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Designing an ESP Blended Course for Manufacturing and Engineering Sciences

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In memory of my sister "*Sihem*"

To my lovely parents

Sweet sisters

Fatima Zahra and Asma

And

My faithful husband

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ABSTRACT

The integration of technology in general and blended learning in particular in Higher education has brought many reconsiderations to English for Specific Purposes teaching and learning . Along this line, the aim of the conducted research work is first, to describe the situation of ESP teaching and analyze the language needs of students in the Department of Manufacturing and Engineering Sciences at Tlemcen University, second, to develop a blended course and respective materials that respond to the learners' expectations, then, to assess the impact of such a course on Manufacturing and Engineering students' achievement. For this purpose, an experimental case study was undertaken. To collect the necessary data for this case study, the investigator employed two questionnaires administered to first year Master's students and ESP teachers, and interviews addressed to subject -specialists and administrators in the Department of Manufacturing Engineering Sciences at Tlemcen University and workplace managers. Regarding the experimental phase, a pretest, a post-test and an evaluation checklist were used. Relying on both quantitative and qualitative data analyses, the results revealed that Manufacturing and Engineering students were highly motivated to learn English as this language plays an important role in their educational and vocational career and were namely in need of speaking and listening in parallel with reading and writing practice. Furthermore, the stakeholders showed a positive attitude towards the integration of blended learning as part of the ESP course due to its importance in creating a context for English teaching and learning. Among the most significant conclusions drawn from the experimental design was that blended leaning approach ensured a trend towards working with a more real language which makes the students focus on skills rather than other language aspects . It was regarded as a means that brought the students' needs to their ends, and henceforth, helped them develop their content knowledge and promote the four language skills with more emphasis on listening and speaking .

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LIST OF ACRONYMS

CEIL: Centre d'Enseignement Intensif des Langues

CNP: Communication Needs Processor

EAP: English for Academic Purposes

EBE: English for Business and Economics

ECTS: European Credits Transfer Scale

EEE: Department of Electrical and Electronic Engineering

EGAP: English for General Academic Purposes

EGOP: English for General Occupational Purposes

EGPP: English for General Professional Purposes

ELP: English for Legal Purposes

ELT: English Language Teaching

EMFE: English for Management, Fianance and Economics

EMP: English for Medical Purposes

EOP: English for Occupational Purposes

EPP: English for Professional Purposes

ESAP: English for Specific Academic Purposes

ESOP: English for Specific Occupational Purposes

ESP: English for Specific Purposes

ESPP: English for Specific Professional Purposes

ESS: English for Social Sciences

EST: English for Science and Technology

EVP: English for Vocational Purposes

GE: General English

LMD: License Master Doctorate

LSP: Language for Specific Purposes

NA: Needs Analysis

NIA: Needs Identification and Analysis

PhD: Doctor of Philosophy

PSA: Present Situation Analysis

TD: Travaux Dirigés

TOEIC: Test of English for International Communication

TP: Travaux Pratiques

TSA: Target Situation Analysis

UE: Unité d'Enseignement

GENERAL INTRODUCTION

GENERAL INTRODUCTION

In today's world, the globalization process has reinforced the status of English as the language through which world trade, business, international law, education and new telecommunication technologies are conducted. It is perceived as the language of opportunity and empowerment as it is taught in more than 100 countries as a foreign or a second language. Moreover, the majority of international academic journals, proceedings and periodicals are published in English. Thus, learning English becomes the only way to enlarge knowledge and take part in global understanding. Therefore, English teaching and learning is generating considerable popularity worldwide as the globalization of international trade and economy intensifies.

To be fully integrated in such global world, Algeria implemented the teaching of English both in National and Higher Education. Therefore, the introduction of this language in university aims to enables specific groups of students to communicate effectively in the target situation. Language courses are offered in all the departments, i.e., ESP with its sub branches including English for Science and Technology (EST), English for Business and Economics (EBE) and English for Legal Purposes (ELP) in higher education. ESP has gained considerable importance in the Algerian Higher Education. Thus, the Department of Manufacturing and Engineering Sciences at Tlemcen University was among those which introduced English for Specific Purposes in the three levels of the LMD system as a compulsory module. The aim behind this policy is to promote the students' competencies in writing, reading, listening and speaking in English for their academic and professional careers.

The courses are set to respond to the students' reasons to learn English. In this respect, ESP teaching is a needs-based approach that associates the teaching and learning of English to what learners' needs from the English course in their future

academic or professional career. Accordingly a set of skills that are required in these contexts are emphasized in the ESP teaching operation. However, the content of the ESP course in the majority of Algerian university departments is believed not to respond to the students' needs though English is gaining more attention in many institutions. The Department of Manufacturing and Engineering Sciences at Tlemcen University does not constitute an exception. ESP teaching seems to be performed inadequately. This is clearly noticed from different angles. First, the rate of students' absences in the ESP module is among the highest rates compared to the other modules. In fact, this shows that the students are not motivated to learn English. Also, teachers view the use of educational technologies as time'consuming due to the lack of expertise in the field of ICT's. Another important remark is that ESP teachers in the aforementioned department claim that no teaching policy, syllabus content and program description are given to them. It is up to them to decide upon what is relevant and appropriate for the students in terms of method, content and materials. Furthermore, the ESP teachers opt for General English programs which are vocabulary and grammar-based rather than courses based on the students' needs. This situation may be due to the fact of not conducting Needs Analysis prior to course design. The latter is considered as an important process to categorize the students' needs and define the ESP course objective, content and materials. Then, it seems necessary to analyze the English language needs of Manufacturing and Engineering students as a first step to overcome the problem of ESP teaching in this area of inquiry .

In the last decades, ESP teaching and learning have witnessed a revolution due to the introduction of technology in educational settings. In this digital era, teachers have many opportunities to use online resources to enrich their language courses. Among these technological discoveries blended learning is recognized as a response to the above-mentioned problems. It is a web-based instruction which combines traditional classroom teaching with online instruction. In this environment, learners are able to explore all the opportunities offered by the internet while being supported with regular face-to-face meetings with the teacher. Such means of

instruction is advised to help in creating a context for English language teaching , and therefore, allow the students to engage effectively in the ESP course. Moreover, it provides a multitude of teaching materials, and ensures access to high quality authentic information that manufacturing and engineering students, workplace managers and engineers need to communicate effectively in technological and scientific fields.

Yet, creating a supportive environment where students can better explore the English language in the ESP course is one of the compelling reasons to integrate blended learning. Regarding the case under investigation, ESP teachers in the Department of Manufacturing and Engineering Sciences at Tlemcen University seem to be on a ceaseless quest for innovations in terms of technology integration. They tend to use traditional materials such as the whiteboard, commercial books with accompanying CDs in the ESP course despite the provision and accessibility of new educational technologies. They consider the plethora of resources that the web offers as not appealing because of the lack of quality assurance and guidance that the students need. Another reason is that the ESP learners seemed not to be enthusiastic about using technology for education purposes though almost all of them use smart phones and computers with internet access. Thus, the ESP course needs to be modernized as a way to equip the learners with a working professional language input and updated data. Moreover, education leaders in Algeria may explore web 2.0 technologies and the opportunities offered by the internet to promote and facilitate ESP teaching and learning .

To sum up, the current research work discusses the importance of needs analysis as the starting step in ESP course design and explores its feasibility to determine the students' target and learning needs. It also explores the integration of blended learning in ESP teaching as a driving tool to the students in the Department of Manufacturing and Engineering Sciences at Tlemcen University to increase motivation and hence improve their achievements in the ESP course. The significance of the present study is manifold. It will contribute to the literature on both ESP and blended learning. It will provide empirical information about the ESP

teaching situation in the Department of Manufacturing and Engineering. It can help education leaders in Algeria and ESP teachers to explore the findings to put the process in which ESP courses are given into question, review the existing programme, and draw a clear policy to ensure successful integration of new teaching technologies namely blended learning in an ESP context.

For the sake of fulfilling the intended task, the investigator undertakes research in the Department of Manufacturing and Engineering Sciences at Tlemcen University. In fact, the study proceeds in two directions, the first tends to analyze the needs of ESP students and the second attempts to gauge the effectiveness of integrating blended learning in an ESP context. In sum, the current investigation seeks to answer the following research questions:

1. Why do Manufacturing and Engineering Students need English?

2. What type of course would be appropriate to improve the students' English language proficiency Level?

3. What are the attitudes of stakeholders towards the integration of blended learning in the ESP course in the Department of Manufacturing and Engineering Sciences at Tlemcen University?

4. What is the impact of such a course on the students' achievement in the English language?

These questions led to the formulation of the following hypotheses:

1. Manufacturing and Engineering students need to learn English in order to develop the four language skills to be able to exploit the literature related to their area of specialism and to be active participants in international manifestations.

2. A blended course within needs-based approach would help improve the students' English language proficiency as it would extend teaching and learning time.

3. Stakeholders would encourage the integration of a blended English course as a way to ensure the consistency and continuity of the ESP course, enhance the students' motivation and build their autonomy.

4. Such a course would help the students to improve their language skills, promote their communication competencies and develop their content knowledge.

Therefore, the aim of the present study is threefold: first to investigate the ESP situation in the Department of Manufacturing and Engineering Sciences at Tlemcen University and to analyze the students' language needs; second to develop a blended course and teaching materials that meet the needs of the students in the aforementioned department; and third to assess the impact of such a course on Manufacturing and Engineering students' achievement.

To achieve these aims, the current research is realized in two phases. The first one uses a case study design relying on a triangulated approach. Then, two questionnaires are administered to students and ESP teachers in addition to two semi-structured and one structured interviews conducted with administrators, subject-specialists in the targeted department and workplace managers. These instruments are intended to identify the students' English language needs adopting Basturkmen's needs analysis model (2013). This framework is organized through the analysis of the target situation, present situation, learner factor and teaching situation. The data gathered are analyzed both quantitatively and qualitatively.

The findings of the needs identification and analysis are used to design a blended ESP course as a response to the stakeholders' perceptions of the English language instruction. This leads to the second phase of the study, i.e., the experiment. The experimental design is set to question the effectiveness of the designed course to improve students' achievement and enhance their English

language proficiency level. For this purpose, a pretest and a post-test are used with randomly assigned control and experimental groups. In parallel, an evaluation checklist is used in order to measure if the course matches the students' needs.

Concerning the organization of the present work, it consists of six chapters. The first chapter constitutes the theoretical part. It is divided into three parts. The first one gives a holistic overview of ESP, describes its emergence and identifies its characteristics, types and sub-branches stressing EST as being one of the most important ESP subdivisions. After defining needs, approaches and models, the second part highlights the importance of needs analysis as a prerequisite for ESP course design. It also investigates other parameters underlying ESP teaching including materials production and evaluation process. The last part concerns the integration of technology in ESP in general and outlines the specificities and advantages of blended learning.

The second chapter is framed into two main sections. The first one describes the linguistic situation in Algeria and analysis of the status of English in Tlemcen University emphasizing the ESP course in the department under investigation. The second one deals with the research design in terms of the method, sampling techniques, population and instrumentation used to identify and assess the learners' English language needs and the stakeholders' attitudes towards the integration of Blended learning in the Department of Manufacturing and Engineering Sciences at Tlemcen University. Issues related to triangulation, validity and reliability of the research tools were addressed.

The third chapter introduces the beginning of the field work. It revolves around the analysis of the data gathered from the different research instruments: the students and the ESP teachers' questionnaires, the subject-specialists and the administrators' interviews, and the workplace managers' interview. This chapter displays the discussion and interpretation of the findings attempting to reveal the analysis of the present and target situations, learner factor, and the teaching environment.

The fourth chapter strives to describe the intervention. It deals with the design of the ESP blended course for a first-year Master's students in the Department of Manufacturing and Engineering Sciences at Tlemcen. This chapter provides a detailed account of course presentation, materials description and the skills addressed. A sample unit plan is illustrated.

The fifth chapter checks the effectiveness of the ESP blended course designed for the population under investigation. It describes the experimental design used in terms of methodology, sample population and instruments. It copes with the quantitative and qualitative analyses, and presents the findings of the pretest, posttest and the course evaluation checklist undertaken with the control and experimental groups in the Department of Manufacturing and Engineering Sciences at Tlemcen University.

Finally, the sixth chapter aims at proposing some recommendations which may improve the teaching of ESP in the Algerian university in general and in the Department of Manufacturing and Engineering Sciences at Tlemcen University in particular. It suggests general procedures for English language teaching. It also outlines some guidelines for ESP instruction. Suggestions concerning the integration of technology in general and blended learning in particular are given. This chapter constitutes a remedial to the current ESP teaching and learning situation in the department under investigation.

CHAPTER ONE   ESP /EST Overview

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1.1 Introduction

The status of English as a global language, in the light of the globalization of world economy, trade and international law, increases pressure on world governments, including Algeria, to implement English language teaching as part of their educational policy (ELT). In order to reach specific learning needs and social requirements, ESP was introduced at all teaching levels.

The present chapter provides a theoretical overview of ESP. It is divided into two parts. The first will shed light on the theoretical definitions of ESP; en passant par its emergence, characteristics and sub-branches, laying stress on EST, i.e., a general overview of ESP development will be presented in the first part of this chapter. Then, the second part is devoted to highlight the different components of the ESP teaching operation. The researcher discusses the primary stages in the process of ESP course design putting much focus on Needs Analysis Process. Then, other requirements of the ESP course design namely the formulation of goals and objectives , and the construction of content in accordance with different provisions of ESP are described in depth.

1.2 ESP/EST Defined

Teaching General English (GE) was considered as insufficient to meet the students' immediate needs mainly when applied in real life situations like business, medicine, science, law, etc. The reason that led to the emergence of English for Specific Purposes (ESP) in the late 1960s is the development in language theory which puts so much focus on the individual learners' specific needs (Hutchinson and Waters, 1987:8). Furthermore, the status of English as a global language also helps the materialization of ESP as explained by Bottery (2000:6) **"the development of globalization has been associated with the dominance of the English language. The power and influence of English have been widely recognized nowadays in the context of globalization."** In the same line of thought, Constantinou (2009 :95) join the emergence of ESP into three parameters which incorporate :

1. the tremendous scientific and technical development which followed after World War II (business, medicine, engineering, manufacturing etc.),

2. the realization by linguists that language should be studied as a means of communication,

3. the attention to different learning styles, strategies, needs and interests.

An area of inquiry that dramatically contributed to the development of ESP is English for Science and Technology (EST). In the context of ESP, EST is a subcategory of the large field of ESP. It emerged after the Second World War when a revolution in science, economy, trade and technology was witnessed. At that time, there was a need to prepare people who have a certain degree of English language proficiency and are aware of the reasons behind using specific English knowledge. In this regard, Kennedy and Bolitho (1984: 6) posit that:

> Much of the demand for ESP has come from scientists and technologists who need to learn English for a number of purposes connected with their specialisations. It is natural; therefore, that English for Science and Technology (EST) should be an important aspect of ESP programmes.

EST appeared in parallel with ESP, though the evolution of EST is used to illustrate the development of ESP as it is:

> the senior branch of ESP — senior in age, larger in volume of publications and greater in number of practitioners employed. [...] With one or two exceptions, English for Science and Technology has always set and continues to set the trend in theoretical discussion, in ways of analyzing language, and in the variety of actual teaching materials.

(Swales 1985: x)

Regarding the difference between General English or **"English for No Obvious Reason"** (Belcher et al., 2010: 1) and English for Specific Purposes, Hutchinson and Waters (1987: 16) confirms that there is no distinction between the two in *theory*, but in terms of *practice* ,

English for Specific Purposes (ESP) refers to **"the area of inquiry and practice in the development of language programs for people who need a language to meet a predictable range of communicative needs"** (Swales, 1992:300).This means that ESP teaching is a needs-based approach that associates the teaching and learning of English to what learners need from the English course. In ESP teaching operation, the context in which learners can be prepared to reach a certain degree of proficiency in communication in any academic or vocational prescribed task (Sabet and Daneshvar, 2010:2) is emphasized. In addition, the requirements of learners who need to learn English and develop a set of skills that they require in their studies or in their professional careers (Alharby, 2005:10) constitute a cornerstone in ESP teaching process.

In short, different definitions might be given to ESP. In fact, scholars build their views concerning this new teaching trend on its characteristics and specifities.

