leila had a baby yesterday.

**E-----**

1. Latifa is writing now.
2. Latifa is write now.
3. Latifa are writing now.

**F-----**

1. An architect were presenting a project yesterday.
2. An architect are presenting a project yesterday.
3. An architect was presenting a project yesterday.

**G-----**

1. Eiffel is not an architect.
2. Eiffel does not an architect.
3. Eiffel be not an architect.

## Part 02

Put a tick ( ✓ ) in front of the correct sentences

### H-----

1. A flat does not have a yard.
2. A flat do not have a yard.
3. A flat does have not a yard.

### I-----

1. Is there a shortage of budget?
2. Does there a shortage of budget?
3. There is a shortage of budget?

### J-----

1. Does designers use Autocad?
2. Does designers used Autocad?
3. Do designers use Autocad?

### K-----

1. Samir does not revise his lessons yesterday.
2. Samir did not revised his lessons yesterday.
3. Samir did not revise his lessons yesterday.

### L-----

1. Did the Americans land on the moon in 1969?
2. Do the American land on the moon in 1969?
3. Does the American land on the moon in 1969?

Appendix Z  
Table of Students' Scores in Test 5 (Using tenses)

N°	How to use / express	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%	
1	present to express state (to be)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	18	85.71	
2	present to express state (to have)	0	0	1	1	1	1	0	1	0	0	1	1	0	1	0	1	1	1	1	0	0	12	57.14	
3	express a completed state in the past (to be)	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	17	80.95	
4	express a completed state in the past (to have)	1	1	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	1	7	33.33
5	express a progressive action at present	0	0	0	0	1	1	1	1	1	1	1	0	0	1	0	1	0	0	1	0	0	10	47.62	
6	express a progressive action in the past	0	0	0	0	1	1	0	1	1	1	1	0	0	0	0	0	0	0	1	0	0	7	33.33	
7	express negation (to be)	0	1	1	1	1	0	1	0	0	0	1	0	1	0	1	1	0	0	0	1	0	10	47.62	
8	express negation (to have)	0	0	1	0	1	1	0	0	1	0	0	0	1	1	1	0	1	0	0	1	0	9	42.86	
9	yes / no questions (to be)	0	0	0	0	1	0	0	1	0	1	1	0	0	0	0	0	0	0	1	0	0	5	23.81	
10	yes and no questions (lexical verbs)	1	1	0	1	1	0	0	1	0	0	0	0	1	0	1	1	0	1	0	0	0	9	42.86	
11	past negation (lexical verbs)	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	5	23.81
12	enquire about an action in the past	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	1	0	1	1	0	1	7	33.33	
13	present perfect	1	0	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	1	0	1	13	61.90	
14	present perfect in negative form	1	1	0	0	1	1	1	1	0	0	0	1	0	1	1	1	1	0	0	1	1	13	61.90	
15	future	1	1	1	1	1	0	0	0	1	0	1	1	0	0	1	1	1	0	0	1	1	13	61.90	
16	negative form	1	1	1	0	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	0	1	16	76.19	
17	enquire about future events	0	0	1	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	5	23.81
18	give instructions	0	1	0	0	1	1	0	0	0	0	1	0	0	0	1	1	1	0	1	0	1	9	42.86	
		6	8	9	8	16	13	7	10	11	6	10	6	6	10	7	11	9	6	10	7	9	185		

## Appendix AA

## Test 06: WH Questions

Fill in the blank space to form correct sentences

**A**-----

..... is in charge of the project management?

(why, what, who, when, where, how)

**B**-----

..... field do you study?

(why, what, who, when, where, how)

**C**-----

..... university did you come from?

(why, who, when, where, how, which)

**D**-----

..... do engineers carry out a soil test?

(what, who, how, which, whom)

**E**-----

..... tall is the Eiffel tower?

(what, where, when, who, how, which, whom)

**F**-----

..... does the academic year start?

(what, when, who, whose, which, whom)

**G**-----

..... do students live?

(why, what, where, who, whose, which, whom)



Appendix BB

Table of Students' Scores in Test 6 (WH questions)

N°	How to enquire	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%	
1	about a person as a subject	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4.76
2	about something as an object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	9.52	
3	about an object in a limited set of possibilities	0	1	1	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	5	23.81
4	about ways and methods	0	0	1	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	4	19.05
5	about the height of something	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	1	0	0	1	0	6	28.57	
6	about time	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	9.52
7	about locations	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	1	0	1	7	33.33	
<b>Total</b>		0	1	4	0	3	2	1	0	3	0	2	0	2	2	0	1	1	0	2	1	2	27		

## Appendix CC

### Test 07: Prepositions

Put the appropriate preposition.

#### A-----

- |   |                               |
|---|-------------------------------|
| 1. I met my husband ..... a party.        | التقيت بزوجي في حفل           |
| 2. Khaled put a ladder up ..... the wall  | وضع خالد السلم على الجدار     |
| 3. Lisa borrowed books ..... the library. | استعارت ليزا كتباً من المكتبة |

#### B-----

- |  |                        |
|--|------------------------|
| 1. Mohamed has been an engineer ..... 3 years. | محمد مهندس منذ 3 سنوات |
| 2. We have a lecture .....Sunday.              | لدينا محاضرة يوم الاحد |

#### C-----

- |   |                                 |
|---|---------------------------------|
| 1. We crossed the bridge ..... the river  | اجتزنا النهر عبر الجسر          |
| 2. Shall we go ..... the cinema tonight ? | هل نذهب الى قاعة السينما اليوم؟ |

#### D-----

- |   |   |
|---|---|
| 1. The pressure is determined ..... conducting a test | يحدد الضغط عن طريق اجراء<br>اختبار          |
| 2. The soil samples is used ..... laboratory tests    | تستخدم عينات التربة من اجل الفحص<br>المخبري |

#### E-----

- |                                     |                    |
|-------------------------------------|--------------------|
| 1. X is the number ..... variables. | س هو عدد المتغيرات |
|-------------------------------------|--------------------|

Appendix DD

Table of Students' Scores in Test 7 (Prepositions)

N°	How to express	Example	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%	
1	location	n° 01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	9.52	
		n° 02	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
		n° 03	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0			0
2	time	n° 01	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	4.76
		n° 02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
3	movement	n° 01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	9.52
		n° 02	0	0	1	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0		
4	means	n° 01	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2.38
		n° 02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5	consistence	n° 01	0	0	1	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5	23.81
<b>Total</b>			0	0	3	0	4	0	3	1	3	1	1	0	0	0	1	0	0	0	0	0	0	1	18	

## Appendix EE

## Test 08: The passive voice

Put a tick ( ✓ ) in front of the correct sentences

**A**-----

1. Radio waves are measure by kilohertz.
2. Radio waves measured by kilohertz.
3. Radio waves are measured by kilohertz.

**B**-----

1. The design were achieved yesterday.
2. The design was achieved yesterday.
3. The design was achieve yesterday.

**C**-----

1. The Net cable is being repaired now
2. The Net cable is repaired now
3. The Net cable being repaired now

**D**-----

1. A conference being held yesterday at 10:00.
2. A conference was be held yesterday at 10:00.
3. A conference was being held yesterday at 10:00.

**E**-----

1. A virus has detected recently.
2. A virus have been detected recently.
3. A virus has been detected recently.

**F**-----

1. A cement factory will built by 2019 in Adrar.
2. A cement factory will be build by 2019 in Adrar.
3. A cement factory will be built by 2019 in Adrar.

## Appendix FF

Table of Students' Scores in Test 8 (The passive voice)

N°	How to use the	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%	
1	passive voice of simple present	0	0	1	1	0	1	1	1	1	1	0	0	0	1	0	1	0	1	0	1	1	12	57.14	
2	passive voice of simple past	0	0	1	1	1	1	1	0	1	1	1	0	0	1	0	0	1	1	1	1	1	0	13	61.90
3	passive voice of present continuous	1	0	1	1	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	1	1	8	38.10
4	passive voice of past continuous	1	0	1	0	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	6	28.57
5	passive voice of present perfect	1	0	0	0	1	0	1	1	0	0	1	0	1	1	0	0	0	1	1	1	1	11	52.38	
6	passive voice of future	0	1	0	1	0	1	0	0	0	1	0	0	0	1	0	1	0	1	0	0	0	7	33.33	
<b>Total</b>		3	1	4	4	3	3	4	2	4	5	2	0	1	5	0	2	1	4	2	4	3	57		

## Appendix GG

## Test 09: Modals

Fill in the blank space to form correct sentences

**A-----**

The manager said that the engineer ..... take full responsibility for this failure.

- 1) should                      2) must                      3) have to

**B-----**

Students .....hand the homework today. They can do it tomorrow.

- 1) don't have to              2) shouldn't              3) mustn't

**C-----**

If you ..... my advice, you'll revise your lessons every day.

- 1) will be taking              2) will take              3) are taking              4) take

**D-----**

.....women learned about health skills, more babies and children survived.

- 1) Because,                      2) consequently              3) as a result

**E-----**

I wish .....civil engineering as a field of study      ليتني لم اختر تخصص الهندسة المدنية

- 1) did not chose              2) would not chose              3) had not chosen

**F-----**

I wish Adrar University ..... internationally ranked      امل ان اتصبح جامعة ادرار مصنفة دوليا

- 1) was                      2) had been                      3) would be

Appendix HH

Table of Students' Scores in Test 9 (Modal verbs)

N°	How to express	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%	
1	Obligation	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	1	1	0	1	0	1	8	38.10	
2	absence of obligation	1	1	0	1	0	1	0	1	1	0	0	1	0	1	0	0	0	0	0	1	1	1	11	52.38
3	condition	1	1	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	8	38.10
4	cause and result	0	0	0	0	0	0	1	1	0	1	1	1	0	0	1	0	0	1	0	1	1	9	42.86	
5	regret about the past	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	0	0	5	23.81	
6	desire	1	1	0	1	1	1	1	0	1	1	0	1	0	1	1	1	1	0	0	1	0	14	66.67	
<b>Total</b>		3	3	1	2	2	2	3	2	4	2	2	5	2	2	4	2	3	2	3	3	3	55		

## Appendix II

## Test 10: Pronouns

Put the appropriate pronouns to make correct sentences.

Khaled is genius —————> ... **He**..will win the exam (*he, she, him, her, his, hers*)

**A**-----

John is ill. —————> ..... is in the hospital. (*he, she, him, her, his, hers*)

**B**-----

I like cats. —————> Cats don't like ..... (*she, he, her, hers, its, it ,they, me*)

**C**-----

The car there is..... (*me, mine, I, you, they ,she ,he, it*)

**D**-----

..... is raining. (*there, it, the rain, the sky*)

**E**-----

That is the thief .....stole the diamonds? (*my, he, she, it, when, who, what, where*)



## Appendix JJ

Table of Students' Scores in Test 10 (Pronouns)

N°	How to refer to	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%	
1	the subject	1	1	1	1	0	1	1	0	1	1	0	0	1	1	1	1	1	0	1	1	0	15	71.43	
2	the object	1	0	1	0	0	1	1	1	1	1	0	1	1	1	1	1	1	0	1	0	1	15	71.43	
3	possession	0	1	0	0	0	0	1	0	1	0	0	1	1	0	1	0	1	0	0	0	1	8	38.10	
4	existence	1	1	0	0	1	0	0	1	0	0	1	1	0	0	1	0	1	0	0	0	0	8	38.10	
5	link two clauses together	0	1	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	8	38.10
Total		3	4	3	2	2	3	4	2	3	3	1	3	3	2	4	2	4	0	2	2	2	54		

## Appendix KK

## Test 11: Reading Comprehension

Which sentence (a or b) is similar in meaning to the main one (1)

1. I started revising for the exams last week.

a) I revised and started the exams last week.

b) Last week, I started to prepare for the exams.

-----

2. Khaled goes shopping.

a) Khaled has bags of shopping.

b) Khaled goes to the market.

-----

3. The person standing there is our teacher.

a) A person is standing there with our teacher.

b) The teacher is standing there.

-----

4. Samir likes playing football.

a) Samir is likely to play football.

b) Samir is fond of playing football.

-----

5. Students enter the public schools because they are free.

a) Students study in the public schools when they are free.

b) Students go to the public schools since they don't have to pay.

Appendix LL

Table of Students' Scores in Test 11 (Reading comprehension)

N°	Sentences	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%
1	sentence one	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	19	90.48
2	sentence two	1	1	1	1	0	1	1	0	0	0	0	0	0	1	0	1	1	0	1	1	0	11	52.38
3	sentence three	0	1	1	1	1	0	1	1	1	1	0	1	0	0	1	0	0	1	1	0	1	13	61.90
4	sentence four	1	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	0	1	0	1	0	7	33.33
5	sentence five	0	0	0	0	1	1	0	0	0	1	0	1	0	1	1	0	0	0	1	0	1	8	38.10
Total		3	3	3	3	3	3	3	2	2	4	0	4	1	3	4	3	2	3	4	3	2	58	55.24

---

Appendix MM  
Test 12: Vocabulary

Fill in the gaps with the appropriate words:

1) provided,    2) expected,    3) contributed,    4) a threat,    5) isolated.

1. Parents are ..... to pay for their child's school uniform and items of sports wear.
2. Smoking in school is not ..... from what goes in the streets and in the media.
3. Counterfeit medicines are ..... to health, and the risks they pose have been largely underestimated.
4. Education in the United States is ..... mainly by the government with control and funding.
5. Great civilizations of the past ..... some way or another to enhance the technical level of human communities.

Appendix NN

Table of Students' Scores in Test 12 (Vocabulary)

	<b>Vocabulary</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>Total</b>	<b>%</b>
1	example one	0	0	1	1	1	0	0	0	1	0	1	0	0	0	0	1	1	0	0	1	0	8	38.10
2	example two	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4.76
3	example three	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	4.76
4	example four	0	0	1	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	4	19.05
5	example five	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	4	19.05
<b>Total</b>		0	1	2	2	2	0	0	1	2	0	1	0	1	0	0	3	2	0	0	1	0	18	

## Appendix OO

## Test 13: Verb/Noun

Link each verb to the most suitable noun.

- |              |                |
|--------------|----------------|
| 1. celebrate | solutions      |
| 2. Drive     | books          |
| 3. Ride      | wars           |
| 4. Wage      | an anniversary |
| 5. Recommend | a horse        |
| 6. publish   | a car          |

## Appendix PP

Table of Students' Scores in Test 13 (Verb/Noun)

N°	Verbs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%
1	Instance one	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	3	14.29
2	Instance two	1	1	1	1	0	1	1	0	0	0	1	0	0	1	0	1	0	0	1	1	0	11	52.38
3	Instance three	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	3	14.29
4	Instance four	1	0	1	0	0	1	0	0	1	0	0	1	1	0	0	0	0	0	1	0	0	7	33.33
5	Instance five	0	1	1	0	1	0	0	0	0	1	1	1	0	1	0	0	1	0	0	0	1	9	42.86
6	Instance six	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	4.76
Total		2	2	3	1	2	2	1	1	2	1	2	2	3	2	1	2	1	0	2	1	1	34	

---

Appendix QQ  
Test 14: Adjective/Noun

Link each adjective to the most suitable noun.

- |                  |           |
|------------------|-----------|
| 1. sunny         | climate   |
| 2. handsome      | weapon    |
| 3. multinational | companies |
| 4. perpendicular | lines     |
| 5. nuclear       | day       |
| 6. tropical      | men       |



## Appendix RR

Table of Students' Scores in Test 14 (Adjective/Noun)

N°	Adjectives	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%
1	Instance one	0	1	1	0	0	0	1	1	0	1	1	0	1	1	0	1	0	0	0	0	0	9	42.86
2	Instance two	0	1	1	0	1	0	0	0	1	0	0	0	0	1	0	1	0	0	1	0	1	8	38.10
3	Instance three	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	5	23.81
4	Instance four	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4	19.05
5	Instance five	0	0	1	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	1	5	23.81
6	Instance six	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	9.52
Total		0	2	6	1	2	0	2	2	2	2	2	1	1	3	0	4	0	0	1	0	2	33	

Appendix SS

Test 15: Correcting Sentences

Correct the following two sentences

1. A students is studying yesterday morning.

.....

2. People can affects the future by practicing justice social

.....

Appendix TT

Table of Students' Scores in Test 15 (Correcting sentences)

N°	Sentences	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%	
1	Sentence 01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
2	Sentence 02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
<b>Total</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Appendix UU  
Test 16: Writing Sentences

Formulate a correct sentence.