1.3 ESP/EST Characteristics

Scholars view English for Specific Purposes as being different from the other disciplines in terms of its characteristics. In this respect, Dudley-Evans and St. John (1998:4) distinguish three ESP absolute characteristics and four variable features.

a. Absolute Characteristics

1. ESP/EST is defined to meet specific needs of the learners;

2. ESP/EST makes use of the underlying methodology and activities of the discipline it serves;

3. ESP/EST is centered on the language (grammar, lexis, and register), skills, discourse and genre appropriate to these activities.

b. Variable Characteristics

1. ESP/EST may be related to or designed for specific disciplines;

2. ESP/EST may use, in specific teaching situations, a different methodology from that of General English;

3. ESP/EST is likely to be designed for adult learners, either at a tertiary level institution or in a professional work situation. It could, however, be for learners at secondary school level;

4. ESP/EST is generally designed for intermediate or advanced students. Most ESP courses assume some basic knowledge of the language systems, but it can be used with beginners.

This means that ESP teaching turns around learners' specific needs. As ESP uses different methodology from that applied in General English (GE), this approach is not specific to a precise discipline or certain age category. For more clarity, a suggested illustration is provided by Dudley-Evans and St John (1998:5):

Table 1.1 Illustration of absolute and variable characteristics of ESP (Adapted from Dudley-Evans and St John 1998)

Type of Learners	Business Learners	Tourism Learners
Level of English Familiarity	Intermediate	Beginner
Absolute Characteristics	-ESP course based on learners' needs. -Activities serve the business context. -The teaching of relevant language systems.	ESP course based on learners' needs. -Activities serve the tourism context. -The teaching of relevant language systems.
Variable Characteristics	-Grammar teaching includes: the function of "if clauses". -Oral course: simulations of business activities like: meeting, giving presentations to the members of the company.	- Basic grammar teaching e.g. present simple: forms, usage and functions. - Oral course includes the application of grammatical systems in useful sentences: defining a basic touristic function using the present simple

In the same vein, Knight (2010:4) posits that the teaching of ESP is characterized by:

- Learner-centeredness, i.e., the ESP course is defined by the learners. It is determined by what learners will need to do with the language in the target situation and how they might master the foreign language during the period of learning (West 1994).

- Needs-based, i.e., the ESP course is designed to meet the learners' specific needs.

- Collaboration with workplace/content experts, i.e., the ESP teaching is built on the basis of team teaching where there is the contribution of both subject-matter expertise and language teachers (John and Dudley-Evans, 1991, qtd in Pradhan, 2013:9).

- Specificity and relevance, i.e., the teaching materials designed for the ESP course are authentic and relevant to the matter the ESP teacher aims to destine (Vahid Baghban, 2011:3).

The above mentioned characteristics differentiate ESP from any other field of language teaching in terms of course design, materials production, and mainly learners' needs. In fact, the aims and objectives of ESP courses constitute a subject of controversy among linguists in identifying the types of ESP.

1.4 ESP/EST Types

Nowadays, the aims to learn English differ according to the context in which it is applied. This is why ESP constitutes an "ever -diversifying and expanding range of purposes" (Belcher, 2006:134). In this respect, Hutchinson and Waters (1987:16) outline three types of ESP visualized in the form of "the tree of ELT" (see Appendix A):

    a)English for Science and Technology (EST)

    b)English for Business and Economics (EBE)

    c)English for Social Studies (ESS).

These three types are put under **"two main types of ESP differentiated** according to whether the learner requires English for academic study (EAP English for Academic Purposes) or for work/training (EOP English for Occupational Purposes or EVP English for Vocational Purposes)**"** (Hutchinson and Waters, 1994:16). This classification is summarized as follows:
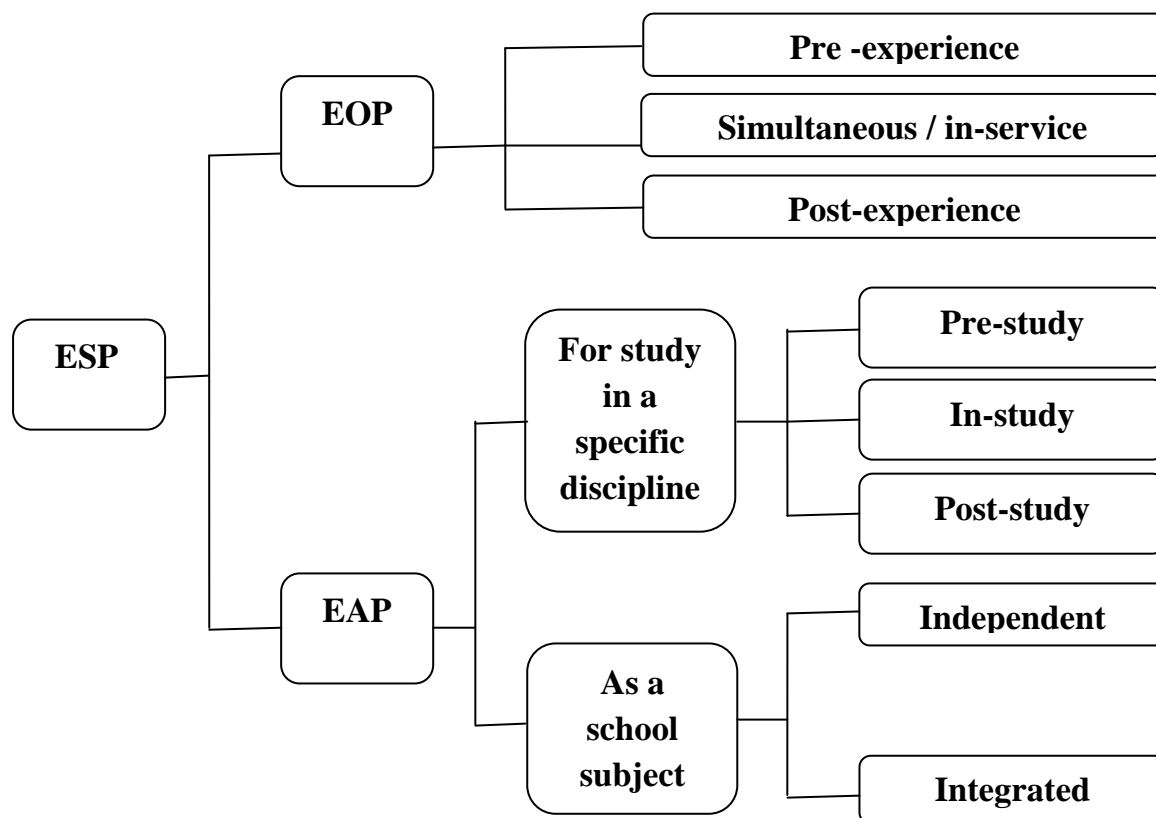
Figure 1.1 ESP classification by experience (Robinson, 1991:3-4)

As far as the above diagram is concerned, the ESP classification depends on when the courses take place. Thus, ESP is categorized into two disciplines: EAP and EOP. English for Academic Purposes courses can be delivered as *discipline based* or as *school subject* where it constitutes an *independent* subject taught as a language study isolated from the other subjects or an *integrated* subject instructed in relation to another subject. Regarding English for Occupational Purposes, this latter involves three stages of language acquisition, i.e., English is taught before the job (*pre-experience*), in parallel with the job (*simultaneous*), or after the training (*post-experience*). In fact, the pre-experience and pre-study courses excludes any job

orientation of ESP (Dudley-Evans and ST John,1998:6) though this latter aims at **"**preparing students to enter target discourse communities (academic, professional, and workplace) with distinct and evolving communicative practices**"** Basturkmen (2006: 11).

Accordingly, another classification of ESP is put forward by Basturkmen (2010:6) who categorizes ESP under three divisions depending on the general and specific nature of the course as ESP teaching can take place in different contexts. These sub-branches are: *English for Academic Purposes* (EAP), *English for Occupational Purposes* (EOP) and *English for Professional Purposes* (EPP).The third branch is **"**more narrowly focused EOP, since it is concerned with specific professions, pilots, nurses etc**."** (Privorova,2016:15).The following table exemplifies the areas of ESP teaching:

Table1.2 Areas of ESP Teaching (Basturkmen, 2010:6)

Branch	*Sub-Branch*	*Example*
English for Academic Purposes (EAP)	English for General Academic Purposes (EGAP)	English for academic writing
	English for Specific Academic Purposes (ESAP)	English for law studies
English for Professional Purposes (EPP)	English for General Professional Purposes (EGPP)	English for the health care sector
	English for Specific Professional Purposes (ESPP)	English for nursing
English for Occupational Purposes (EOP)	English for General Occupational Purposes (EGOP)	English for the hospitality industry
	English for Specific Occupational Purposes (ESOP)	English for hotel receptionists

In this line of thought, an inevitable question arises: what distinguishes EAP from EOP?

1.4.1 English for Academic Purposes (EAP)

English for Academic Purposes (EAP) is a sub category of ESP which comes to use in the 1970s. EAP is **"**taught generally within educational institutions to students needing English in their studies**"** (Kennedy and Bolitho, 1984:4).That is to say, the EAP course is devoted to learners who are studying *the language of academic performance* in order to enter professions such as medicine, business, law, and so on. Accordingly, EAP itself covers two broad branches: English for General Academic Purposes (EGAP) where the aim lies on training the learners for their current studies, and English for Specific Academic Purposes (ESAP) which prepares the learners for their future work (Day and Krzanowski, 2011:1). Moreover, EAP instruction emphasizes the teaching of the common core skills such as writing reports, reading academic texts, listening to and producing discourse, and so forth, to students usually in a higher education setting. Thus, the aim behind EAP teaching is to train the students to use the language appropriately for the sake of study, i.e., to promote specific linguistic features of a particular area of education. In addition, it tries to meet the communicative needs and practices in academic settings (Hyland and Shaw, 2016: 1).

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                              ┌───────────┐
                              │    ESP    │
                              └─────┬─────┘
                              ┌─────┴─────┐
                              │    EAP    │
                              └─────┬─────┘
        ┌────────────┬─────────────┼─────────────┬────────────┐
  ┌───────────┐ ┌───────────┐ ┌───────────┐ ┌───────────┐
  │    EST    │ │    EMP    │ │    ELP    │ │   EMFE    │
  │English for│ │English for│ │English for│ │English for│
  │(Academic) │ │(Academic) │ │(Academic) │ │Management │
  │Science and│ │  Medical  │ │   Legal   │ │Fianance and│
  │Technology │ │  Purposes │ │  Purposes │ │ Economics │
  └───────────┘ └───────────┘ └───────────┘ └───────────┘
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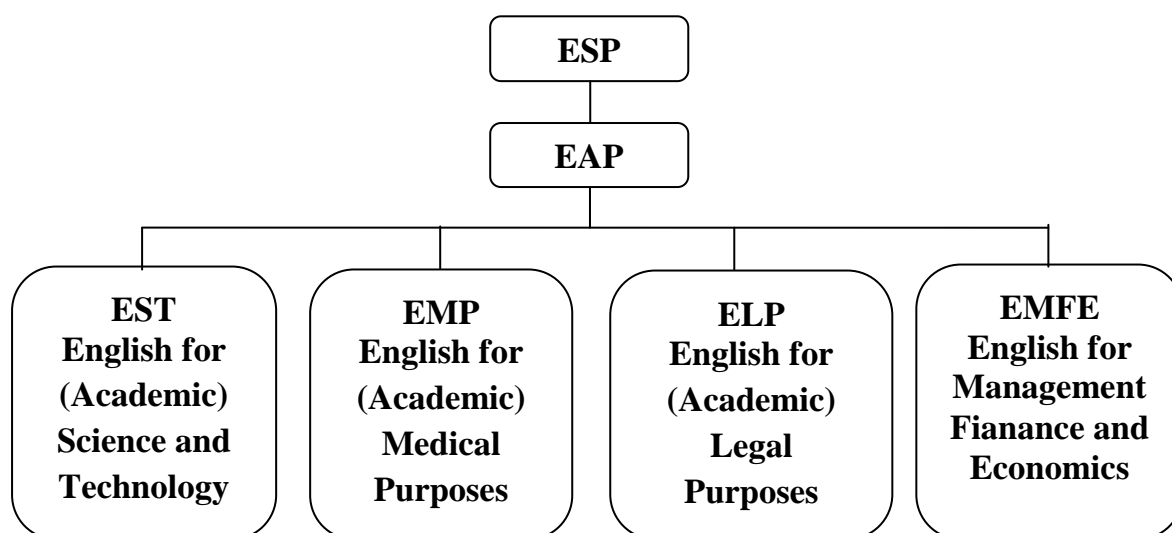
Figure1.2 EAP classification by professional area (Adapted from Dudley-Evens and St John, 1998:6)

It is well demonstrated that EAP encompasses three branches:

English for Academic Science and Technology: is a sub branch of ESP which refers to the type of English that "…scientists and technologists need to learn for a number of purposes connected with their specialities" (Kennedy & Bolitho 1984: 6).

English for Medical Purposes: refers to the category of English that medical students are required to learn in order "to obtain ideas and information about medicine by listening to talks and lectures, viewing multimedia resources, and reading a variety of medical materials" (Allouche, 2011:20).

English for Legal Purposes: which is defined as "the language used by drafters, legislators, lawyers, judges, litigants, law enforces, and other law users in the common law jurisdictions" (Yongping, 2004:29).

Management Finance and Economy: refers to the English course which aims at promoting the learners' English basic skills in the fields of management, finance and economics.

1.4.2 English for Occupational Purposes (EOP)

English for Occupational Purposes (EOP) refers to "English that is not for academic purposes, it includes professional purposes in administration, medicine, law and vocational for non-professional in work or pre-study work." (Dudley-Evans and St John, 1998:7).Therefore, it aims to meet the needs of the learners who work and need "the language of job performance" as it is explained by Kennedy and Bolitho (1984:4) "EOP is taught in a situation in which learners need to use English as part of their work or profession". This means that EOP courses are delivered to answer occupational demands. EOP instruction covers situations and knowledge of English needed to carry out a profession. Therefore, EOP courses are designed to train the students to communicate effectively in occupational relevant situations. For more clarity, Harmer (1983:1) outlines two examples of EOP situation. The first

is English needed by an air traffic controller to guide aircraft through skies, and the second is the businessman who may need English for international trade.
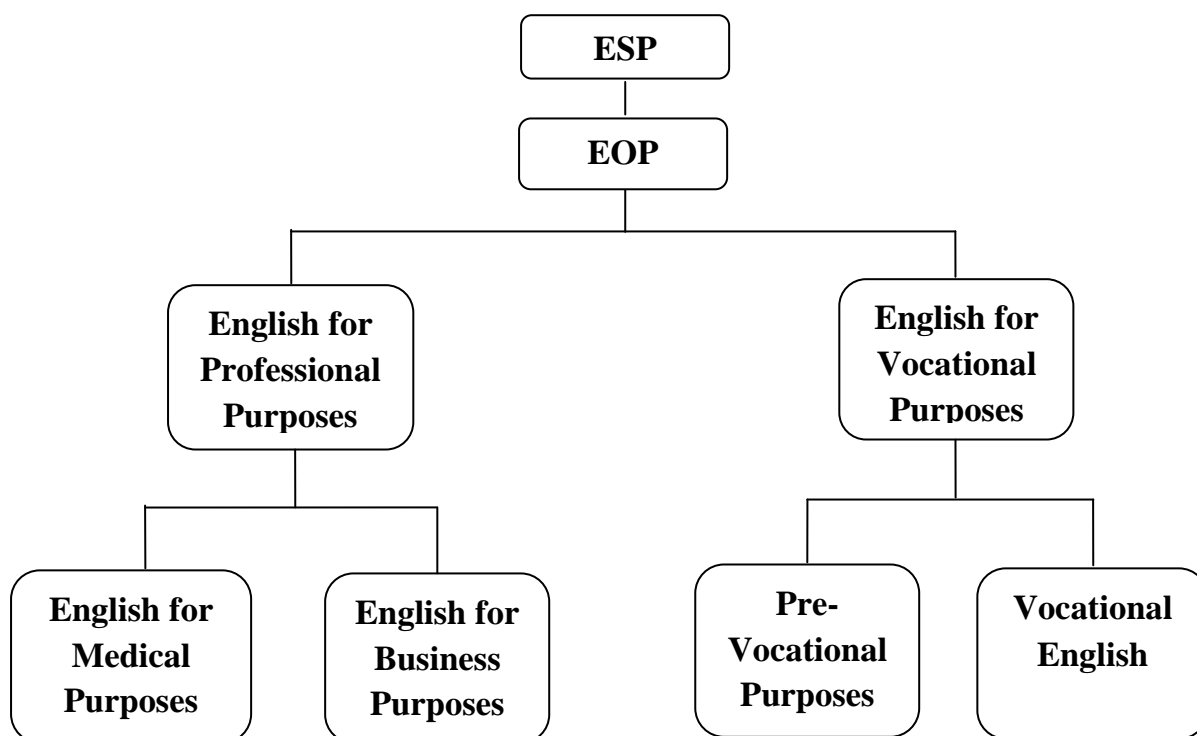
Figure1.3 EOP classification by professional area (Adapted from Dudley-Evens and St John, 1998:6)

Within EOP, two types of English are made distinct:

English for Professional Purposes: defined by Ypsilandis and Kantaridou (2007:69) as **"**the actual needs of (future) professionals at work**",** i.e., it refers to the English language skills that learners need to develop in their professional career.