1) to protect, the government, medicines, counterfeit, from, people, should.

.....

Appendix VV

Table of Students' Scores in Test 16 (Writing sentences)

N°	Sentence	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total	%
1	Sentence 01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	4.76
	<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	

## Appendix XX

## استبيان

اعد هذا الاستبيان في اطار التحضير لشهادة الدكتوراه و هو يهدف الى دراسة و تحديد الحاجيات اللغوية الحقيقية للمهندسين المدنيين خاصة فيما يتعلق باللغة الانجليزية ، وهذا بغية اقتراح برنامج دراسي ضمن ما يسمى باللغة الانجليزية للأهداف الخاصة. يرجى ملا الفراغات او وضع اشارة عند الاقتضاء.

**للتذكير:** المعلومات الشخصية الواردة تعتبر سرية و لا تستعمل الا في حدود البحث العلمي.

## 1/المعلومات الشخصية

الجنس :	السن :	سنة	التخصص:
المستوى الجامعي:	الوظيفة :	الهيئة المستخدمة :	

## 2/ دوافع اختيار الهندسة المدنية

(1) لماذا اخترت دراسة تخصص الهندسة المدنية؟

شعبي المفضلة ... فرص العمل متوفرة ... لأنه افضل اختيار متاح ... تلبية لرغبة الاولياء ...

(2) ما هي ميولك الوظيفية المستقبلية ؟ العمل في :

الوظيف العمومي ... استاذ جامعي ... مكتب دراسات او مخبر ... شركات انجاز محلية ... شركات اجنبية ...

## 3/ الكفاءات اللغوية (اللغات مع درجة اتقانها )

5) اللغة الانجليزية :

متواضع (.....)

حسن (.....)

جيد (.....)

4) اللغة الفرنسية:

متواضع (.....)

حسن (.....)

جيد (.....)

3) اللغة العربية:

متواضع (.....)

حسن (.....)

جيد (.....)

## 4/ دوافع و حوافز تعلم اللغة الانجليزية

(6) هل اللغة الانجليزية مهمة بالنسبة للهندسة المدنية ؟ نعم او لا

(7) هل تحضر دروس اللغة الانجليزية ؟ نعم او لا

(8) في حالة الاجابة بنعم هل هذا (حضور الدروس) يعود الى :

انها مادة اجبارية ... مهتم باللغة الانجليزية ... ان طريقة تدريسها ممتعة ...

(9) كيف تجد اللغة الانجليزية ؟ صعبة جدا ... صعبة ... في المتناول ... سهلة ...

(10) ما هو تصنيفك الشخصي لمستواك اللغوي الحالي؟

ضعيف ... دون المتوسط ... متوسط ... حسن ... جيد ...

(11) هل تحتاج اللغة الانجليزية في نشاطاتك الدراسية ؟ لا ... احيانا ... غالبا ... دائما ...

## 5/ المهارات و الاستراتيجيات التعليمية المتعلقة باللغة الانجليزية

12) رتب المهارات اللغوية حسب درجة اهميتها بالنسبة اليك:

الاستماع ... التكلّم ... القراءة ... الكتابة ...

13) رتب الفئات النحوية حسب درجة صعوبتها بالنسبة اليك:

الاسماء ... الافعال ... الصفات ... الادوات ...

14) ما هي اهم الصعوبات التي تواجهك في تعلم اللغة الانجليزية ؟

.....  
.....

## 6/ مضمون الدرس

15) ما هو رايبك في مضمون درس اللغة الانجليزية؟

مفيد و ينبغي تركه على ما هو عليه .... مفيد بعض الشيء .... غير مفيد على الاطلاق و ينبغي مراجعته ....

16) ما هي طبيعة النص الذي ينبغي ان يبني عليه درس اللغة الانجليزية؟

نص ادبي .... نص علمي حسب التخصص .... نصوص محادثة .... كل ما سبق ....

17) ينبغي استيعاء مواضيع المادة:

من المادة العلمية المتداولة .... مع مراعاة حاجياتنا المهنية المستقبلية .... بما يتوافق و التكنولوجيا الحديثة .... كل ما سبق ....

## 7/ مدرس اللغة الانجليزية

18) ما هو في رايبك الانسب لتدريس اللغة الانجليزية لطلبة الهندسة المدنية :

استاذ حائز على شهادة عليا في تخصص اللغة الانجليزية عموما ....

استاذ حائز على شهادة عليا في تخصص تدريس اللغة الانجليزية بالأهداف ....

استاذ حائز على شهادة عليا في الهندسة المدنية و يمتلك بعض القدرات في تخصص اللغة الانجليزية ....

## 8/ طريقة التدريس

19) ما هي الكيفية التي ترغب ان تكون بها طريقة التدريس؟

ليس لدي فكرة بالتحديد. ....

بالطريقة الكلاسيكية. ....

باستعمال الوسائط الاعلامية الحديثة. ....

بدمج الطريقتين : الطريقة الكلاسيكية و الوسائط الاعلامية الحديثة. ....

## 9/ الوسائل التعليمية للتدريس

20) ما هي انواع الوسائل التعليمية التي تقترح ان يوظف بها الدرس ؟

كتب ، اقرص ممغنطة مضغوطة ، ... الخ. ....

وسائل تحاكي وسط العمل مثل : المطبوعات ، دليل استعمال الاجهزة ... الخ. ....

وسائل مستخرجة من الشبكة العنكبوتية. ....

دمج مختلف الطرائق. ....

## Appendix YY

استبيان

يندرج هذا البحث ضمن التحضير لشهادة الدكتوراه و هو يهدف الى دراسة و تحديد الحاجيات اللغوية الحقيقية للمهندسين المدنيين خاصة فيما يتعلق باللغات الاجنبية و تحديدا اللغة الانجليزية ، و هذا بغية اقتراح برنامج دراسي ضمن ما يسمى باللغة الانجليزية للأهداف الخاصة.

**للتذكير:** المعلومات الشخصية الواردة تعتبر سرية و لا تستعمل الا في حدود البحث العلمي.

يرجى ملا الفراغات ،وضع دائرة حول الاجابة المناسبة ،او علامة عند الاقتضاء.

**1/المعلومات الشخصية**

الجنس : السن : سنة الشهادة :

الوظيفة : الهيئة المستخدمة :

**2/ الكفاءات اللغوية (اللغات مع درجة اتقانها ) : اشطب الخانة المناسبة**

(3) اللغة الانجليزية :

متواضع (.....)

حسن (.....)

جيد (.....)

(2) اللغة الفرنسية :

متواضع (.....)

حسن (.....)

جيد (.....)

(1) اللغة العربية :

متواضع (.....)

حسن (.....)

جيد (.....)

**3/ دوافع و حوافز تعلم اللغة الانجليزية :**

لا

او

نعم

(4) هل لك رغبة لتعلم اللغة الانجليزية ؟

(5) ما هو الحافز الذي يدفعك لتعلم الانجليزية ؟

.....  
.....

(6) رتب اللغات التي تعتمد عليها في الاطلاع على البحوث الصادرة حديثا حسب درجة اهميتها في ذلك.

..... اللغة العربية

..... اللغة الفرنسية

..... اللغة الانجليزية

(7) ما هي الوسيلة التي تعتمد عليها لفهم محتوى النصوص المحررة بالغة الانجليزية؟

..... اخمن المعنى بالتقريب فقط

..... استخدم المترجم الالي مباشرة

..... كل ما ذكر



- 8) هل تحتاج من حين الى اخر الى التحرير باللغة الانجليزية ؟  نعم او  لا
- 9) في اي مجال بالتحديد ؟ تحضير دروس للطلبة  تحضير مداخلات وطنية و دولية  تحرير مقالات للنشر

مجالات اخرى ( ما هي بالتحديد).....

10) ما هي الوسائل التي تستعملها فصد تحرير النصوص باللغة الانجليزية ؟

- برامج ترجمة مثبتة  برامج ترجمة فورية على الانترنت  الاستعانة بصديق

#### 4/ المهارات و الاستراتيجيات التعليمية المتعلقة باللغة الانجليزية :

11) رتب المهارات اللغوية حسب درجة اهميتها بالنسبة اليك :

- الاستماع  التكلم  القراءة  الكتابة

12) رتب الفئات النحوية حسب درجة اهميتها بالنسبة اليك :

- الاسماء  الافعال  الصفات  الادوات

13) ما هي اهم الصعوبات التي تواجهك في تعلم اللغة الانجليزية ؟

.....  
.....

#### 5/ مدى الاهتمام و التعلق بدراسة اللغة الانجليزية :

14) هل انت مستعد لتخصيص الوقت  نعم او  لا و المال :  نعم او  لا لتعلم اللغة الانجليزية ؟

15) ما هو ترتيب تعلم اللغة الانجليزية ضمن سلم اولوياتك اللغوية ( الاولى ، الثانية، الثالثة ،.....الخ)

16) ما هو تصنيفك الشخصي لمستواك اللغوي الحالي (اشطب الخانة المناسبة)؟

- ضعيف  دون المتوسط  متوسط  حسن  جيد

#### 6/ طريقة التدريس

17) ما هي الكيفية التي ترغب ان تكون بها طريقة التدريس ؟

- بالطريقة الكلاسيكية .....
- باستعمال الوسائط الاعلامية الحديثة.....
- بدمج الطريقتين : الطريقة الكلاسيكية و الوسائط الاعلامية الحديثة.....

#### 7/ وسائل التدريس

18) ما هي انواع الوسائل التعليمية التي تقترح ان يوظف بها الدرس ؟

- كتب ، اقرص ممغنطة مضغوطة ، الخ.....
- وسائل تحاكي وسط العمل مثل : المطبوعات ، دليل استعمال الاجهزة ، الخ.....
- وسائل مستخرجة من الشبكة العنكبوتية.....
- دمج مختلف الطرائق.....

## Appendix ZZ

## Tables of word clusters related to construction materials

- Table 1: Two word compositions

a) **noun + noun**

1	active silica	40	capillary tube	79	compression wood
2	aggregate content	41	capillary water	80	concrete beams
3	aggregate particle	42	carbon atoms	81	concrete blocks
4	aggregate surface	43	carbon content	82	concrete construction
5	aggregate type	44	carbon dioxide	83	concrete cover
6	air entrainment	45	carbon fibres	84	concrete masonry
7	alkaline environment	46	carbon glass	85	concrete matrix
8	aluminat cement	47	case study	86	concrete mix
9	aluminat phases	48	cast concrete	87	concrete strength
10	aluminium alloys	49	cavity wall	88	concrete structures
11	aramid fibres	50	cell cavity	89	concrete surface
12	aspect ratio	51	cell types	90	concrete technology
13	asphalt concrete	52	cellulose fibres	91	concrete units
14	asphalt mixture	53	cellulose molecule	92	concrete volume
15	binder content	54	cement content	93	conformity criteria
16	binder course	55	cement grains	94	constant stress
17	binder ratio	56	cement hydration	95	constituent materials
18	bitumen content	57	cement matrix	96	construction industry
19	bitumen globules	58	cement particles	97	construction material
20	bitumen grade	59	cement production	98	construction site
21	block length	60	cement replacement	99	coordination number
22	board materials	61	cement water	100	corrosion rate
23	bond strength	62	chain length	101	crack growth
24	bore dust	63	chain molecules	102	crack length
25	bound water	64	chain unit	103	crack propagation
26	bridge deck	65	Charpy impact	104	crack tip
27	brittle fracture	66	chloride content	105	creep behaviour
28	brittle materials	67	chloride ions	106	creep compliance
29	bulk density	68	clay brick	107	creep curve
30	bulk flow	69	clay masonry	108	creep rupture
31	calcium aluminat	70	clay units	109	creep strain
32	calcium carbonate	71	component materials	110	crystalline cellulose
33	calcium chloride	72	component parts	111	crystalline core
34	calcium hydroxide	73	composite action	112	crystalline structure
35	calcium oxide	74	composite material	113	cube strength
36	calcium sulphate	75	compound composition	114	cure adhesive
37	cambial cells	76	compression failure	115	degradation processes
38	capillary pores	77	compression strength	116	design codes
39	capillary porosity	78	compression test	117	design life

118	design methods	157	flow rate	196	load application
119	design process	158	flow table	197	load capacity
120	design purposes	159	flow test	198	magnesium oxide
121	diffusion coefficient	160	fly ash	199	masonry elements
122	diffusion process	161	fracture mechanics	200	masonry materials
123	dislocation movement	162	fracture toughness	201	masonry Part
124	distribution curve	163	furnace slag	202	masonry structures
125	drum mixer	164	gel coat	203	material properties
126	duplex beam	165	gel pores	204	materials science
127	efficiency factor	166	grain angle	205	matrix cracks
128	electromotive series	167	grain boundary	206	matrix material
129	energy input	168	grain direction	207	matrix strength
130	energy state	169	grain structure	208	metal surface
131	equilibrium diagrams	170	ground contact	209	mix proportions
132	equilibrium moisture	171	growth ring	210	mix water
133	equilibrium phase	172	Hatschek process	211	mixture design
134	exposure classes	173	heat output	212	mixture proportions
135	failure criterion	174	heat transfer	213	moisture change
136	failure load	175	hydration effects	214	moisture diffusion
137	failure mode	176	hydration products	215	moisture loss
138	failure rate	177	hydration reactions	216	moisture movement
139	failure strain	178	hydrogen bond	217	nickel sulphide
140	failure stress	179	hydrogen bonding	218	oven dry
141	fast fracture	180	hydrogen bonds	219	oxide proportions
142	fatigue failure	181	hydroxyl groups	220	oxygen atoms
143	fatigue line	182	impact energy	221	panel products
144	fibre architecture	183	impact loading	222	parenchyma cells
145	fibre array	184	impact resistance	223	parent metal
146	fibre composite	185	injection moulding	224	particle shape
147	fibre direction	186	insect attack	225	particle size
148	fibre length	187	intensity factor	226	penetration grade
149	fibre matrix	188	interlayer water	227	performance concrete
150	fibre orientation	189	iron oxide	228	pig iron
151	fibre strength	190	laboratory tests	229	polymer composite
152	fibre volume	191	life cycle	230	polymer fibres
153	fire resistance	192	lime glass	231	polypropylene fibres
154	fire tests	193	lime mortars	232	pore structure
155	flame retardants	194	limestone powder	233	pore water
156	float glass	195	limit state	234	power stations

235	pressure difference	273	strain rate	310	test piece
236	production process	274	strength characteristics	311	test results
237	proof stress	275	strength class	312	test specimen
238	pultrusion technique	276	strength data	313	timber products
239	reaction wood	277	strength development	314	timber structures
240	rebound number	278	strength gain	315	time dependent
241	replacement materials	279	strength loss	316	transition zone
242	ring porous	280	strength properties	317	transverse shrinkage
243	ring width	281	strength steel	318	trial mix
244	road structure	282	strength values	319	tunnel linings
245	road surface	283	stress concentration	320	unit area
246	rolled steel	284	stress distribution	321	unit cell
247	room temperature	285	stress level	322	unit volume
248	scrap steel	286	stress range	323	unit weight
249	secant modulus	287	stress relaxation	324	valence electrons
250	section sizes	288	stress theory	325	vapour interface
251	service conditions	289	sulphate attack	326	vapour permeability
252	shear modulus	290	superposition principle	327	vapour pressure
253	shear rate	291	surface course	328	void content
254	shear strain	292	surface energy	329	volume ratio
255	shear strength	293	surface finish	330	Waals forces
256	shear stress	294	surface layer	331	wall layers
257	Shell Bitumen	295	surface material	332	wall material
258	sieve analysis	296	surface tension	333	wall thickness
259	Sitka spruce	297	surface texture	334	water absorption
260	slump test	298	sustainability issues	335	water binder
261	soda lime	299	tangent modulus	336	water borne
262	sodium hydroxide	300	target mean	337	water content
263	sodium oxide	301	temperature range	338	water loss
264	sodium potassium	302	tensile forces	339	water molecules
265	softwood timber	303	tensile loading	340	water repellent
266	steel fibres	304	tensile strain	341	water soluble
267	steel production	305	tensile stress	342	water vapour
268	steel reinforcement	306	tension compression	343	wheel load
269	stone masonry	307	term strength	344	window frames
270	stone mastic	308	test conditions	345	yield point
271	strain curves	309	test methods	346	yield strength
272	strain hardening				