English for Vocational Purposes: refers to the teaching of English for **"**non-professionals in work (the language of training for specific trades) or occupations, or pre-work situations (concerned with finding a job and interview skills)**"** (Bojovic, 2006:489).

In fact, there is no a clear-cut distinction between EAP and EOP since **"**people can work and study simultaneously; it is also likely that in many cases the language learnt for immediate use in a study environment will be used later when the student

takes up, or returns to, a job" **(**Hutchinson and Waters ,1994:18). Thus, this is clearly illustrated in the following diagram:
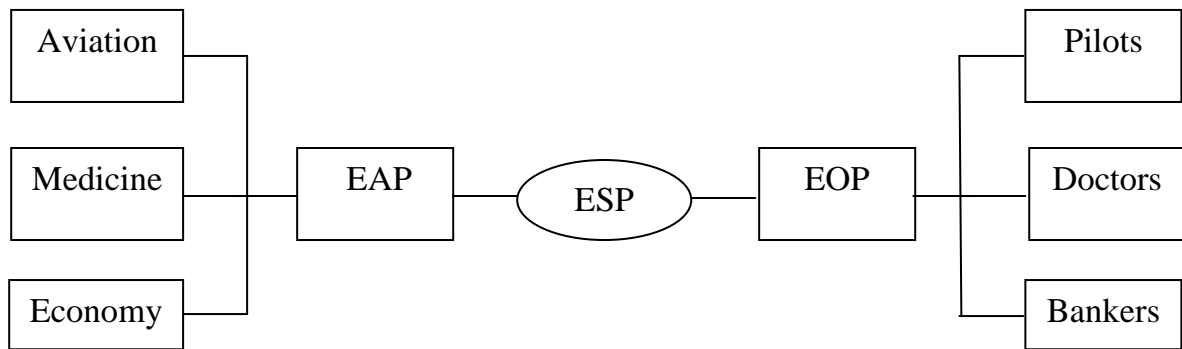
Figure 1.4 EAP vs. EOP (Adapted from Flowerdew and Peacock, 2001: 12)

1.5 English for Science and Technology (EST)

EST is concerned with teaching English in the fields of science and technology and related areas as it is clarified by Dudley- Evans et. al (2009 quoted in Hemche 2014: 39) **"**EST is simply a subdivision of ESP dealing with scientific content. It covers General Science, physics, chemistry, biology, mathematics, Environmental Education and various technologies**"**. This latter is presented as follows:
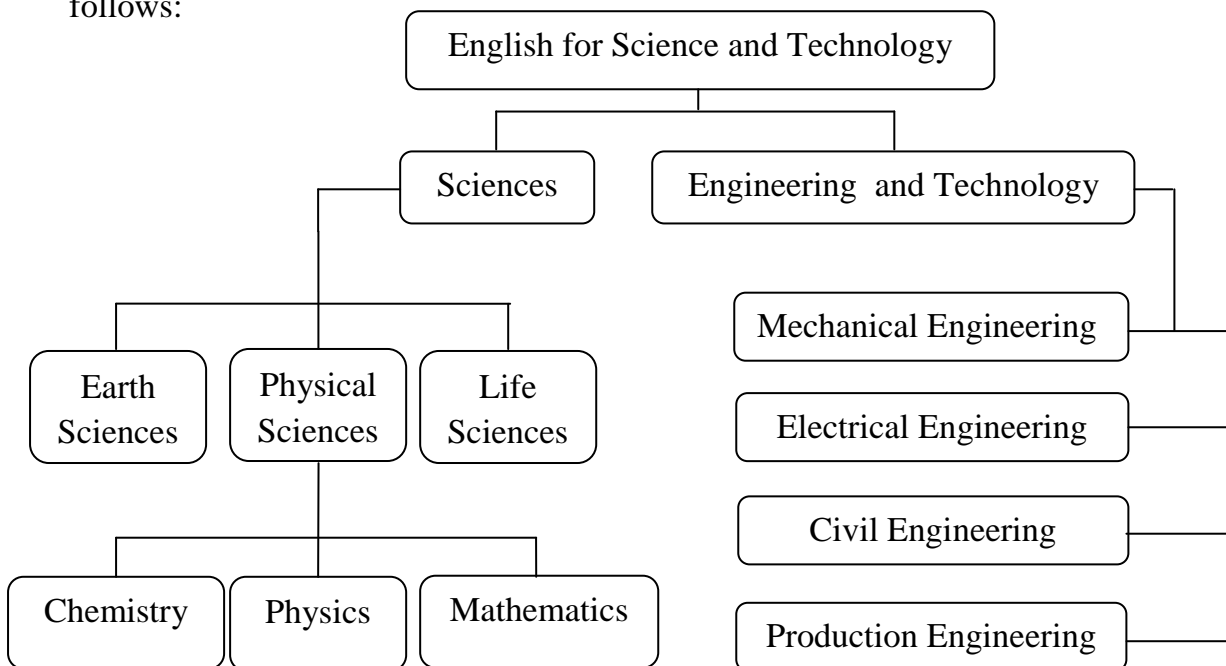
Figure1.5 The subcategories of EST (Swales, 1998).

1.5.1 EST : a sub-field of ESP

EST courses are quite different as they focus on scientific English and a selection of communicative situations which are appropriate for scientific and technological fields (Dorrity, 1983). Particularly, students should be able to recognize, exploit and evaluate the materials related to science and technology. Therefore, EST is an approach to language teaching and learning where the content and procedures are associated to the students' reasons to learn.

Regarding the classification of EST, it constitutes a topic to heated debate. Though it is widely acknowledged that EST fits both EAP and EOP and emphasizes the use of English in both academic and occupational settings (Robinson, 1980: 8), as it is presented in the following diagram:
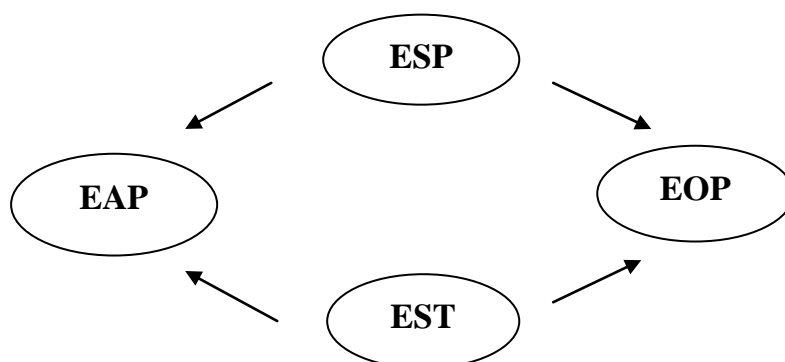
Figure 1.6 Subdivisions of ESP (Benyelles, 2009: 13)

Mc Donough (1984:6) considers EST to be academically oriented since it answers the students' educational needs. This is illustrated as follows:
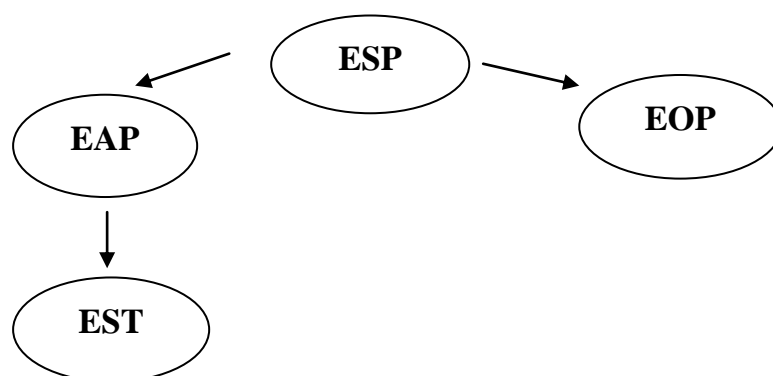
Figure1.7 Subdivisions of ESP (Mc Donough, 1984: 6)

Therefore, categorizing EST under EAP or EOP depends on the students' profile of need, i.e., what the students learn English for. This means that students may need to learn English to satisfy their educational purposes or to answer their professional demands since English "is of particular importance for engineering and science students" (Pritchard and Nasr, 2004:426) .

1.5.2 Teaching EST

In recent years, manufacturing and engineering students, workplace managers and engineers are called more than anyone and any time to learn English in order to keep pace with nowadays globalization of international science and business. Pendergrass et al. (2001:1) claim that "integrating English into engineering, science and math courses is an effective way to improve the performance of engineering students in oral and written communication". Thus, teaching English for Science and Technology Purposes is regarded as challenging since EST teaching differs from that of General English as it involves not only language but also subject knowledge; however the complexity of scientific discourse creates difficulties to ESP teachers who are deficient in scientific domain.

Since EST constitutes an essential branch of ESP, they share the same characteristics approximately and principles. Therefore, technical discourse represents the core of the EST class as "the research into language and discourse is the most involved and sophisticated in ESP" (Johns et.al.2011). In this regard, the task of the ESP teachers lies in their ability to use an appropriate multitude of textbooks, reference materials, oral explanations and so on in parallel with their students' needs.

The aims and objectives of the EST course are determined in accordance with the different types of syllabi through which the EST course "is designed to meet the learners' special needs" (Dudley-Evans& St Johns, 1998:4).Accordingly, the EST course design is built upon "both the oral and written discourse of English for academic or professional, occupational or vocational purposes. It mainly deals with learners at the tertiary level for whom the learning of English takes on a service role

for their specific needs in study, work or research**"** (Rao, 2014: 3-4), to ensure the benefits of ESP course design outlined by Dudley-Evans et al.(1998:9):

   -The ESP course design wastes no time as the course focused on the learners' needs.

   -The ESP course design is relevant to the learner.

   -It is successful in imparting learning.

   -It is more cost-effective than General English.

   The teaching of EST involves double-effects as the aim is to ensure a high proficiency level in the English language throughout teaching the basic skills of the English language, and improving skillful language use in legal contexts. Nouali (2016:24) describes EST teaching as being devoted to potential engineers above average proficiency level in the English language, who want to promote their communicative skills to interact with colleagues and customers, conduct meeting, give presentations, and discuss engineering related matters.

   Regarding our context, i.e. the Algerian situation, an investigation was made to determine engineering students' needs .The outcomes revealed that:

> The majority of scientific reports and journals are now available in English. Many international conventions and meetings are spoken and presented in English. With this in mind, it stands to reason that to become an active and functional member of this community, knowledge of the English language is essential as it is a convenient tool for sharing scientific knowledge. In fact, having one language to share information can allow discoveries and new technologies to be distributed practically and more efficiently.

(Bouklikha, 2016:125)

In order to design an appropriate course, the ESP teachers attempt to select the most suitable teaching materials that are relevant to their students' needs. This will be possible only if a comprehensive needs analysis process is conducted.

1.6 ESP Teaching Process

The process of ESP teaching usually involves the interaction between a number of elements including "… needs analysis, course (and syllabus) design, materials selection (and production), teaching and learning, and evaluation." (Dudley-Evans and Johns 1998:121). These elements constitute a progressive, dynamic and cyclical process which aims to equip the learners with a particular state of knowledge (Hutchinson and Waters, 1987: 65). In fact, assessing the students' needs, designing the course, selecting the teaching approach and materials besides the decision of the evaluation criteria are regarded as being "not separated, linearly related activities, rather, they represent phases which overlap and are interdependent". (Dudley-Evans and Johns 1998: 121). The latter illustrates the interconnectedness of the different stages in the ESP teaching process as presented in the following figures:
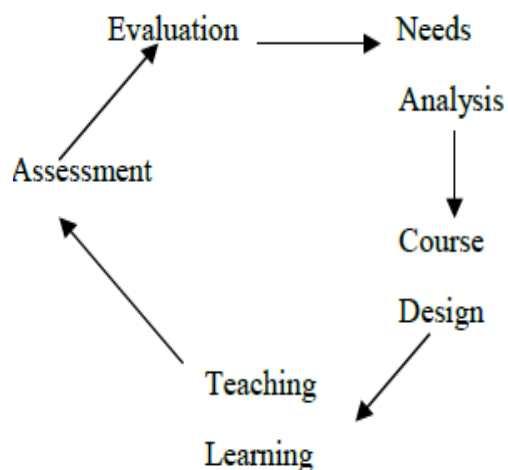
Figure1.8 Stages in the ESP: *Theory*   **Figure1.9** Stages in the ESP: *reality*
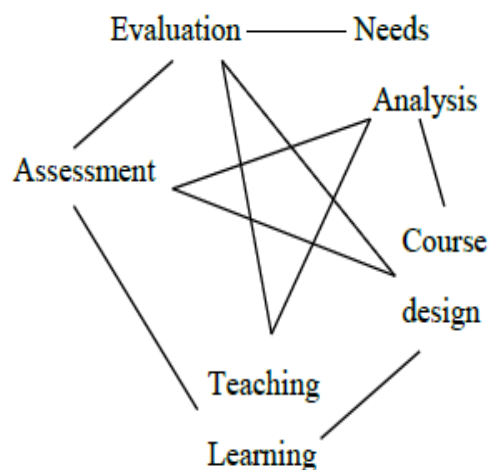
(Dudley-Evans and Johns, 1998:121)

Respectively, the cyclical presentation shows that there is no difference between theory and reality. Rather, they should be recognized as an entity proceeding in **"a linear fashion"** .This is because the previously highlighted stages are interrelated and interdependent overlapping activities in a cyclical process (Flowerdew, 2013:325) where **"the simplicity and clarity of the linear process is in reality more like the cyclic one"** (Dudley-Evans and St. Johns, 1998: 121).Moreover, the ESP course developer can proceed anywhere in the cyclical framework as long as it is logical (Graves, 2000). This, therefore, establishes ground for evaluation to take place at each step in ESP course design. Accordingly, this visualization clarifies how Needs Analysis is an ongoing process carried out to establish the "what" and the "how" of a course. This process enables the ESP practitioner to **"modify his teaching as he comes to learn more about his students, and in this way it actually shades into evaluation – the means of establishing the effectiveness of a course"** (Hyland, 2006: 73). It also paves the way for researchers to:

> …use the theoretical and empirical information available to produce a syllabus, to select, adopt or write materials in accordance with the syllabus, to develop a methodology for teaching those materials and to establish evaluation procedures by which progress towards the specified goals will be measured.

> (Hutchinson and Waters, 1987: 56)

By way of explanation, Hutchinson and Waters (1987: 56) break the ESP teaching operation into five connected processes. These are:

- ➢ Needs identification and analysis
- ➢ Course design
- ➢ Materials production
- ➢ Teaching
- ➢ Evaluation.

All of these processes are "forming a network of interacting systems" (Richards, 2001: 41). In order to design an appropriate course, the ESP/EST teachers attempt to select the most suitable teaching materials that are relevant to their students' needs. This will be possible only if a comprehensive needs analysis process is conducted.The overall stages will be described in detail in the coming sections and chapters.

1.6.1 Needs Identification and Analysis

ESP is tightly associated with the process of Needs Analysis through which the ESP course is designed to meet the learners' specific needs. In this regard, Hutchinson and Waters (1987:53) claim that **"what distinguishes ESP from General English…is an awareness of the needs"**. This reflects the importance of knowing what is English needed for in order to decide what should be included in the course and what language aspects have to be exploited. Similarly, Widdowson (1981:2) argues that "if a group of learners' needs for a language can be accurately specified, then this specification can be used to determine the content of a language program that will meet these needs". This implies that the ESP approach relies on the needs analysis process as a tool to identify learners' needs in a specific situation, i.e., the situation in which the learners will use the language they are learning. Thus, **"in every genuine ESP course, needs assessment is obligatory, and in many programs, an ongoing needs assessment is integral to the curriculum design and evaluation"** (Johns and Machada, 2001:49). However, before digging deeper in the process of needs analysis, understanding clearly what is meant by the term *needs* in the context of ELT in general and ESP in particular before tackling learners' needs is necessary.