**b) adjective + noun**

347	alkali content	394	elastic constant	441	initial rate
348	ambient temperature	395	elastic deformation	442	initial set
349	aqueous solution	396	elastic modulus	443	initial value
350	atmospheric pressure	397	elastic properties	444	in-situ concrete
351	atomic lattice	398	elastic region	445	internal energy
352	atomic number	399	elastic response	446	internal strain
353	atomic structure	400	elastic strain	447	irreversible component
354	atomic weight	401	electric arc	448	large diameter
355	attractive appearance	402	electrical conductivity	449	larger pores
356	attractive forces	403	environmental impact	450	lesser extent
357	axial stress	404	experimental data	451	liquid vapour
358	basic oxygen	405	experimental results	452	liquid water
359	bituminous materials	406	external walls	453	local stress
360	bituminous mixture	407	fine aggregate	454	long chain
361	cementitious materials	408	flat glass	455	long term
362	characteristic strength	409	flexural strength	456	longitudinal axis
363	characteristic values	410	foreign atoms	457	longitudinal compression
364	chemical attack	411	free energy	458	longitudinal modulus
365	chemical composition	412	fresh mortar	459	longitudinal tangential
366	chemical modification	413	frost attack	460	low moisture
367	chemical processes	414	fungus attack	461	low permeability
368	chemical reaction	415	green state	462	low porosity
369	common metals	416	high binder	463	low strength
370	complex shapes	417	high consistence	464	low temperature
371	comprehensive text	418	high density	465	low tensile
372	compressive loading	419	high fibre	466	lower strength
373	compressive strength	420	high moisture	467	lower temperatures
374	compressive stress	421	high molecular	468	lower values
375	constant temperature	422	high performance	469	lower water
376	continuous phase	423	high pressure	470	marine structures
377	covalent bonds	424	high quality	471	mastic asphalt
378	critical length	425	high specific	472	maximum load
379	critical stress	426	high stiffness	473	maximum particle
380	critical value	427	high stress	474	maximum size
381	cross-sectional area	428	high temperature	475	maximum stress
382	crystal lattice	429	high tensile	476	mean value
383	crystal structure	430	high volume	477	mechanical properties
384	cubic structure	431	higher consistence	478	medium density
385	destructive tests	432	higher strength	479	microfibrillar angle
386	dimensional changes	433	higher stress	480	microscopic level
387	dimensional stability	434	higher temperatures	481	middle lamella
388	dry process	435	higher values	482	middle layer
389	dry state	436	hydraulic cement	483	mild steel
390	dry timber	437	important factor	484	molecular level
391	ductile material	438	individual cells	485	mortar beds
392	dynamic modulus	439	individual particles	486	mortar joints
393	elastic behaviour	440	individual phases	487	natural durability

488	natural fibre	526	resonant frequency	564	structural timber
489	natural sources	527	right angles	565	structural units
490	natural stone	528	rough surface	566	survival probability
491	normal concrete	529	secondary aggregates	567	tertiary reinforcement
492	normal density	530	secondary cell	568	theoretical strength
493	normal distribution	531	secondary reactions	569	thermal conductivity
494	normal strength	532	secondary wall	570	thermal degradation
495	normal temperatures	533	separate components	571	thermal energy
496	normal wood	534	short term	572	thermal expansion
497	open structure	535	significant quantities	573	thermal insulation
498	organic compounds	536	solid liquid	574	thermal properties
499	orthotropic laminate	537	solid solution	575	thermal shock
500	orthotropic materials	538	solid surface	576	thermoplastic composites
501	outermost shell	539	solid timber	577	thermoplastic polymer
502	permanent deformation	540	solid vapour	578	thermosetting polymers
503	physical properties	541	solid waste	579	thicker walls
504	plastic deformation	542	soluble salts	580	thin film
505	plastic flow	543	specific creep	581	thin sheet
506	plastic shrinkage	544	specific gravity	582	total aggregate
507	plastic viscosity	545	specific strength	583	total material
508	polymeric materials	546	stainless steel	584	total strain
509	porous asphalt	547	standard deviation	585	true stress
510	porous materials	548	state flow	586	Typical effects
511	pozzolanic reaction	549	steady state	587	typical values
512	primary aggregates	550	straight line	588	ultimate strength
513	primary reinforcement	551	structural applications	589	ultimate stress
514	principal axes	552	structural behaviour	590	ultimate tensile
515	principal material	553	structural components	591	ultrasonic pulse
516	principal stress	554	structural concrete	592	uniaxial tensile
517	pure metals	555	structural design	593	unidirectional laminate
518	quality control	556	structural element	594	vertical axis
519	raw material	557	structural engineering	595	viscoelastic behaviour
520	relative creep	558	structural features	596	viscoelastic creep
521	relative density	559	structural integrity	597	viscoelastic material
522	relative humidity	560	structural material	598	viscous flow
523	relative particle	561	structural member	599	viscous liquid
524	relative proportions	562	structural situations	600	ultra-high modulus
525	residual stress	563	structural steel		

	<b>c) ved + noun</b>		<b>d) ving + noun</b>		<b>e) adjective + ving</b>
601	absorbed water	641	alloying elements	673	covalent bonding
602	advanced polymer	642	bending strength	674	cyclic loading
603	annealed glass	643	bending stress	675	destructive testing
604	applied force	644	building blocks	676	in-situ recycling
605	applied load	645	building materials	677	multiple cracking
606	applied stress	646	buildings Part		<b>f) noun + ving</b>
607	bordered pit	647	changing moisture	678	aggregate grading
608	chopped strand	648	cracking pattern	679	air entraining
609	crushed rocks	649	cracking region	680	asphalt recycling
610	distorted grain	650	drying shrinkage	681	civil engineering
611	elevated temperature	651	engineering applications	682	filament winding
612	embedded steel	652	engineering materials	683	load bearing
613	embodied carbon	653	grading curves	684	sulphate resisting
614	embodied energy	654	icing agent	685	water reducing
615	fired clay	655	icing salts	686	wheel tracking
616	foamed concrete	656	increasing moisture	687	wood destroying
617	graded aggregate	657	increasing rate		<b>Verb Noun</b>
618	hardened cement	658	increasing strain	688	epoxy resin
619	hardened concrete	659	increasing strength		
620	hardened mortar	660	increasing temperature		
621	hardened properties	661	loading conditions		
622	hindered adsorption	662	loading time		
623	hydrated cement	663	manufacturing process		
624	hydrated lime	664	melting point		
625	laminated glass	665	melting temperature		
626	limited range	666	mixing plant		
627	marked influence	667	reinforcing steel		
628	marked reduction	668	retaining walls		
629	mixed concrete	669	setting time		
630	oriented strand	670	softening point		
631	packed direction	671	testing concrete		
632	recycled aggregate	672	testing fresh		
633	recycled asphalt				
634	recycled concrete				
635	reinforced cement				
636	reinforced concrete				
637	reinforced polymer				
638	saturated concrete				
639	toughened glass				
640	unhydrated cement				

Table 2: Three word compositions

	<b>a) noun + noun + noun</b>		<b>h) adjective + noun + noun</b>
1	water cement ratio	39	low water cement
2	fibre saturation point	40	stress strain behaviour
3	fibre volume fraction	41	civil engineering industry
4	Shell Bitumen Handbook	42	civil engineering structures
5	calcium silicate hydrate(s)	43	high strength concrete
6	masonry units determination	44	internal strain energy
7	penetration grade bitumens	45	critical stress intensity
8	stress strain relationship	46	free water cement
9	brick development association	47	free water content
10	calcium hydroxide crystals	48	freeze thaw damage
11	equilibrium phase diagram	49	lower water cement
12	fibre matrix interface	50	normal density aggregates
13	glass transition temperature	51	plastic shrinkage cracking
14	particle size distribution	52	high molecular weight
15	stone masonry units	53	high tensile strength
16	alkali silica reaction	54	low moisture contents
17	calcium silicate units	55	maximum aggregate size
18	coarse aggregate particles	56	normal strength concrete
19	polymer composite materials	57	relative particle density
20	Portland cement concrete	58	secondary cell wall
21	Stress strain behaviour		<b>i) number- noun+noun</b>
22	wheel tracking test	59	zero moisture content
	<b>b) noun + ving noun</b>	60	two-way drainage
23	sulphate resisting Portland	61	28-day strength
	<b>c) noun + ved + noun</b>		<b>j) adjective + adjective + noun</b>
24	wood based panels	62	longitudinal radial plane
25	ground granulated blast	63	hot rolled asphalts
26	fibre reinforced plastic	64	longitudinal tangential plane
27	fibre reinforced polymers	65	heat strengthened glass
28	water borne preservatives	66	mechano-sorptive behaviour
29	glass reinforced cement		<b>k) adjective + ved + noun</b>
	<b>d) ving + noun + noun</b>	67	hot rolled asphalt
30	increasing moisture content	68	close-packed direction
31	testing fresh concrete		<b>l) adverb + adjective + noun</b>
32	changing moisture content	69	cross sectional area
33	resisting Portland cement	70	high moisture contents
	<b>e) prefix - noun + noun</b>		<b>m) prefix-adjective + noun</b>
34	post-cracking behaviour	71	ultra-high modulus
35	pre-stressed concrete	72	mechano-sorptive creep
36	Self-compacting concrete		<b>n) noun + noun + ved</b>
	<b>f) ved + ved + noun</b>	73	glass fibre reinforced
37	autoclaved aerated concrete		
	<b>g) ving + noun + noun</b>		
38	building research establishment		



Table 3: Four word compositions

<b>a) adjective + noun + noun + noun</b>		<b>e) adjective + ved + noun + noun</b>	
1	critical fibre volume fraction	7	hot rolled asphalt mixtures
2	critical stress intensity factor	<b>f) prefix-adjective + adjective + noun</b>	
3	equivalent Portland cement mix	8	non-linear viscoelastic behaviour
<b>b) noun + noun + noun + noun</b>		<b>g) adjective + adjective + noun + noun</b>	
4	time-temperature superposition principle	9	small clear test pieces
<b>c) noun + noun + ved + noun</b>		<b>h) noun + ving + noun + noun</b>	
5	glass fibre reinforced plastic	10	sulphate-resisting Portland cement
<b>d) adjective + adjective + ved + noun</b>			
6	hexagonal close-packed structure		

## Appendix AAA

Tables of word clusters related to Geotechnical Engineering

Table 1: Two word compositions

a) **noun + noun**

1	void ratio	50	shear force	97	strength mobilization
2	ground surface	51	Silica sheet	98	stress path
3	plasticity index	52	soil backfill	99	strut loads
4	soil mass	53	soil wedge	100	swell index
5	soil solids	54	cone penetration	101	time factor
6	clay particles	55	discharge velocity	102	waste disposal
7	soil specimen	56	force polygon	103	water content
8	soil mechanics	57	line load	104	water Solid
9	clay soil	58	test equipment	105	boundary conditions
10	sheet pile	59	clay liner	106	cell pressure
11	laboratory test	60	compaction effort	107	construction site
12	soil element	61	filter material	108	continuity equation
13	clay minerals	62	group symbols	109	earthquake acceleration
14	stability coefficients	63	liner system	110	earthquake forces
15	soil sample	64	pore pressure	111	exploration program
16	particle size	65	stability number	112	flight augers
17	stability analysis	66	strip load	113	foundation material
18	failure wedge	67	capillary tube	114	group name
19	clay specimen	68	clay Figure	115	influence chart
20	shrinkage limit	69	composite liner	116	lap seam
21	wall friction	70	drainage path	117	leak detection
22	earth dam	71	flow rate	118	liquidity index
23	sieve analysis	72	hydrometer analysis	119	oxygen atoms
24	head difference	73	layer Figure	120	particle orientation
25	sand silt	74	load increment	121	quartz sand
26	compression index	75	sand drains	122	reaction series
27	percent finer	76	sand layer	123	rebound curve
28	pressure diagram	77	shear box	124	rock cycle
29	compaction curve	78	slope angle	125	rock layer
30	earth slopes	79	strip footing	126	sand cone
31	soil pat	80	toe circles	127	sand grains
32	flow channel	81	uniformity coefficient	128	settlement profile
33	preconsolidation pressure	82	wall tube	129	shear resistance
34	flow line	83	Atterberg limits	130	Shelby tube
35	shear displacement	84	chamber pressure	131	size limits
36	soil exploration	85	compaction energy	132	slope stability
37	head permeability	86	cone method	133	soil column
38	soil type	87	dial gauge	134	soil compaction
39	contact pressure	88	downstream side	135	soil cylinder
40	soil profile	89	field compaction	136	soil grains
41	stress condition	90	flow conditions	137	soil properties
42	trial failure	91	load application	138	stem augers
43	water level	92	midpoint circle	139	subsoil conditions
44	axial strain	93	point load	140	test borings
45	compaction test	94	pressure range	141	test specimen
46	consolidation curve	95	sea level	142	waste material
47	cut slope	96	slip planes	143	square footing
48	group index	97	solid particles	144	column footing
49	roller passes	98	solid waste		

## b) adjective Noun

145	vertical stress	184	double layer	223	cohesionless soils
146	specific gravity	185	Relative density	224	common types
147	cohesive soil	186	sandy clay	225	dry weight
148	sandy soil	187	total volume	226	effective dimensions
149	relative density	188	vertical direction	227	effective size
150	clayey soil	189	average degree	228	empirical relationship
151	permeable layer	190	average value	229	equal spheres
152	hydraulic gradient	191	Dry sand	230	experimental results
153	passive force	192	horizontal line	231	fine sand
154	limit test	193	Impervious layer	232	finite slope
155	shallow foundation	194	moist soil	233	flexible area
156	soft clay	195	plastic equilibrium	234	free surface
157	void spaces	196	rectangular area	235	granular material
158	logarithmic spiral	197	relative compaction	236	graphic construction
159	elastic settlement	198	critical height	237	high plasticity
160	tensile crack	199	dimensional consolidation	238	homogeneous soil
161	equipotential lines	200	hollow stem	239	infinite slope
162	Plastic limit	201	horizontal direction	240	Intrusive Coarse
163	steady state	202	negative charge	241	laminar flow
164	active case	203	normal forces	242	linear relationship
165	compactive effort	204	radial line	243	loose sand
166	dry density	205	schematic diagram	244	lower portion
167	lateral pressure	206	trial wedges	245	metric tons
168	organic content	207	atmospheric pressure	246	mineral grains
169	slope failure	208	axial stress	247	minimum factor
170	critical circle	209	dry side	248	natural state
171	frictionless wall	210	dry soil	249	organic soils
172	active pressure	211	dynamic compaction	250	peak shear
173	effective pressure	212	English units	251	Permeable layer
174	Impermeable layer	213	hazardous waste	252	regular intervals
175	passive pressure	214	low plasticity	253	removal system
176	dense sand	215	metamorphic rock	254	rigid foundation
177	granular backfill	216	minimum dry	255	smooth curve
178	passive state	217	secondary consolidation	256	total force
179	right angles	218	Typical values	257	total head
180	active state	219	undrained condition	258	total rate
181	ordinary method	220	vertical pressure	259	total settlement
182	ultimate load	221	average height	260	undrained cohesion
183	critical surface	222	blue clay		

<b>c) ved + noun</b>		<b>d) ving + noun</b>	
261	saturated soil	278	preceding equation
262	undrained shear	279	vibrating unit
263	compacted clay	280	drilling rod
264	unconfined compression	281	bearing plate
265	loaded area	282	molding moisture
266	overconsolidated clay	283	shearing resistance
267	saturated clay	284	bracing systems
268	undrained test	285	engineering problems
269	compacted soil	286	engineering purposes
270	layered soil	287	sliding surface
271	braced cuts	<b>e) adjective + ving</b>	
272	drained test	288	geotechnical engineering
273	Unified system	289	chemical weathering
274	perforated pipes	290	civil engineering
275	braced wall	<b>f) noun + ved</b>	
276	drained angle	291	soil retained
277	modified failure		