1.6.1.1 The concept of Needs

The word "need" is a cover term which is "both ambiguous and imprecise" (Chambers, 1980: 26). It has been conceptualized differently by several scholars who agreed on putting the learner as a cornerstone in the process of analysis. In fact, this characterizes ESP as being a learner-centered approach. In this regard, Dickinson (1991:90) refers to the term *needs* as **"a certain skill or object that a**

person considers important but does not have or possess**"**. Consequently, *needs* are defined as the differences between the actual state regarding the group or situation in relation to a specific question and the desired state. They reflect the existence of a certain problem that requires an intervention and must be dealt with (Lamri, 2015:44).

In the context of ESP, the term *needs* may convey a broad range of meanings such as: learners' goals, desires, preferences, demands, interests, necessities, wants, expectations, lacks, requirements and motivations, their awareness of their rights, their language proficiency, their reasons for taking a course, their teaching and learning constraints, gaps in their knowledge and even their fantasies (Chambers, 1980; Beatty, 1981; Richterich, 1983; Brindley, 1984; Johnson et al., 1987; Robinson, 1991; Benesch, 2001; Hyland, 2006).

In contrast to the previous literature, Widdowson (1983:20) asserts that "the absence of distinction between aims and objectives leads to an ambiguity in the expression of learner needs". This implies that *needs* are assumed to be either *goal-oriented* i.e. they are related to the ends of learning a language, referring to aims, or *process-oriented*, that is, the means of learning a language or what the learner has to do in order to learn the language, addressing objectives.

However, an opposing view appeared to deny the existence of needs prior to a project, but as being the outcome of an existing educational experience (Richterich and Chancerel, 1987: 9). In this regard, Brindley (1984: 29) posits that "need is not a thing that exists and might be encountered ready-made on the street. It is a thing that is constructed". In fact, a great majority of scholars agree on associating needs to an existing gap between a present situation and a desired future, a change to be made, or progress to be achieved towards a desired goal (Beatty, 1981; Graves, 2000). Hence, this view summarizes the objectives of ESP teaching as a way to bridge this gap and meet the learners' needs.

So, the term *needs* was defined differently by many scholars. But this does not prevent them from drawing conventional conclusions about the defining features of

those needs. Trim (1980), Brown (1995), Harding (2007), Cooke and Simpson (2008) and Reguzzoni (2008) point that needs are:

-multiform or multifaceted;

-amenable to change;

-not constant or fixed facts;

-vary from one person to another depending on the interaction between individuals and their environment and on their activities;

-not entirely independent;

-always constructed;

-can be identified and analyzed.

Though the feature already mentioned may help to clarify the concept of needs, their identification still constitutes a challenging task. The word "need" is used as an umbrella term to cover many types. Thus, needs typology has been defined from different perspectives by various scholars.

1.6.1.2 Types of Needs

Scholars define the term *needs* as the requirements of the learners to function or communicate effectively in the target situation. But this does not deny that there is no absolute agreement about the definition and the types of needs (Chambers, 1980). Accordingly, needs are put under many subcategories depending on who is discussing them, including teachers, learners, administrators, employees, parents, and stakeholders. Therefore, different meanings of needs are implied.
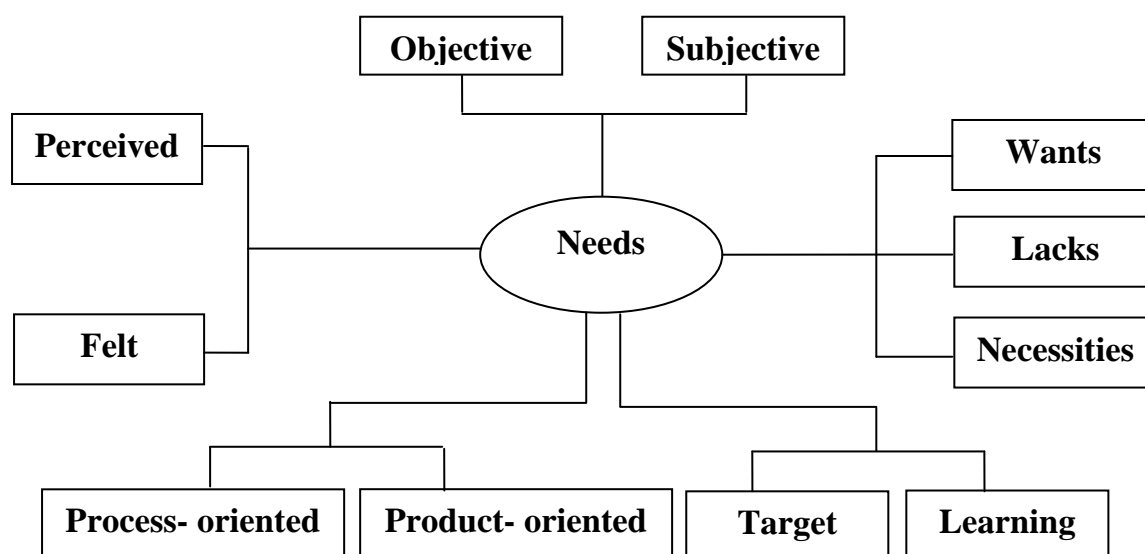
Figure1.10 Types of needs (Brindley , 1989; Robinson ,1996; Hutchinson and Waters ,1987)

As displayed by figure 1.10, Brindley (1989:65) identifies two types of needs: *objective* and *subjective needs*:

> The first of these terms…refers to needs which are derivable from different kinds of factual information about learners, their use of language in real-life communication situations as well as their current language proficiency and language difficulties. The second term refers to the cognitive and affective needs of the learner in the learning situation, derivable from information about affective and cognitive factors such as personality, confidence, attitudes, learners wants and expectations with regard to the learning of English and their individual cognitive style and learning strategies.

This implies that *objective needs* are gathered from objectively observable data. They are related to concrete linguistic factors which do not take into account the learners' attitudes and views. Those needs can be identified by the teacher on the basis of learners' personal profile. This may include factual and biographical information of the situation, the learners such as age, gender, nationality and the language that students must acquire, their present proficiency level, …etc.

Accordingly, this subcategory collects information about the actual requirements for language use as they exist in the target situation (Tudor, 1997:24). On the other hand; *subjective needs* refer to the data derived from the learners themselves. It encompasses the learners' self-knowledge, their awareness of the target situation, desires and instructional expectations, goals, attitudes and perceptions about the reasons behind undertaking the language course and their preferences about the course content (Nunan, 1988:18).Thus, there is "a tendency to equate objective needs with the specification of content ,and subjective needs with the specification of methodology (Nunan,1988:44).

Relatedly, Robinson (1996:8) provides another division of needs. *Objective* and *subjective* needs are contrasted with needs "*perceived*" by teachers and authorities, i.e., what the experts think the learners need to learn, and needs "*felt*" by the learners themselves, that is what the learners feel they need to learn. Similarly, Brindley (1989:64) goes further to distinguish between *process-oriented* and *product-oriented* needs. The former refers to the way in which learning is carried out, and the latter concerns the final outcome of the language course.

On their turn, Hutchinson and Waters (1987:57) suggest a further distinction between *target needs* and *learning needs*. While the former refers to "what the learners need to do in the target situation", i.e., what the learner should know in order to communicate effectively in the target situation including the knowledge, abilities and skills required for the proficiency level in the target situation, the latter refers to "what the learner needs to do in order to learn", that is, information about the learning environment including materials, learning styles, time load,…etc. Learning needs paved the way to the course developers to achieve the desired objectives since **"the mere identification of the target situation does not indicate** *how* **to get there"** (Privorova, 2016:17). Rather, learning needs are assumed to investigate why and how the language is learnt in the learning situation, and question the circumstances surrounding the course in terms of purpose, materials, time and place. These issues, however, are referred to as **"instructional logistic**

needs**"** (Savage and Storer, 2001: 141) .Therefore, Hutchinson and Water's (1987) conceptualization of needs is clarified in the following figure:

```
                            ┌─────────────┐
                            │    Needs    │
                            └─────────────┘
                   ┌───────────────┴───────────────────┐
          ┌─────────────────┐                  ┌──────────────────┐
          │  Target Needs   │                  │  Learning Needs  │
          └─────────────────┘                  └──────────────────┘
      ┌───────────┼───────────────┐                     │
┌──────────┐ ┌──────────┐ ┌──────────┐         ┌──────────────┐
│Necessities│ │  Lacks   │ │  Wants   │         │  What the    │
│Type of   │ │What      │ │What the  │         │learner needs │
│need      │ │existing  │ │learner   │         │to do in order│
│determined│ │gaps need │ │perceives │         │to learn.     │
│by the    │ │to be     │ │as a      │         │              │
│target    │ │closed    │ │lack.     │         │              │
│situation │ │from the  │ │          │         │              │
│          │ │teaching  │ │          │         │              │
│          │ │perspective│ │          │         │              │
└──────────┘ └──────────┘ └──────────┘         └──────────────┘
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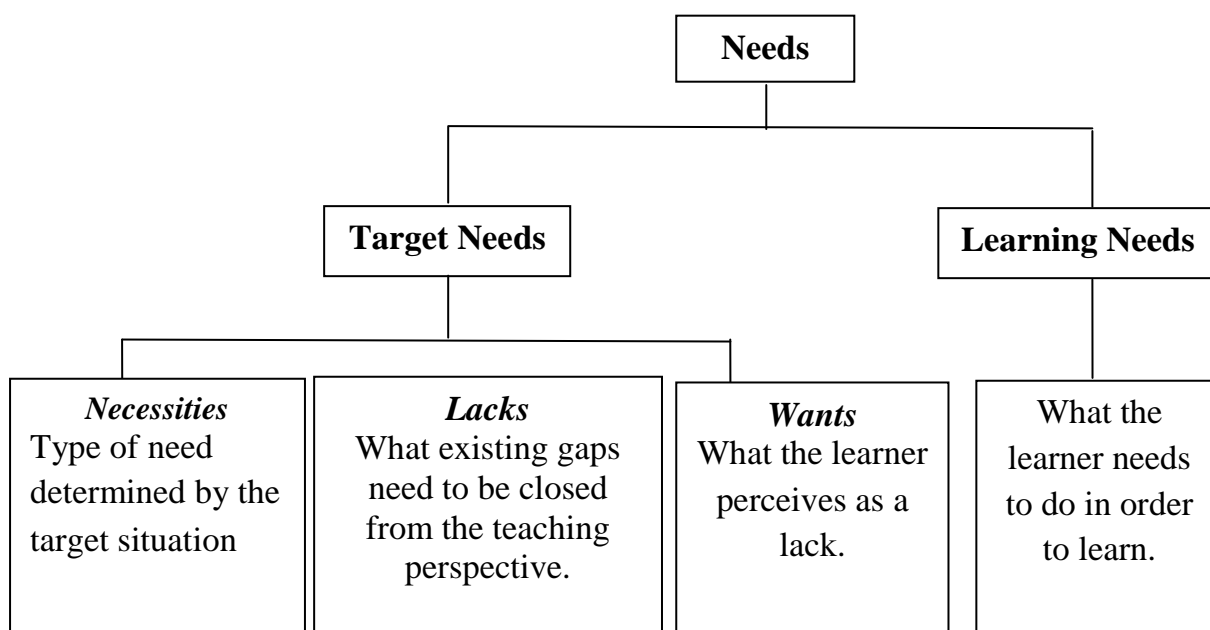
Figure1.11 Classification of needs based on Hutchinson and Waters (1987)

In this respect, target needs fall under three (03) main categories: *necessities*, *wants* and *lacks*. Hutchinson and Waters (1987:55) explain these subdivisions as follows:

1.'*Necessities'* are the type of needs that is determined by the demands of the target situation, and necessities are what learners need to know so as to function effectively in the target environment. Hutchinson and Waters (1987:55) give the example of a businessman who might need to learn English in order to interact effectively in conferences and to understand business-related documents.

2.'*Lacks'* are the type of needs where the ESP practitioners need to investigate what the learners already know, so that the ESP practitioners can decide which necessities the learners lack. It is the gap between the existing proficiency and the target proficiency.
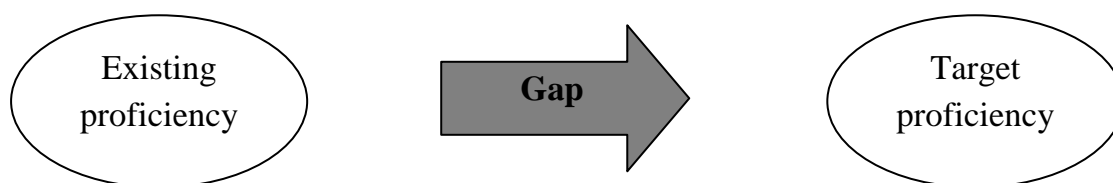
Figure 1.12 Learner's needs as lacks

3. *'Wants'* are what the learners want to learn and what they like to obtain from the course. They refer to what the learners think they need in contrast to the views of course designers and teachers.

Table1. 3 Examples of necessities, lacks and wants (Hutchinson and Waters,1987)

	Objective (as perceived by course designers)	*Subjective* (as perceived by learners)
Necessities	The English needed for success in agriculture or veterinary studies.	To reluctantly cope with a 'second-be.'
Lacks	Areas of English needed for agriculture or veterinary studies.	Means of doing medical studies.
Wants	To succeed in agricultural or veterinary studies.	To undertake medical studies.

In sum, whatever type is, students' needs have to be identified and analyzed because "by identifying elements of students' target English situations and using them as the basis of EAP/ ESP instruction, teachers will be able to provide students with the specific language they need to succeed in their courses and future careers" (Johns, 1991: 67).Therefore, it is only after the analysis of the learners' needs that the ESP teacher can proceed to the next steps.

1.6.1.3 The Process of Needs Analysis

The term *Needs Analysis* was first introduced in the 1920s in India by Michael West who uses the term to " cover what learners will be required to do with the foreign language in the target situation and how learners might best master the language during the period of learning" (Rahman, 2015: 25). Later, in 1961, the

term was suggested during the Makerere Conference (Commonwealth Education Committee) when English for Specific Purposes came to existence (West, 1994:1).

In the field of education in general and ESP in particular, more importance is given to investigations in the learners' needs as "a prerequisite for effective course design" (Long, 2005: 1).These needs are identified through the process of "needs analysis" or "needs assessment" which has been defined differently by several scholars. (Brown 1995: 35) posits that NA refers to "the activities involved in gathering information that will serve as the basis for developing a curriculum that will meet the learning needs of a particular group of learners". For this reason, the process of Needs analysis plays an important role in the ESP teaching operation. It is considered as the starting point in the process of designing and carrying out any ESP course. Indeed, Hutchinson and Waters (1987:53) have insisted on the fact that any language course design should be based on needs analysis through which the teacher will gather and collate relevant data about his students' reasons for learning English. This latter will be interpreted to define the objectives and the principles for more focused course design and teaching materials because:

> …if we had to state in practical terms the irreducible minimum of an ESP approach to course design, it would be needs analysis, since it is the awareness of a target situation – a definable need to communicate in English – that distinguishes the ESP learner from the learner of General English. (Hutchinson and Waters: 1987, p. 54)

Effectively, the vital role that needs analysis plays in the process of ESP teaching is scrutinized by Richards (2001:52) who maintains that a wide range of purposes can be served when conducting a needs assessment. These objectives are displayed as follows:

1.To help determine if an existing course adequately addresses the needs of potential students.

2.To insure if there is a real and beneficial change of direction that stakeholders feel is important.

3.To determine which students from a group are most in need of training in particular language skills.

4.To collect information about a particular problem learners are experiencing.

5.To ascertain what cognitive and academic skills students have acquired in English.

6.To determine the cultural, political, and personal characteristics of students.

7.To identify students' perceptions of language difficulties they may face.

8.To determine current levels of language proficiency of students.

(Richards, 2001: 52)

Therefore, the evolvement of needs analysis has led to the emergence of different models which **"**analyze a wide range of social issues that affect a language programme. Characteristics of the environment in which the courses are conducted and views of stakeholders are considered as important factors in current models of needs analysis**"** (Kothalawala and Amaratunga, 2015:1). Those models are similar to a certain extent with a slight difference related to the elements that should be focused in the NA process. Thus, it is up to the analyst to adapt the model that suits the case he intends to investigate.

To conduct a Needs Analysis, different approaches must be taken into account. Dudley-Evans & St John (1998: 126) state that **"**needs analysis study aims to know the target situations and learning environment so that data can appropriately be interpreted**"**. Regarding the present study, an integrative model like the one provided by Basturkmen (2013) where different components interact, is believed to be more appropriate. This needs analysis framework is based on

Hutchinson and Waters' (1987) approach in analyzing the target situation (TSA) and present situation (PSA). Basturkmen's model covers other types of analyses including learner-factor analysis and teaching context analysis. Thus, in order to assess the students' English language needs, the investigator considers different components.

Present Situation Analysis (**PST**): is undertaken to "establish what the students are like at the beginning of their language course, investigating their strengths and weakness" (Robinson, 1991, p. 9), to determine the students' previous learning experiences, and to identify their proficiency level to perform related activities and tasks in relation to the target situation. This is what Hutchinson & Waters (1987) refer to as '*lacks*'. Moreover, present situation analysis examines the gap between the students' abilities at the beginning of the course and what is wanted from them to achieve at the end of the course. Flowerdew (2013:327) posits that other aspects related to the prevailing situation can be revealed through present situation analysis. They include:

1. Personal information about the learners: factors which may affect the way they learn such as previous learning experiences, cultural information, reasons for attending the course and expectations of it and attitude towards English; information about learners' current skills and language use.

2. Information about the language teaching environment (e.g. resources, administration matters).

Thus, the present situation analysis identifies what learners already know and what they expect . It captures the students' current and immediate needs. The ESP needs analyst investigates what the learners do and do not know and can or cannot do in accordance to the requirements of the target situation (Richards, 2015:563).

Target Situation Analysis (**TSA**): the term Target Situation Analysis was first introduced and discussed by Chambers (1980). According to Dudley-Evans & St. John (1998, p. 124), TSA refers to "tasks and activities learners are/will be using

English for target situation". This means that TSA aims to identify *"the necessities"* and/or measure to what extent an adequate proficiency level for a profession or a study situation is reached. The course designer analyses **"what learners need to know or be able to do in the target language in order for them to function effectively in their chosen profession, work or study area"** (Basturkmen 2013:1). In other words, target situation analysis aims to investigate the future communicative situations to identify what the students should be able to do at the end of the ESP course. It also examines the context where English will be used and outlines the language-related activities and tasks that novice workers actually perform after graduation. Over time, the scope of NA has widened its scope to include the assessment of the learners' expectations, reasons for attending the course, attitudes towards English, preferred ways of learning, styles and strategies, and their perceptions of needs and / or "*wants*" in relation to the ESP course.

Learner Factor Analysis **:** in order to bridge the gap between the starting point, i.e. PSA to destination or TSA, learning needs as being a neglected terrain in ESP must be taken into account to determine the course content in response to *psychological* and *cognitive needs* ,i.e. motivational, recreational and emotional needs, *sociological needs* which include the teacher's role, subject valence, social responses…etc., and *methodological needs,* that is, classroom teaching, techniques, skills and strategies. It involves motivation of the students, their learning styles and strategies and the reasons for learning English. It also determines the students' type, level, learning process and their perceptions of their needs.

Teaching context analysis: relates to the content that can be realistically included in the course and assesses what realistically be offered in the course. The needs analyst examines the resources, time, materials and so forth.

Thus, Hutchinson and Waters (1987) suggests that the needs analysis should be conducted in parallel with three (03) main approaches, namely Target Situation Analysis, Present Situation Analysis, and Learning Needs Analysis. The framework of this model is summarized as follows:

Table1.4 Target Situation Framework (Hutchinson and Waters, 1987:59-60)

Why is the language needed?	- For study; for work; for training; for a combination of these; for some other purpose, e.g. status, examination, promotion.
How will the language be used?	- Medium: speaking, writing, reading etc.; - Channel: e.g. telephone, face to face; - Types of text or discourse: e.g. academic texts, lectures, informal conversations, technical manual s, catalogues.
What will the content areas be?	- Subjects: e.g. medicine, biology, architecture, shipping, commerce, engineering; - Level: e.g. technician, craftsman, postgraduate, secondary school.
Who will the learner use the language with?	- Native speakers or non-native; - Level of knowledge of the receiver: e.g. expert, layman, student ; - Relationship: e.g. colleague, teacher, customer, superior, subordinate.
Where will the language be used?	- Physical setting: e.g. office, lecture theatre, hotel, workshop, library ; - Human context: e.g. alone, meetings, demonstrations, on telephone; - Linguistic context: e.g. in own country, abroad.

Table 1.5 Framework for Analyzing Learning Needs (Hutchinson and Waters,1987:50-60)

Why are the learners taking the course?	- Compulsory or optional; - Apparent need or not,
Is status, money, promotion involved? What do learners think they will achieve? What is their attitude towards the ESP course? Do they want to improve their English or do they resent the time they have to spend on it? How do the learners learn? What is their learning background? What is their concept of teaching and learning? What methodology will appeal to them? What sorts of techniques are likely to bore / alienate them?	
What resources are available?	- Number and professional competence of teachers; - Attitude of teachers to ESP; - Teachers' knowledge of and attitude to the subject content; - Materials; - Aids; - Opportunities for out-of-class activities.
Who are the learners?	- Age sex, nationality;
What do they know already about English? What subject knowledge do they have? What are their interests? What is their socio-cultural background? What teaching styles are they used to? What is their attitude to English or to the cultures of the English-speaking world?	
Where will the ESP course take place?	- Are the surroundings pleasant, dull, noisy, cold etc.?
When will the ESP course take place?	- Time of day; - Every day, *once* a week; - Full-time, part-time; - Concurrent with need or pre-need.

Regarding the methods that help the needs analyst to collect the necessary data, Basturkmen (2013:30) outlines that needs analysis can **"**take a number of forms including questionnaires, interviews, observations of interactions and analysis of language use in the target situation, tests of performance and observations of ESP learners carrying out tasks replicating those in the target situation**".**

The use of the aforementioned research instruments enables the ESP teacher to gather important information about the learners' needs, both target and learning needs, students' perceptions and reasons for learning English, and the learning environment. This data will be analyzed and interpreted in order to design a more focused ESP course.

1.6.2 Specification of Goals and Objectives

The next step after needs analysis is the formulation of the course goals and objectives. But before, it is necessary to address the confusion in literature between objectives and goals. Goals refer to the things that a person wants to achieve. In the context of language teaching, they are "…broad statements that provide general sign points for course development" (Nunan and Lamb, 2001:39). This means that goals are very general and broad. Similarly, Graves (1996:17) define goals as "general statements of the overall, long-term purposes of the course". In other words, goals prescribe what is wanted from the course to achieve in the future. They are not permanent as they respond to the students' needs which are distinctive. For this reason, goals should be realistic as a way to enhance the learners' motivation. From the basis of goals, specific objectives are generated. On the other side, objectives are the **"**the specific ways in which the goals will be achieved" (Graves, 1996, 17). Objectives are said to be short to medium-term goals. They should correspond to the goals.

More general ████████████████████████████████████ More specific

               ⬅   ➡

               Goals   Objective

Figure1.13 Goals vs. Objective (Mayora, 2013:10)

Thus, the process of ESP course goals and objectives formulation is displayed in the following figure:

```
                                        ┌──────────┐
                        ┌────────┐       │  Narrow  │        ┌──────────────┐
                        │ Goal 1 │       │   The    │───────▶│ Objective1.1 │
                        └────────┘       │  scope   │        │ Objective1.2 │
  ┌──────────┐          ┌────────┐       │   of     │        │ Objective1.3 │
  │  Needs   │─────────▶│ Goal 2 │       │   the    │        └──────────────┘
  │ Analysis │          └────────┘       │  goal    │───────▶┌──────────────┐
  └──────────┘          ┌────────┐       │statements│        │ Objective 2.1│
                        │ Goal 3 │       └──────────┘        │ Objective 2.2│
                        └────────┘                           │ Objective2.3 │
                                                             └──────────────┘
                                                    ───────▶ ┌──────────────┐
                                                             │ Objective 3.1│
                                                             │ Objective3. 2│
                                                             │ Objective 3.3│
                                                             └──────────────┘

  ┌──────────────┐   ┌──────────────────────────┐   ┌──────────────────────┐
  │ Identify what│   │ State the needs of the   │   │ State context-suitable│
  │ learners need│   │ students in terms of     │   │ and precise objectives│
  │ English for  │   │ realizable goals for the │   │                       │
  │              │   │ program.                 │   │                       │
  └──────────────┘   └──────────────────────────┘   └──────────────────────┘
```
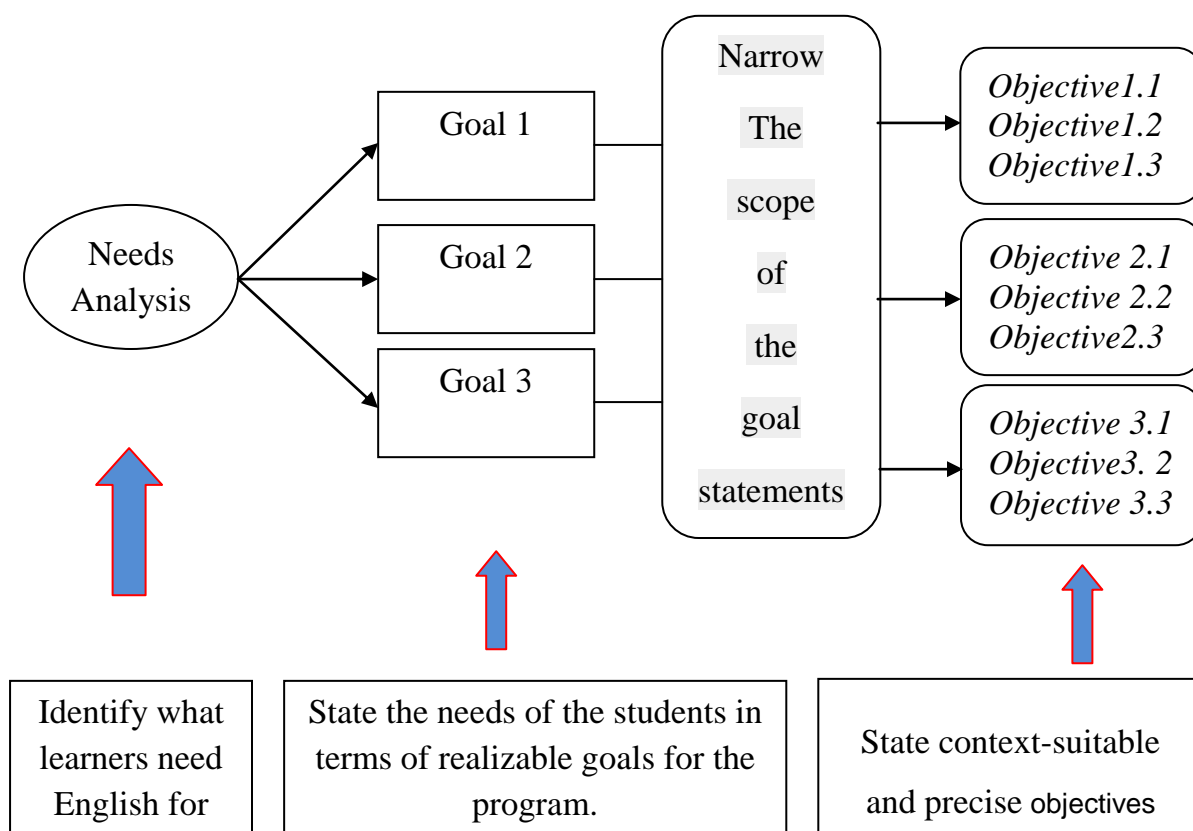
Figure1.14 Developing goals and objectives from needs (Mayora, 2013:18)

This implies that the course designer has clear explanations about *how*, *when* and *what* to teach. The content should reflect what is wanted from the course and the learners' reasons to attend this course. These latter are deduced from needs analysis . Thus, it is the teacher who **"identifies the changes in his learners' needs and then tailors his ESP syllabi by integrating four language skills into their lessons, thereby making subject content knowledge accessible and communicative to students"** (Nguyen and Nguyen ,2017: 801).

In the context of ESP, the ultimate goal of the course is to promote the students communicative competence. This is because ESP learners will use the language in real life situations. In this respect, Nation and Mocalisto (2010:6-7) outlines the different goals that ESP courses intend to achieve. These are:

1. to encourage students to exploit all the elements of the language that they know in order to make their meanings clear;

2. to encourage students to communicate in a wide range of everyday situations;

3. to promote students' co&mmunicative competence by developing their ability to understand and speak accurately and fluently about a wide range of topics in English;

4. to develop students' speaking and listening skills necessary for participating in classroom discussions with an introduction to oral presentation and critical listening skills.

1.6.3 Course content

At this stage, the ESP course designer decides about the content of the course. This implies the determination of what language areas, topics and aspects to be covered in the course, the order in which they are tackled. In fact, this step is referred to as *syllabus*. Hutchinson and Water (1987:8) clarify that a syllabus is **"a document which says what will (or at least what should) be learnt"**. This point drives to distinguish between syllabus and curriculum. Ansarey (2016:143) defines curriculum as the general presentation of **"language learning, learning purpose and experience, evaluation, and the role of relationships of teachers and learners"**. Curriculum designers make theoretical description and general statements about language learning, its purpose and the rational for language teaching. However, Rabu (2016) explains that syllabus is the process of **"breaking down the mass of knowledge to be learned into manageable units helps the ESP practitioners in developing materials which are appropriate to the students"**. It covers the content of the ESP course and interprets the goals of the curriculum to concrete objectives. Hutchinson and Waters (1987: 85) outline different types of syllabi. These are topic syllabus, structural or situational syllabus, functional or notional syllabus, skills

syllabus, situational syllabus, functional or task-based syllabus, discourse or skills syllabus and skills and strategies.

When planning the syllabus, Basturkmen (2010:61) asserts that the course developer decides about:

-*Types of units:* such as: skills, vocabulary, genres, functions, notions and disciplinary, professional or cultural content.

-*Items in the units:* such as: which genres, semantic sets and functions.

-*Sequencing:* what should come first, second and so forth and decisions made according to considerations such as: immediate and less immediate need, levels of difficulty with easier items before more difficult items and logical flow.

1.7 Conclusion

This chapter was in fact a theoretical part of an investigative case study where the researcher tried to give an overview related to ESP definitions, types and sub branches .The focus was made on teaching and learning ESP and the characteristics of EST course design . Next, the investigator attempted to shed light on the concept of needs and needs analysis, their types, characteristics, and the role that they play in ESP teaching.

This review work of literature is followed by an account where the investigator outlines other provisions in the process of ESP course design and highlights the importance of integrating technology and blended learning in ESP . It also describes the situation of ESP teaching and learning in the Department of Manufacturing and Engineering Sciences at Tlemcen University. This will be the task of the next chapter.

CHAPTER TWO   ESP Course Design and Situation Analysis

2.1 Introduction

The status of English as being the global language of world economy, law, media, and the vehicle for international scientific and technological exchanges has urged the decision makers to reinforce the position of the English language in the Algerian educational system. This is why ESP courses are offered in almost all the departments over the Algerian universities. These courses aim at meeting the students' English language needs and equip them with the necessary language components that enable them to function effectively in the target situation, be it an academic or a professional setting.

The present chapter is divided into two parts. The first sheds light on other provisions in ESP namely the approaches and parameters of the ESP course design. An account of the importance, principles, and models of materials production is provided. Then, a section is devoted to tackle the importance of integrating technology and more precisely blended learning in the ESP course.The second part devoted to describe the status of English in Algeria. Moreover, it portrays the ESP teaching situation in Tlemcen University and more precisely in the Department of Manufacturing and Engineering Sciences in the Faculty of Technology .

The study focuses, on the one hand, on determining the English language needs of first year Manufacturing and Engineering Sciences Master's students at Tlemcen University, and on identifying the stakeholders' attitudes towards the integration of blended learning in order to make the ESP course more effective and reliable.

2.2 ESP Course Design

In the context of ESP, course design plays a vital role. The latter refers to the process of planning tasks, activities and language components in line with the creation of an appropriate context that matches the learners' needs, expectations and reasons to learn. In fact, ESP course design is a difficult task to carry out because in

many instances the students' needs are not clear enough to identify (Haddam, 2015:49).

Opposed to GE where the process of course design is not at issue as the courses are determined by the Ministry of Education, ESP is neither the case. The difference does not lie only in the purpose of language teaching since ESP courses **"broaden the learners' knowledge about specific subject matter, by offering intensively specialized vocabulary that in turn prepares learners to use the language in their future professions"** (Albassri ,2016:45), but also in the methodology employed.

As it is previously mentioned, needs analysis in the context of ESP is tightly related to course design. This is because its significance **"lies in the potential of its findings to inform the development of the syllabus of the LSP course in question"** (Basturkmen, 2013: 7). Indeed, the data obtained from needs analysis interprets the students' actual level and portrays their expectations about learning English. Consequently, relevancy of language activities and tasks is established as learners are centralized in the course framework (Shahriari & Behjat, 2014, p. 322). Another reason is that ESP is **"an approach to language teaching in which all decisions as to content and method are based on learner's reason for learning"** (Hutchinson and Waters, 1992). Thus, exploiting information about the learners' needs to learn the language to design appropriate language course **"plays a relatively minor part in the life of the General English teacher, for ESP teacher, it is often a substantial and important part of the workload"** (Hutchinson and Waters, 1987:21).

Apart from ESP perspective of purpose, ESP courses are recognized according to the situation related to the learners' work or study experience (Basturkmen, 2010:6). This is encapsulated in the following figure:

```
                    ┌──────────────┐
                    │  ESP Course  │
                    └──────┬───────┘
        ┌──────────────────┼──────────────────┐
┌───────────────┐  ┌───────────────────┐  ┌────────────────┐
│ Pre-experience│  │ During-experience │  │ Post-experience│
└───────────────┘  └───────────────────┘  └────────────────┘
```
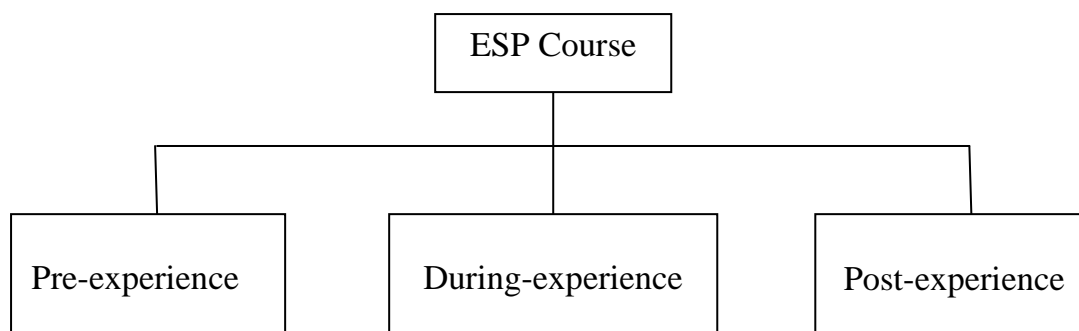
Figure 2.1 ESP course in relation to learners' work or study experience

As it is presented in the figure, Basturkmen (2010:6) dimensions ESP courses in three angles: pre-experience, during-experience, and post-experience.

❖ *Pre-experience:* it includes preparatory courses for learners who have never worked in the professional field but they want to apply for that position.

❖ *During-experience:* ESP course is delivered to learners who are still working in their professions at the time of the course.

❖ *Post-experience:* the courses are designed for students no longer working in their occupations, but who want to resume the job after they acquire the necessary skills.

(Privorova, 2016:15)

In this respect, ESP courses are designed to **"**teach the language and communication skills that specific groups of language learners need to function effectively in their disciplines of study, professions or workplace**"** (Basturkmen, 2013: 17). In fact, ESP course design is not an easy task. It involves interaction of different elements. So, to perform this task, a set of parameters have to be followed.

2.3 Parameters in ESP Course design

In pursuit of ESP, Hutchinson and Waters (1987:21) maintain that ESP course design is **"**fundamentally a matter of asking questions in order to provide a reasoned basis for the subsequent processes of syllabus design, material writing, classroom teaching and evaluation**"**. Indeed, a series of reflective questions should be investigated by the course designer.

The inquiries to be made are:

- ✓ Why does the student need to learn?
- ✓ Who is going to be involved in the process?
- ✓ Where is the learning to take place?
- ✓ What potential does the place provide?
- ✓ What limitation does the place impose?
- ✓ When is the learning to take place?
- ✓ How much time is available? How will it be distributed?
- ✓ What does the student need to learn? What aspects of language will be needed and how will they be described?
- ✓ What level of proficiency must be achieved?
- ✓ What topic areas will need to be covered?
- ✓ How will learning be achieved?
- ✓ What learning theory will underlie the course?
- ✓ What kind of methodology will be employed?

(Hutchinson and Waters 1987: 21-22)

The following figure illustrates these categories:
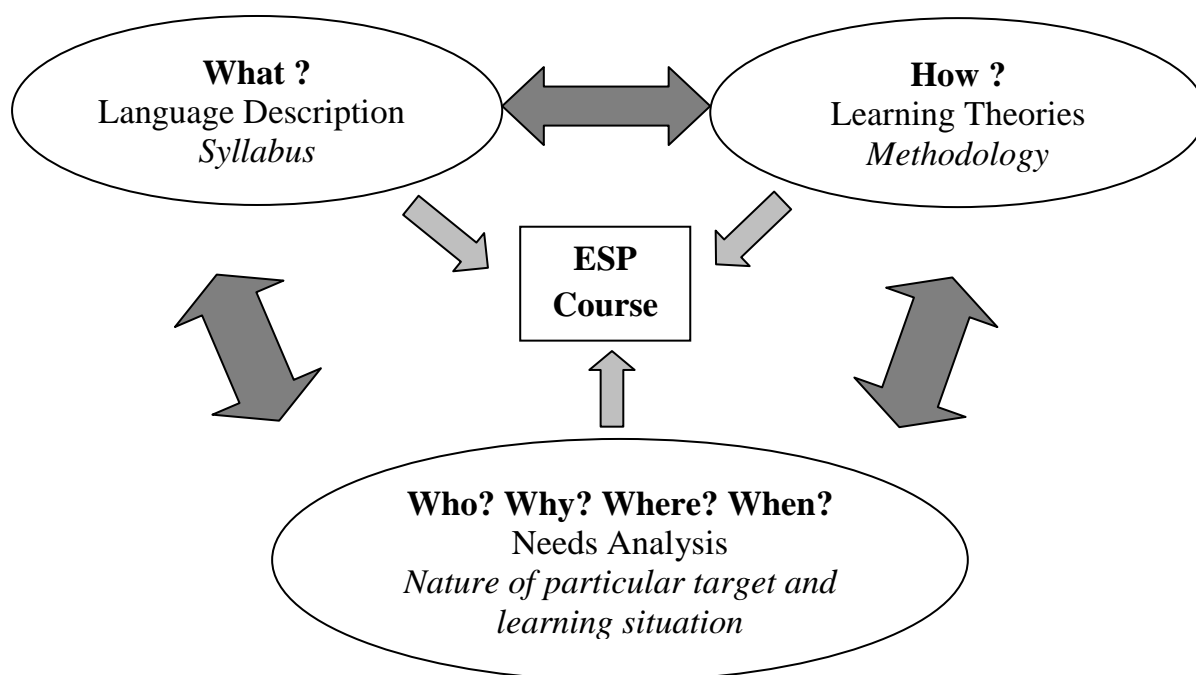
Figure 2.2 Factors affecting ESP course design

As it is shown in the above diagram, Hutchinson and Waters (1987: 21-22) group the questions under three criteria: *language descriptions*, *theories of learning* and *needs analysis*. The first factor i.e. language description refers to "the way in which the language system is broken down and described for the purpose of learning" (Hutchinson and Waters, 1987: 23). Language description answers the "*wh*at" question .The answer identifies the language knowledge that the learner needs to be included in the course. The second is learning theories. These cover the methodologies that explain how people learn a language as Hutchinson and Waters (1987:23) assert **"it is the learning theory which provides the theoretical basis for the methodology, by helping us to understand how people learn"** in accordance with the change of the learning styles and strategies. The last point is needs analysis which investigates the "who", "why", "when" and "where" in relation to the target and learning situations .

To conclude, one can say that designing an ESP course is a difficult task. It incorporates the interaction of the above factors "to achieve satisfactory goals of the ESP course and lead to effectiveness in the learning process" (Bracaj, 2014:44). This latter describes the nature of language teaching and learning and dictates the approach of the course to be taught.

2.4 Approaches to ESP Course Design

The evolution of language teaching and learning theories in addition to approaches to course design were of paramount avail in the development of ESP (Richards, 2001). In this respect, Hutchinson and Waters (1987:65) suggest three approaches to ESP course design namely *language-centered*, *learning-centered* and *skills-centered*.

2.4.1 Language-centered approach

According to Hutchinson and Waters (1987:66), the language-centered approach to course design relates the target situation analysis to the course content. It proceeds as follows:

```
┌─────────────────────┐                              ┌─────────────────────┐
│   Identify learners'│                              │  Select theoretical │
│   target situation  │                              │  views of language  │
└─────────────────────┘                              └─────────────────────┘
            │                                                    │
            │        ┌─────────────────────────┐                │
            └───────▶│  Identify linguistic features◀───────────┘
                     │  of the target situation.│
                     └─────────────────────────┘
                                  │
                                  ▼
                        ┌──────────────────┐
                        │  Create a syllabus│
                        └──────────────────┘
                                  │
                                  ▼
                        ┌──────────────────┐
                        │  Design material to│
                        │  exemplify syllabus items│
                        └──────────────────┘
                                  │
                                  ▼
                        ┌──────────────────┐
                        │  Establish evaluation│
                        │  procedures to test acquisition│
                        │  of syllabus items.│
                        └──────────────────┘
```
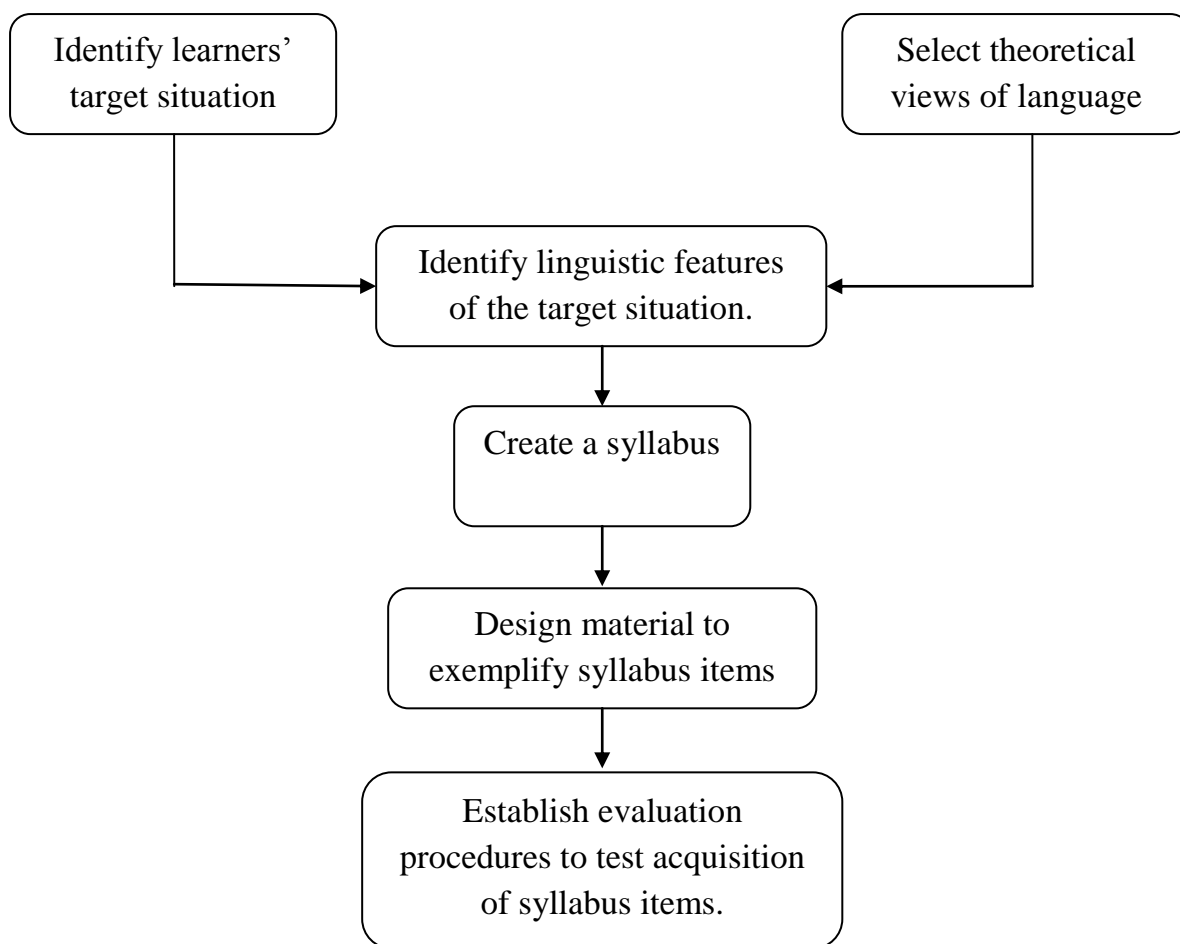
Figure2.3 A language centered approach to course design (Hutchinson and Waters, 1987:66)

As it is shown in the figure above, the ESP course designer identifies the learner's target needs and then selects theories of language in order to analyze the linguistic features of the target situation. The next step is the design of the syllabus followed by materials production. Based on the previous points, the successfulness of the course is put into question.

Though the language-centered approach is said to be the simplest and the most common among ESP course developers, this latter becomes subject to criticism. In fact, this is due to the fact that it neglects the learners' needs, motivation and expectations as it put so much focus on the target situation. As soon as the initial analysis of the target situation is done, Hutchinson and Waters (1987: 67) elucidate that **"the course designer is locked into a relentless process."** This approach is estimated to be inappropriate to design a flexible syllabus as it proceeds from one

assumption that set the learner aside and perceives learning as a linear process (Hutchinson and Waters, 1987:67-68).

2.4.2 Skills-centered Approach

The skills-centered approach comes into existence as a reaction to the notion of specific language as a key component of ESP. This approach to ESP course design puts the learner in the position of a language user rather than being a language learner as it emphasizes **"the processes of language use not language learning"** (Hutchinson and Waters, 1987:70). This approach is presented as follows:
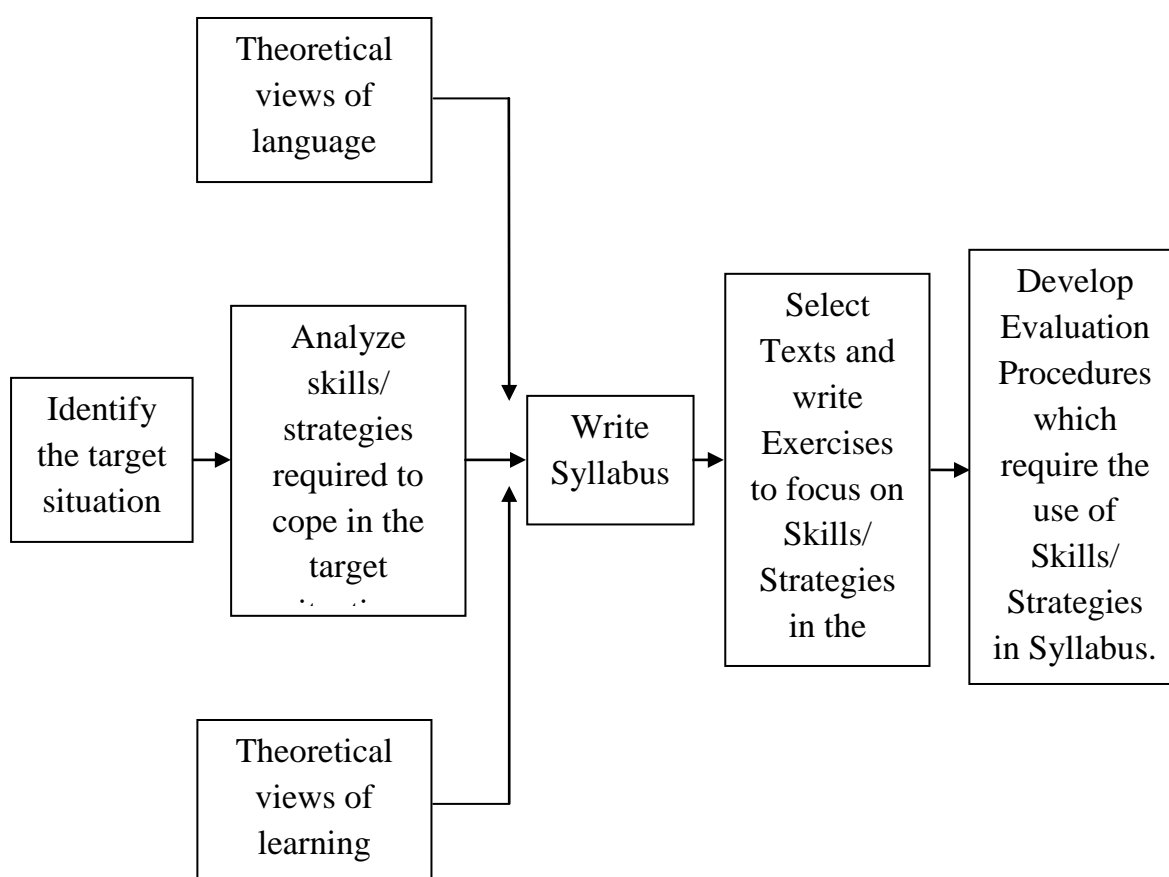
Figure 2.4 Skills-centered approach (Hutchinson and Waters, 1987:70)

The general scope of the skills-centered approach is to enable the students promote their skills and strategies after the course. This, indeed, enhances the learners' knowledge processing abilities. This approach dictates to go beyond the

target data in order to identify those processes that facilitate the learners' performance and therefore govern the ESP course.

The skills- centered approach is framed on the basis of two main principles:

-The basis theoretical hypothesis governing any language behavior. It entails that the learner has to use a set of styles and strategies in order to proceed.

-The pragmatic basis for skills-centered approach. It is generated from Widdowson's (1981) distinction between goal-oriented course and process-oriented course.

Within the skills-centered approach, needs analysis process serves to:

-Investigate the main competence that helps the learners act effectively in the target situation.

-Analyze the skills, potential knowledge and abilities that the students come with to the ESP course.

2.4.3 Learning-centered approach

The learning-centered approach puts the learners at the heart of the learning process. Teachers can decide what to teach but what students learn is identified by the learners themselves. It considers learning as a matter of negotiation between individuals and society rather than being just a mental process (Hutchinson and Waters, 1987: 72). This approach is regarded as a process where the learners make use of their prior knowledge and skills in order to grasp new state of knowledge. The learning-centered approach involves the investigation not of the competence that enables the learners to function but to discover how this competence is acquired. The framework of the learning-centered approach is summarized as follows:

```
                        ┌──────────────┐
                        │   Identify   │
                        │   Learners   │
                        └──────┬───────┘
```

| Theoretical Views of Learning | Analyze Learning Situation | Analyze Learning Target | Theoretical Views of Language |

| Identify Attitudes/ Wants/ Potential of Learners | |
| Identify Needs/Potential/ Constrains of Learning/ Teaching Situation | |

Identify Skills and Knowledge Needed to Function in the Target Situation

| Evaluation | Write Syllabus/ Materials to Exploit the Potential of the Learning Situation in the Acquisition of the Skills And Knowledge Required By The Target Situation | Evaluation |

Figure 2.5 A Learning-centered Approach to Course Design (Hutchinson and Waters, 1987: 74)

Alsamadani (2017:59) outlines that the learning –centered approach is very useful. This is because it ensures an ongoing systematic assessment of the students' needs. Another positive feature is that it acknowledges the use of authentic materials as a way to enhance the students' motivation. Within this approach, Hutchinson and Waters (1987) suggest the use of mixed method of data collection to cope with the complexity of needs identification.

In conclusion, one may deduce that while the language-centered approach focuses performance, the skills-centered approach concentrates on competence and the learning –centered approach seeks to discover how this competence is acquired. Regarding the present research work, the three approaches to course design overlap and constitute a continuum. Language-centered instruction is used as the researcher proceeds by analyzing the students' needs, identifying the features of the target situation, preparing materials and designing the course, and finally establishing an evaluation criteria. The skills-centered approach is employed since a set of authentic texts and carefully selected tasks emphasizing the skills that the learners need to develop in order to perform in the target situation are written.Besides the two approaches, the learning-centered instruction is adopted when a deep needs analysis of the learners' wants, attitudes , perceptions and potentials of learning is conducted.

Thus, the aim of ESP teaching is to equip the students with the necessary language skills that enable them cope with the requirements of the target situation. To achieve this objective, the ESP teacher has the choice to select, adapt or develop appropriate materials.

2.5 Materials in ESP Teaching

After formulating the content of the course (see section), the ESP teacher has the choice to select, adapt or develop appropriate materials.This involves that the process of ESP materials design turns around three main stages namely *selection*, *adaptation*, and *development*. But the only condition is that when the ESP teacher selects, adapts or develops the materials, he should address the students' needs and the materials he designs should " truly reflect what the teacher think and feel about the learning process" (Hutchinson and Waters, 1992:107). They also claim that effective materials cover a wide range of interesting tasks and activities that relate the students' current knowledge to the new state of enquiry.

2.5.1 Importance of ESP Materials Production

Hutchinson and Waters (1984:110) assert that the process of materials production is determined **"in all essentials by the prior analysis of the communication needs of the learners"** (Munby, 1978:2). This means that the role of ESP teachers lies on his ability to design his teaching materials in accordance with his learners' needs after which the ESP practitioner selects subject-specific materials which help the learners to store the procedural ability that enables them to enhance their intercultural competence and communicate effectively (Benabdallah, 2012:6).

To what extent the teaching materials should be subject-specific constructs the interest of many scholars. Skela (2008:159) indicates that the use of subject-specific materials is beneficial as:

-it emphasizes purposeful learning.

-It considers the learner as an active processor of information.

-It is based on problem-solving technique.

-It focuses on deliberate acquisition of language as a logical system.

Teaching materials are of paramount importance in designing an ESP course though the preparation of these instructional tools is not an easy task for the majority of ESP teachers as only **"few have had any training in the skills and techniques of materials writing"** (Hutchinson &Waters, 1987:106).

2.5.2 Principles of ESP Materials Design

As the use of teaching materials is welcomed in ESP classes, it seems to be difficult to the ESP teacher to design a course without producing the suitable reference materials. This latter needs to be **"consistent and to have some recognizable patterns"** (Dudley-Evans & St John 1998:171). Consequently, the

selection of teaching materials is basically influenced by the learners' needs, the ESP learning situation and the target situation. Hutchinson & Water (1987:108) argue that language instructional materials should not be **"the kind of beginners' guide to Applied Linguistics which is so prevalent in ESP"**. Therefore, teaching materials have to be designed in the form of syllabi that enables the learners to develop their language skills and improve their communicative competence (Wesche, 1989:1).

On the basis of Hutchinson and Waters' (1987: 107-8) views, Rabu (2016) provides a checklist summarizing the principles underlying the production of ESP materials. This latter should provide a stimulus to learn, help to organize the teaching learning process by providing a path through the complex mass of the language to be learnt, and embody a view of the nature of language and learning. ESP materials have to reflect the nature of the learning task. Therefore, ESP teachers should proceed systematically when applying these principles. They should adopt a framework to govern their design of materials.

2.5.3 Models of ESP Material Design

Hutchinson and Waters (1987:108-109) display a working model that governs the process of Materials production in ESP. It consists of four main elements. These are: *input*, *content focus*, *language focus* and *task*s.

✓ *Input:* can be a text, dialogue, a piece of writing,..etc. The type of the input depends on the results obtained from a needs analysis. The input incorporates :

1. Stimulus materials for activities
2. New language items
3. Correct models of language use
4. A topic of communication
5. Opportunity for the learners to use their knowledge processing abilities
6. Possibility to explore the students' current knowledge of the language and the subject matter.

✓ *Content focus:* it considered language as being not an end in itself but as a medium by which meanings; feelings, perceptions, views and information are conveyed in a form of meaningful communication patterns.

✓ *Language:* it implies that the learning objective intends to enable the learners to use the language that they have knowledge about. Language focus permits the learners to break the language into items, analyze them and putting them together.

✓ *Task:* the materials are designed for communicative purpose. That is, the learners use the content and the language knowledge they have formed.

Hutchinson and Waters' (1987:108-109) ESP materials design model is presented as follows:
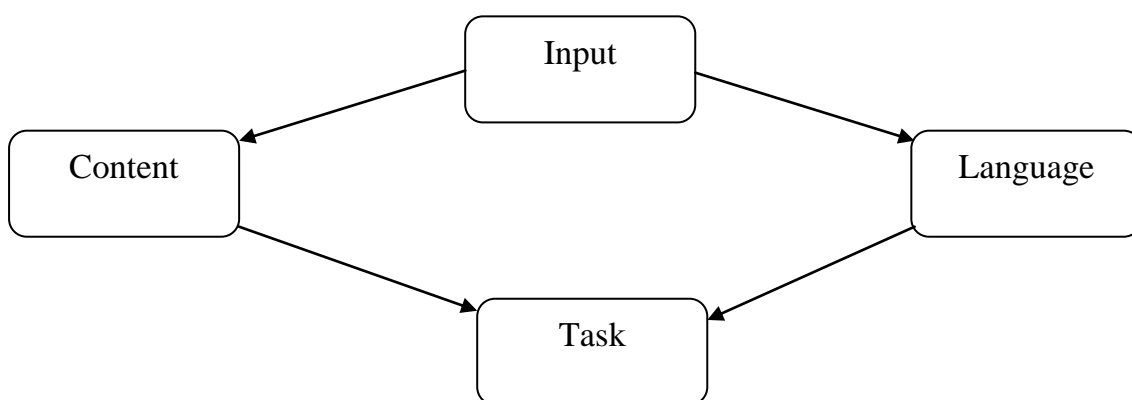
Figure 2.6 ESP Materials Design Model (Hutchinson and Waters, 1987, 108-109)

According to Hutchinson and Waters (1987:108), the model speculates that language and content are generated from the input and selected in response to what the learners need in order to do the task. The latter is the main item in the unit. The main feature of this model is that each item is congruent to each one. This helps the construction of skills and knowledge.

2.5.4 Authenticity of ESP Materials

An important criterion in materials design is the notion of authenticity which is "the main idea behind ESP exercise typology and is a skills-based approach to

materials development and design in ESP courses**"** (Coffey, 1984). Basturkmen (2010:62) explains that authenticity implies the use of materials **"**written for purposes other than language teaching and learning**"** .The use of authentic materials plays an important role in the learners' actual and simulated purposes to the real world. In fact, authentic materials create a context for real language with its cultural load to be presented in the classroom.

An important issue regarding the use of authentic materials should be considered from the part of the course design. This addresses the degree of complexity of those materials. In some cases,

> the authentic materials can be too complex, either linguistically or in terms of content. Although we may wish to use authentic texts, if the information in them is beyond the understanding of our students, this will inevitably make for frustration and hinder the effectiveness of the instruction.

> (Basturkmen, 2010:65)

To overcome this situation, adaptation is advised. This implies that the ESP teacher can modify, add or delete items to minimize the degree of difficulty. To do so, the learners' needs are usually at the top of consideration. Additionally, other techniques such as: **"**supplementing, editing, expanding, personalizing, simplifying, modernizing, localizing or modifying**"** (Madsen and Bowen, 1978) can be applied. The use of those techniques serves to stimulate the students' motivation.

For the sake of successful materials production criteria, Harding (2007:10-11) offers some useful guidelines. These include:

➢ Use contexts, texts and situations from the students' subject area. Whether they are real or simulated, they will naturally involve the language the students need.

➢ Exploit authentic materials that students use in their specialism or vocation, and don't be put off by the fact that it may not look like 'normal English'.

➢ Make the tasks authentic as well as the texts. Get the students doing things with the material that they actually need to do in their work .

Many scholars interested in the teaching materials operation (Richards, 2001; Canningsworth, 1995; Dudley-Evans & St John, 1998) maintain that teaching materials in the process of ESP teaching and learning are regarded as:

-a language source, reference or input for learners in terms of grammar and vocabulary.

-a source of activities and learning support for motivation and stimulation.

- a support for novice teachers to gain self-confidence.

In this vein, Lamri (2011:45) maintains that the role of the ESP teacher is **"**to produce and present the language content and the course activities in various ways to help and motivate the students to learn the target language needed to update their academic or occupational knowledge**"** as students' motivation becomes at the top of ESP issues. That is, the ESP practitioner should build his objectives on the idea of how to make the ESP teaching and learning motivational, flexible, individual, and autonomous regarding the fact that ESP is a learner-centered and content-based approach. To achieve this goal, the integration of Blended learning is suggested to be the most effective language teaching and learning devices.

2.6 The Use of Technology in ESP Teaching

The use of technology is increasingly recognized in teaching and learning situations. In this regard, Moreno and Mayer (2007 qtd in Jinbang, 2013:29) maintain that the inclusion of educational technology as part of the teaching process will make the latter effective so that a multitude of information can be obtained and stored.

Accordingly, the teaching of ESP is regarded as challenging mainly when new technology is integrated in the ESP class. Simin (2012: 10) states that the use of technology gives chance to the ESP learners to be exposed to specific-subject information. Therefore, online materials constitute a reliable reference that promotes the ESP learners' autonomy. Yet, online teaching materials' appropriateness in the ESP context is ensured only if these teaching aids relate the ESP learners' needs to their language and technological competencies.

Consequently, the integration of new educational technology in the field of language teaching is not a novelty. Chapelle and Jamieson (2008) suggest a wide range of possibilities to enhance language learning via technology. They propose the use of CALL, i.e. *computer assisted language learning*, *web-enhanced language learning* (WELL) and MALL, namely *mobile-assisted language learning*, in addition to blended learning, which promote the interaction patters from learner-teacher and learner-learner to computer-based interaction. They also develop the traditional way of teaching from face to face to technology-based communication. On the same line of thought, Blake (2008) introduces the concept of "*distance learning*" which refers to the use of **"**multimedia programs delivered by CD or DVD disks, Internet materials and activities**."**

In short, one may say that in order to promote learners' English skills and enhance ESP teaching and learning, a multitude of the sources that online materials cover can be used.

2.6.1 Characteristics and specifities of technology use

The use and evaluation of technology ensures that the importance of these e-tools is identified by its noticeable characteristics. Thus, Southern Regional Education Board (2005:2) outlines that the specifities that the teaching technology holds, lie in terms of:

➢ *Accessibility* and *Flexibility*: technology can be used by anyone, at anytime and anywhere.

➢   *Portability*: e-tools are characterized by the ability of exchanging the content from one environment to another.

➢   *Usability*: online teaching materials are practical for producing inputs and learning and interpreting outputs.

➢   *Reusability*: e-materials ensure the autonomy of the learning object which can be used and applied in different contexts.

The above outlined characteristics of technology use in the English course raise two important questions: what role do these e-materials play in educational context? And what makes technology highly recommended in ESP teaching?

2.6.2 Advantages and benefits of technology integration in ESP courses

In educational settings, online teaching materials **"**are becoming more interactive and distributed, enabling learners and instructors to participate in an incredibly array of information, resources, and instructional experiences**"** (Bonk & Cunningham, 1998). In this respect, Peratton et al. (2002:38) argue that **"**well-designed online teaching materials are usually designed to promote learning**"**.

According to Shyamlee & Phil (2012:152), a number of educational benefits are gained through the integration of technology in the English language classroom. First, these teaching tools enable the language teacher to construct a context for language teaching, improve the teaching effect, and promote teacher-student interaction. Second, the use of teaching e-tools develops the students' communicative skills, enriches their knowledge, and creates new horizons to make the learners opened on the target culture.

Regarding the ESP context where the learners' interest is the cornerstone factor to be taken into account, Kavaliauskiene (2003:1) asserts that the use of technology fosters the students' attitudes towards learning English, enhances student-centered learning, and therefore, presents **"**a reliable and continuously update source both of general and specific interest materials that are invaluable to learners**"**(Simin,2012:9). One of the possibilities to achieve these aims is the integration of blended learning.

2.7 Blended Learning Defined

The integration of technology in ESP courses poses many challenges and offers different opportunities. The advantages of high technology enables the application of blended learning mode of instruction in ESP classes. The term *Blended learning* was first used in business in relation with corporate training (Sharma & Barratt, 2007) when a press handout dated March 5, 1999, published that a company of Atlanta offered courses using BL (Catalano,2014:263). Then it was applied in higher education and in language teaching and learning. *Blended learning*, *hybrid learning* or *mixed-mode instruction* has been defined differently by many scholars though they agreed on its key components *face to face* and *online education*. It refers to the integration of **"online and face-to-face formats to create a more effective learning experience"** (Brew, 2008:98), that is the learners and the teacher are met together for face-to-face instruction but with giving the learners the chance of self-learning beyond the classroom via technology- based materials such as computers, satellite television channels, video-conferencing and other emerging electronic media. Similarly, Tafazoli (2014:1) breaks down the process of Blended learning into three main phases:

➢ combining instructional modalities
➢ combining instructional methods