Table 2: Three word compositions

a) noun + noun + noun		b) adjective + noun + noun	
1	pore water pressure	37	active earth pressure
2	average shear stress	38	actual failure surface
3	unified soil classification	39	critical failure surface
4	deviator stress application	40	direct shear test
5	earth pressure coefficient	41	dry unit weight
6	earth pressure distribution	42	Environmental Protection Agency
7	excess pore water	43	flexible circular area
8	field load tests	44	general shear failure
9	Gibbsite sheet Silica	45	general wedge theory
10	grain size distribution	46	granular drainage layer
11	head permeability test	47	liquid limit device
12	highway research board	48	local shear failure
13	laboratory consolidation test	49	mean grain size
14	laboratory test results	50	moist unit weight
15	lateral earth pressure	51	national research council
16	leachate collection system	52	native foundation soil
17	Mohr Coulomb failure	53	normal stress shear
18	particle size distribution	54	permeable soil layer
19	plate load test	55	potential failure surface
20	pore water pressure	56	primary consolidation settlement
21	Rankine active force	57	primary leachate collection
22	vertical stress increase	58	standard penetration number(s)
23	rest earth pressure	59	standard penetration tests
24	shear strength Figure	60	standard Proctor test
25	shear strength parameters	61	thick clay layer
26	size distribution curve	62	total stress failure
27	soil classification system	63	total stress Mohr
28	soil friction angle	64	total stress pore
29	split spoon sampler	65	unconfined compression strength
30	state university ames	66	unconfined compression test
31	stress failure envelope	67	undrained shear strength
32	stress pore water		
33	transportation research board		
34	trial failure surface		
35	unit weight Moisture		
36	vane shear test(s)		

<b>c) adjective + adjective + noun</b>		<b>d) ving + noun + noun</b>	
68	effective normal stress	84	bearing capacity equation
69	effective overburden pressure	85	bearing capacity factors
70	effective stress failure	86	bearing capacity failure
71	effective stress Mohr	87	falling head permeability
72	equivalent hydraulic conductivity	88	resisting shear stress
73	fine grained soil(s)	89	scanning electron micrograph
74	gross allowable load	<b>e) adverb + adjective + noun</b>	
75	major principal plane	90	cross sectional area
76	major principal stress	91	uniformly distributed load
77	maximum dry unit	<b>f) ved + noun + noun</b>	
78	minor principal stress	92	curved failure surface
79	optimum moisture content	93	modified failure envelope
80	passive earth pressure	94	modified Proctor test
81	total active force	95	saturated unit weight
82	undrained triaxial tests		
83	vertical back face		

Table 3: Four word compositions

	<b>a) adjective + noun + noun + noun</b>		<b>g) noun + noun + noun + noun</b>
1	active earth pressure coefficient	22	grain size distribution curve
2	consolidated undrained triaxial test	23	highway research board national
3	dry unit weight moisture	24	particle size distribution curve
4	effective stress failure envelope	25	stress pore water pressure
5	impermeable layer sheet pile	26	unit weight moisture content
6	national research council Washington	27	water pressure increase effective
7	passive earth pressure coefficient	28	excess pore water pressure
8	plasticity index liquid limit		<b>h) adjective + adjective + noun + noun</b>
9	porous stone soil specimen	29	maximum dry unit weight
10	primary leachate collection system	30	maximum effective past pressure
11	rest earth pressure coefficient	31	minimum dry unit weight
12	single clay liner system	32	present effective overburden pressure
13	solid waste disposal sites		<b>i) adverb + adjective + noun + noun</b>
14	total stress failure envelope	33	normally consolidated clay layer
15	unified soil classification system	34	normally consolidated clay specimen
	<b>b) ved + adjective + noun + noun</b>		<b>j) ved + ved + adjective + noun</b>
16	corrected standard penetration numbers	35	consolidated drained triaxial test
17	drained direct shear test		<b>k) ved + noun + noun + noun</b>
18	loaded flexible circular area	36	constant head permeability test
	<b>c) noun + adjective + noun + noun</b>		<b>l) ving + noun + noun + noun</b>
19	board national research council	37	falling head permeability test
	<b>d) adjective + adjective + adjective + noun</b>		<b>m) adverb + ved + adjective + noun</b>
20	unconsolidated-undrained triaxial tests	38	uniformly loaded flexible circular
	<b>e) adjective + noun + ving + noun</b>		
21	ultimate soil bearing capacity		

## Appendix ZZ

## Tables of word clusters related to Structural Engineering

Table 1: Two word compositions

## a) noun + noun

1	analysis methods	45	floor load	88	reaction force
2	analysis procedure	46	floor plan	89	redundant force
3	analysis software	47	floor slab	90	roller support
4	approximate methods	48	footing area	91	roof structure
5	arch bridge	49	force components	92	sag profile
6	arch geometry	50	force diagrams	93	sag ratio
7	arch structure	51	force distribution	94	service load
8	beam segment	52	force envelope	95	shear deformation
9	beams columns	53	force influence	96	shear diagram
10	bottom chord	54	force matrices	97	shear moment
11	bridge system	55	force quantity	98	shear walls
12	cable areas	56	force redundant	99	sign convention
13	cable geometry	57	force vector	100	software package
14	cable tension	58	frame structure	101	soil backfill
15	cantilever beam	59	friction force	102	Solution Case
16	case study	60	gable frame	103	Solution Part
17	chord members	61	gravity load	104	solution procedure
18	chord rotation	62	gravity loading	105	span length
19	column load	63	ground acceleration	106	spring forces
20	conjugate beam	64	ground motion	107	steel frame
21	deck slab	65	hand computation	108	steel reinforcement
22	deflection computation	66	inertia force	109	stiffness distribution
23	design code	67	inflection point	110	stiffness elements
24	design moments	68	influence line	111	stiffness factors
25	design values	69	lateral loading	112	stiffness matrices
26	direction cosines	70	load capacity	113	stiffness method
27	displacement components	71	mass distribution	114	story stiffness
28	displacement constraints	72	matrix form	115	support movement
29	displacement measures	73	matrix notation	116	support settlement
30	displacement method	74	matrix operations	117	symmetry axis
31	displacement patterns	75	maximum tension	118	system matrices
32	displacement profile	76	member equations	119	transverse direction
33	displacement quantities	77	member force	120	transverse shear
34	displacement relations	78	member matrices	121	truss member
35	displacement restraints	79	member properties	122	truss structure
36	displacement variables	80	member truss	123	unit force
37	distribution details	81	members incident	124	unit load
38	distribution factors	82	moment summation	125	unit moment
39	Engineering Mechanics	83	moment values	126	unit value
40	engineering process	84	plan view	127	wall structures
41	equilibrium conditions	85	plane truss	128	wind load
42	fabrication error	86	property line	129	wind velocity
43	flexibility coefficients	87	Rankine theory	130	zero bending
44	floor beams				



**b) adjective + noun**

131	Actual forces	172	indeterminate trusses	213	right segment
132	Actual structure	173	individual frame	214	rigid frame
133	analytical solution	174	individual members	215	simultaneous equations
134	arbitrary point	175	inelastic deformation	216	single plane
135	axial load	176	initial instability	217	single span
136	axial member	177	interior column	218	single story
137	axial shear	178	interior supports	219	slender beams
138	axial stiffness	179	internal force	220	spectral acceleration
139	centroidal axis	180	lateral displacement	221	straight member
140	civil structures	181	lateral load	222	straight segments
141	complex truss	182	left segment	223	structural analysis
142	compound trusses	183	left support	224	structural components
143	computational effort	184	local frame	225	structural design
144	critical location	185	longitudinal axis	226	structural elements
145	diagonal members	186	longitudinal direction	227	structural engineer
146	direct stiffness	187	maximum moment	228	structural engineering
147	discrete point	188	minimum values	229	structural members
148	elastic behavior	189	negative curvature	230	structural response
149	equilibrium analysis	190	negative moment	231	structural system
150	equilibrium considerations	191	negative values	232	symmetrical frame
151	exterior column	192	nodal displacement	233	symmetrical function
152	external forces	193	nodal loads	234	symmetrical structure
153	external loading	194	normal force	235	torsional moment
154	external loads	195	numerical integration	236	total integral
155	external nodal	196	optimal shape	237	tributary areas
156	extreme values	197	parabolic arch	238	Typical floor
157	free stream	198	parabolic member	239	unbalanced moment
158	general solution	199	peak pressures	240	unbalanced nodal
159	global equilibrium	200	peak value	241	uniform load
160	global frame	201	planar structure	242	uniform loading
161	horizontal cable	202	planar truss	243	vertical deflection
162	horizontal component	203	Portal method	244	vertical direction
163	horizontal deflection	204	positive sense	245	vertical displacement
164	horizontal displacement	205	possible moment	246	vertical forces
165	horizontal force	206	Primary structure	247	vertical load
166	horizontal load	207	prismatic member	248	vertical reaction
167	horizontal projection	208	relative displacement	249	vertical restraints
168	horizontal reaction	209	relative rotation	250	virtual displacement
169	horizontal thrust	210	relative stiffness	251	virtual moment
170	idealized model	211	resultant force	252	Virtual Work
171	indeterminate beams	212	return period	253	first story

	<b>c) ving + noun</b>		<b>e) ved + noun</b>		<b>f) adjective + ving</b>
254	bending action	279	applied load	298	arbitrary loading
255	bracing system	280	braced frame	299	extreme loading
256	corresponding displacement	281	concentrated load	300	live loading
257	corresponding forces	282	curved beam	301	planar bending
258	corresponding moment	283	curved member	302	planar loading
259	corresponding values	284	deflected shape	303	qualitative reasoning
260	cutting plane	285	desired displacement	304	single footing
261	flooring system	286	distributed load	305	static loading
262	loading conditions	287	factored load	306	symmetrical loading
263	loading Solution	288	fixed support	307	transverse loading
264	remaining steps	289	inclined cable	308	vertical cutting
265	resulting structure	290	inclined chord		<b>g) noun + ved</b>
266	retaining wall	291	partitioned form	309	load applied
267	Summing forces	292	partitioned row		<b>h) ved + ving</b>
268	summing moments	293	prescribed support	310	applied loading
	<b>d) noun + ving</b>	294	reinforced concrete	311	combined footing
269	dead loading	295	required area	312	distributed loading
270	design loading	296	scaled version		
271	floor loading	297	stayed structures		
272	forces acting				
273	frame building				
274	ground shaking				
275	lane loading				
276	pattern loading				
277	pressure loading				
278	truck loading				

Table 2: Three word compositions

	<b>a) noun + noun + noun</b>		<b>b) adjective + noun + noun</b>
1	force equilibrium equations	26	structure redundant reactions
2	slope deflection equations	27	free body diagram(s)
3	soil pressure distribution	28	primary structure redundant
4	uller Breslau Principle	29	static equilibrium equations
5	frame type structures	30	rigid body motion
6	moment equilibrium equations	31	effective soil pressure
7	system stiffness matrix	32	nodal force equilibrium
8	moment deflection profile	33	virtual force method
9	node incidence table	34	local member frame
10	rigid body motion	35	nodal moment equilibrium
11	column shear forces	36	common reference frame
12	computer software system	37	geometric compatibility equation
13	force influence table	38	virtual force system
14	member stiffness matrices	39	axial force shear
15	Science Business Media	40	determinate plane frames
16	soil pressure computations	41	discrete moment envelope
17	Springer Science Business	42	global reference frame
18	displacement boundary conditions	43	nodal equilibrium equations
19	joint displacements reactions	44	virtual force method
20	member node incidence	45	allowable soil pressure
21	structure redundant reaction	46	axial deformation term
22	truss type structures	47	base pressure distribution
23	hinge portal frame	48	live load patterns
24	Hoover Dam Bypass	49	maximum shear force
25	story shear stiffness		

	<b>c) adverb + adjective + noun</b>		<b>i) noun + adjective + noun</b>
52	cross sectional properties	74	column axial forces
53	statically indeterminate structures	75	span continuous beam
54	statically determinate plane	76	span horizontal structures
55	statically determinate structure		<b>j) number + noun + noun</b>
56	cross sectional areas	77	two span beam
57	statically determinate beams	78	three-hinge frame
58	statically determinate structures	79	two-hinged arch
	<b>d) adjective + adjective + noun</b>		<b>k) ved + noun + noun</b>
59	single concentrated force	80	fixed end actions
60	absolute maximum value	81	distributed dead load
61	low rise rigid	82	modified slope deflection
62	maximum axial force		<b>l) noun + ved + noun</b>
63	maximum positive moment	83	computer based analysis
64	maximum possible moment	84	cable stayed bridges
	<b>e) adverb + ved + noun</b>	85	computer based scheme
65	simply supported beam		<b>m) adjective + adjective + ving</b>
66	uniformly distributed live	86	uniform vertical loading
67	uniformly distributed dead	87	low rise buildings
	<b>f) ving + noun + noun</b>		<b>n) ving + noun + noun</b>
68	bending moment diagram	88	bending moment distributions
69	using computer software	89	bending moment deflection
70	bending moment diagrams		<b>o) adjective + noun + ved</b>
71	enforcing equilibrium leads	90	virtual forces specialized
	<b>g) ved + noun + ving</b>		<b>p) adjectiev + ving + noun</b>
72	supported beam spanning	91	critical loading patterns
	<b>h) ving + ving + noun</b>		<b>q) adjective + ved + noun</b>
73	loading bending moment	92	parabolic curved beam

Table 3: Four word compositions

	<b>a) adverb + ved + noun + ving</b>		<b>i) adverb + ved + nun + noun</b>
1	simply supported beam spanning	8	simply supported beam moment
	<b>b) adverb + ved + adjective + noun</b>	9	simply supported beam results
2	uniformly distributed dead load	10	simply supported beam shear
	<b>c) noun + adjective + noun + noun</b>		<b>j) adjective + noun + noun noun</b>
3	deflection-virtual force method	11	nodal force equilibrium equations
	<b>d) adjective + ving + noun + noun</b>	12	nodal moment equilibrium equations
4	final bending moment distributions		<b>k) noun + noun + noun + noun</b>
	<b>e) adverb + adverb + ved + noun</b>	13	member node incidence table
5	loaded simply supported beam	14	springer science business media
	<b>f) noun + ved + adjective + noun</b>		<b>g) adjective + noun + adjective + noun</b>
6	three-hinged parabolic arch	15	long-span horizontal structures
	<b>h) adverb + adjective + noun + noun</b>	16	primary structure-redundant reaction
7	statically determinate plane frames		

Table 4 Five word compositions

	<b>a) adjective + noun + adjective + adjective + noun</b>
1	primary structure redundant internal force
	<b>b) adjective + adjective + noun + adjective + noun</b>
2	slender long-span horizontal structures

## ملخص باللغة العربية

تناولت هذه الدراسة بالبحث والتحليل الحاجات الأكاديمية والمهنية الخاصة باللغة الإنجليزية، والتي تتعلق بالمهندسين المدنيين بجامعة أدرار. وقد اعتمدنا في جانبها المنهجي على أسس ثلاثة: نظرية دراسة الحاجات، واستراتيجية دراسة حالة، بالتركيز على قاعدة المعالجة الثلاثية للبيانات. حيث تمخضت نتائج البحث عن رسم الأطر العامة لمنهج اللغة الإنجليزية ودراستها، مع تقديم درس نموذجي مشفوعاً بشرح مفصل عن كيفية اختيار عناصره الأساسية.

**الكلمات المفتاحية:** اللغة الإنجليزية لأغراض محددة، دراسة الحاجيات، تصميم المنهج، الهندسة المدنية.

## Summary in English

This study explores and analyses academic and professional English language needs of civil engineering students at Adrar University. The aim is to find out the appropriate English to this specific community. The tripartite design of Needs Analysis theory, case study strategy, and triangulation of data underpins the study methodological aspect. The findings draw up the overall framework that defines the specifications of the syllabus and details the course elements including a sample unit of a course provided.

**Kew Terms:** ESP, Needs Analysis, Syllabus Design, Civil Engineering.

## Résumé en Français

Le présent travail consiste à examiner les besoins en langue anglaise des ingénieurs de génie civil de l'université d'Adrar. L'objectif ultime de cette recherche est de découvrir l'anglais approprié à cette communauté spécifique. Trois approches préconisées sous-tendent l'aspect méthodologique de l'étude: la théorie de l'analyse des besoins, la stratégie d'étude de cas et la triangulation des données. Les résultats ont permis d'aboutir à l'établissement d'un cadre théorique et méthodologique permettant de bien cerner les besoins linguistiques du cas d'étude, ainsi que le développement d'un cours d'Anglais modèle avec une explication détaillée de la manière de sélection de ses éléments de base.

**Mots clés:** Anglais à But Spécifique, l'Analyse des Besoins, Conception de Programme, le Génie Civil.