combining online and face-to-face instruction.

Usta (2007) interprets blended learning in three different ways, i.e., as *media-based*, *method incorporation* or a combination of *online* and *traditional* education methods. In this perspective, Yeboah and Smith (2014:5) outline four components to be used in a blended learning environment. These are presented as follows:

❖ Multimedia and virtual Internet resources: this covers the use of videos, virtual field trips, and interactive websites.

❖ Classroom websites.

❖ Course Management Systems: this includes the use of the Moodle, WebCT, …etc.

❖ Synchronous and asynchronous discussions: such as Yahoo Groups, TappedIn, Blogs, and Elluminate.

The provision of these elements in the ESP course will be beneficial for both teachers and learners. So, what are the advantages of integrating blended learning in ESP teaching?

2.8 The Educational Effect of Blended Learning

Among the reasons that make blended learning one of the best practices in the field of language teaching is that it "provide realistic practical opportunities for learners and teachers to make learning independent, useful, sustainable and ever growing" (Šafranj,2013 :514) . Osguthorpe and Graham (2003) outlines that the integration of hybrid instruction ensures educational richness because blended learning "combines the best of the taught element of a course with the benefits of technology, so that, the argument goes, better learning outcomes can be achieved" (Sharma, 2007), information accessibility as they can have 24/7 access to their learning materials (Lungu, 2013:471), learner-centeredness, improved learning effectiveness. In addition to this, Sharma and Barratt (2007:3) emphasize the convenience of blended learning as students can learn whenever and wherever they want. Hockly (2011: 58) goes beyond the aforementioned features of blended learning and points out that the use of such learning environment in ELT will answer the learners' expectations since they consider themselves as "digital natives" who expect technology to be present and helps them fit language learning in their daily lives. Moreover, teachers opt for blended learning to enhance students' collaboration, project-based learning and problem solving (Eng and Muk 2015: 295).

Similarly, Catalano (2014:767) outlines a wide range of advantages that can be associated to the use of blended learning in the ESP course. He claims that the integration of blended learning :

-facilitates independent and team simultaneous learning experiences;

-enhances the students' motivation, interest and satisfaction;

-enables learning productivity as an outcome of the interactive learning activities given;

-creates continuum of professional activity;

-allows for the investment of a wide range of resources available by making a working plan that should lead to the achievement of the learning goals ;

-personalizes the learners' factors as the personal learning style and strategies of learners are adapted and supported

-gives possibility to ask for information and the permanent feed-back of a tutor;

-ensures the transfer of ideas in the private and professional area.

The application of blended learning in an ESP course is not an easy task. Rather, the ESP teachers need to adapt a clear evaluation criteria. The aim is to identify how successful the materials are , assess whether they fulfill the designed course, and examine the extent to which these materials match the students' learning objectives.

2.9 Evaluation

In education in general and ESP teaching in particular, the underlying objective behind carrying out an evaluation process is to establish appropriateness, effectiveness and efficiency of teaching and learning process in parallel with the predefined objectives. Regarding the ESP course, evaluation must be regarded "as a

part of the course design. The used materials, classroom activities, the out-of-class support, the course design, methodologies or any aspects of the teaching-learning situation, are the main topics that should be evaluated**"** (Saeed,2012:3).

As ESP courses intend to meet the students' needs, it seems to be necessary to check to what extent this course responds to the learners' requirements. Accordingly, Hutchinson and Waters (1987: 153) present clearly that a set of inquiries has to find answers in order to examine the effectiveness of the course. These questions are:

➢ Is the course fulfilling the learners' language *learning* needs
➢ Has the course fulfilled?
➢ Is the course fulfilling the learners' language needs?

2.10 Situation Analysis

As a starting step before describing the research methodology used to collect the necessary data to draw first year Manufacturing and Engineering Master's students' profile of needs, a portrait of Tlemcen University and its different faculties and departments notably the department under investigation (Department of Manufacturing and Engineering Sciences) is provided in addition to a description of the status of English in the Algerian both national and higher education.

2.10.1 The Linguistic Situation in Algeria

Regarding the Algerian context, the linguistic situation is considered as rich and complex at the same time. Tabory and Tabory (1987 cited in Resig, 2011:1327-1328) outline that:

> The Algerian situation is complex, as it is at a crossroad of tensions between French, the colonial language, and Arabic, the new national language; Classical Arabic versus colloquial Algerian Arabic; and the various Berber dialects versus Arabic. The lessons from the Algerian

situation may be usefully applied to analogous situations by states planning their linguistic, educational and cultural policies.

The existence of such an immense range of language varieties urged the Algerian authorities to create a balance between the national and foreign languages in the educational system. In order to overcome the language crisis and avoid the loss of identity, the Algerian education developers launched a set of reforms. The latter are summarized as follows:

Table2.1 Education reforms in Algeria

Year	*Reform*
1962	Implementation of Arabic in education
1963	Arabic is the official language of the country
1976	Implementation of "Fundamental School" consisting of three levels: primary school (06 years), middle school (03 years) and secondary school (03 years) with the teaching of all the subjects in Arabic.
1979	Teaching of "French as the first foreign language in the fourth year of primary school and English as the second foreign language in the eighth year of middle school.
2003	At the primary school, French is taught from the second year instead of the fourth. Introduction of Tamazight as a national language.
2004	Implementation of LMD system in Higher Education: License (03 years) , Master (02 years) and Doctorate (03 years)

2.10.2 The status of English in Algeria

Nowadays, the world becomes a "global village." The reason why the demand to know languages is noticeably increasing .In this respect, the recognition of the role that the English language plays in such an impressive global community as being the medium of interaction of international economy, science, technology, law, and media is highly required. As a matter of fact, teaching and learning English

becomes an urgent need due to the fact that education is considered as one of the strategic sectors all over the world.

Although French was the dominant language in education and administration, Algeria was not an exception of the countries who wanted to be fully integrated in the globalization process. One of the defining features of globalization is English which becomes both the language of science and technology, diplomacy, law, media,… etc., and synonym of social and economic evolution. The reason why English has received a considerable attention within the Algerian educational reform .In this regard, Miliani (2003:13) justifies that **"the introduction of English is being heralded as the magic solution to all possible ills including economic, technological and educational ones."** In fact, English was first implemented in the Algerian educational system by the French authorities during their colonization to Algeria (Hemche, 2014:134). Following the same path, English continued to be taught as a second foreign language after French in the Algerian schools after independence.

Consequently, there was an attempt to enhance foreign language teaching in the Algerian educational system by implementing English in the primary school. Pupils were given the chance to choose to learn French or English starting from the fourth year and lasting to the sixth year in the primary education. Unfortunately, this program failed as it was integrated only in few primary schools and faced a rejection of the parents who wanted their children to acquire French. But this fact does not deny the awareness of a great majority of Algerians of the vital role played by English in the world different sectors as it is clarified by Hayenne (1987: 43):

> In spite of all these challenges encountered by the English language, the Algerian political and educational authorities have managed to undertake the rehabilitation of the status of this language. Because of the technical and economic exchanges all over the world, English is now occupying a better position in the Algerian educational system. Hence, most of the

Algerian students and even their parents are becoming more conscious of its importance as an international language 'par excellence.'

In order to reinforce the status of English as an alternative to French in the Algerian educational system, curriculum developers in Algeria introduce English, the second foreign language, as a compulsory subject. The latter covers seven (07) years in national education, i.e., four years at middle school and three years at secondary education. In parallel, the Algerian Ministry of Higher Education and Scientific Research introduced the teaching of English at university level all over Algeria. This decision came as a solution to cater for the requirements of both academic and professional settings. Another attempt to empower the position of English is mainly related to the creation of ESP centers notably in Oran, Algiers and Constantine in 1980s (Daoud Brikci, 2012: 49). This project came into practice as a response to a series of contact with some British Universities namely Glasgow, Manchester, Leeds, Sheffield, Nottingham and Salford. This co-operation ensures mobility of Algerian students to these universities as postgraduates. Bencherif (1993) asset that the aim behind the foundation of such institutions was to train teachers and learners who want to pursue their studies in UK, design English courses and teach English to subject specialists in the fields related to science and technology. As cited in Benyelless (2009:90), there was a total dissolution of the ESP centers, mainly those at the level of Constantine and Algiers, due to the government's refusal to give these centers an official status. The ESP center in Oran constitutes the exception. Though it is believed not to fulfill its mission, the center perform some activities related to the organization of seminars and study days in addition to providing documents to researchers, teachers and students.

Indeed, English is taught as a discipline in the English department and as an integrated module known as English for Specific Purposes (ESP) in the other scientific and social departments such as biology, pharmacy, computer sciences, manufacturing and engineering sciences, philosophy, sociology,…etc. The aim is to enable the students to develop the language four skills, achieve an adequate proficiency level in English and mainly promote their content knowledge and

prepare them to be active communicants and participants in both national and international manifestations.

2.10.3 ESP Situation at Tlemcen University

Tlemcen University or Abou Bekr Belkaid University was founded according to the decree N° 89-138 on August 01, 1989. It is composed of five (05) poles; in Chetouane, Imama, la Rocade, la Caserne, Hay Zitoune. It consists of eight faculties, each with more than one department. These faculties are:

- ❖ The Faculty of Sciences.
- ❖ The Faculty of Technology.
- ❖ The Faculty of Medicine.
- ❖ The Faculty of Letters and Languages.
- ❖ The Faculty of Humanities and Social Sciences.
- ❖ The Faculty of Law and Political Sciences.
- ❖ The Faculty of Economics, Business Sciences and Management.
- ❖ The Faculty of Natural Sciences, Life Sciences, Earth Sciences and the Universe.

The university also encompasses two superior national schools, namely National Superior School of Applied Sciences and National Superior School of Management, and two preparatory schools; Preparatory School of Sciences and Techniques and Preparatory School of Economic and Commercial Sciences and Management. The university counts for seventy-four research laboratories. Within the LMD system, the students at Tlemcen University have the chance to be trained through three stages: License (03 years), Master (02 years) and Doctorate (03 years). Regarding English language instruction, the ESP courses are offered in all the faculties and departments of Tlemcen University, including the department under investigation, i.e., Department of Manufacturing and Engineering Sciences. These courses aim at promoting the students' abilities to communicate effectively in target situations.

2.10.3.1 Faculty of Technology

The faculty of technology, previously known as the faculty of engineering sciences, is one of the eight faculties in Tlemcen University. It was founded in September 1999. The faculty consists of seven (07) departments: Architecture, Civil Engineering, Biomedical Engineering, Electrical and Electronic Engineering, Hydraulic Engineering, Telecommunication, and Mechanical Engineering.

The faculty receives Baccalaureate holders mainly from Experimental Sciences, Mathematics and Technical Math streams. The current study program within the LMD system is organized in eight years of study. As presented in the following diagram:
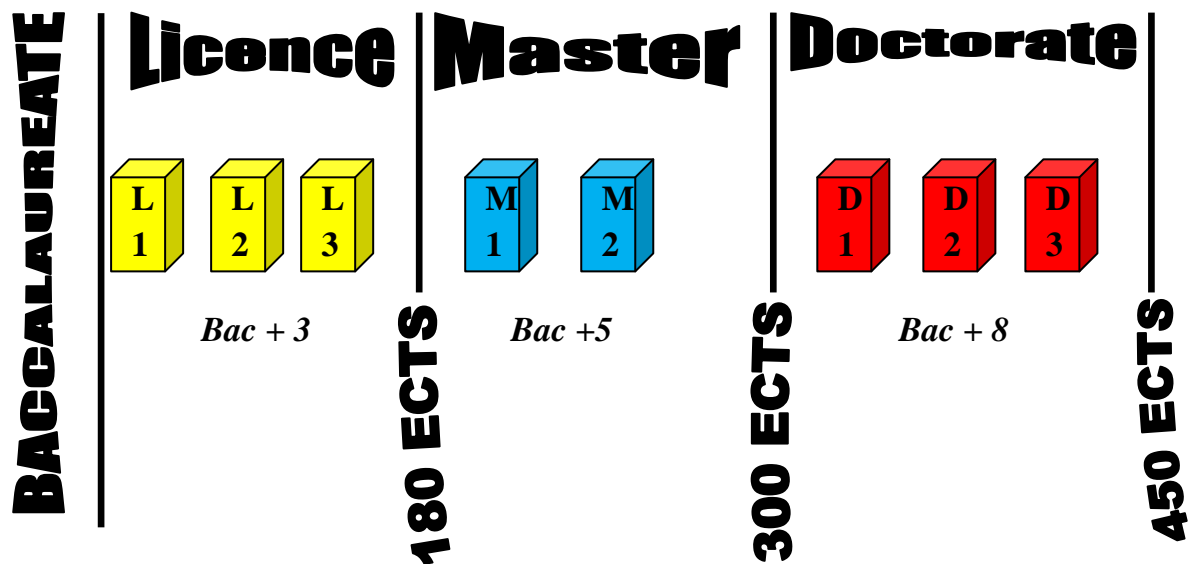
Figure 2.7 LMD System

The training design at the faculty of technology is structured through three stages, i.e., License, Master, and Doctorate. The courses are organized in semesters and teaching units (UE) with the implementation of the credit system (ECTS[1]). In other words, the three training stages are expressed in semesters. Each semester which counts fifteen (15) weeks including teaching and evaluation, corresponds to an hourly volume established and measured in credits. In fact, one semester makes a

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[1] European Credits Transfer Scale (ECTS)

sum of thirty (30) credits, i.e., one (01) credit equals twenty (20) hours of the total work load including courses (cours), tutorials (TD),field work (TP), research, training and personal work. Concerning the teaching units, the courses are presented in the form of lectures, tutorials, practical work, fieldwork, research, etc., or the combination of these different forms.

   Thus, this system is organized as follows:

❖   License obtained after three (03) years of study or six (06) semesters corresponding to 180 credits where the students should prepare a training report.

❖   Master approved after two (02) years of study, i.e., four (04) semesters equivalent to 300 credits. At this stage the students have to submit a thesis.

❖   Doctorate degree gained after three (03) years of study, that is six (06) semesters constituting a total of 480 credits, but before the students have to pass a contest to enroll and conduct research embodied in the form of a dissertation that should be defended by the end of the 3rd year.

   The ESP course or technical English is considered as a transversal unit. It is offered in all the departments in the faculty of technology at Tlemcen University. The students receive ESP courses both at graduate and/or post-graduate levels. However, the time allotted to English teaching differs from one department to another. This is due to the field and the level of study. The following table gives the time allotted to the instruction of English in the faculty of technology.

   It is noteworthy to assert that the department involved in the current study is conformed to the Department of Electrical and Electronic Engineering, the reason why it is not displayed in the table below. The latter compromises two sub departments: science and technology, and Manufacturing and Engineering. Though it is considered as a separate field , the specialty of Manufacturing Engineering shares much of content areas with the aforementioned department.

Table2.2 Time allocated to English teaching in the faculty of technology

Departments	Time allotted to English teaching				
	License			*Master*	
	1ˢᵗ year	2ⁿᵈ year	3ʳᵈ year	1ˢᵗ year	
Architecture	-	-	1h30	1h30	-
Mechanical Engineering	3h	1h30	-	1h30	-
Civil Engineering	-	1h30	-	1h30	-
Hydraulic Engineering	1h30	-	-	1h30	1h30
Electrical and Electronic Engineering	-	3h	3h	3h	-
Telecommunication	-	1h30	-	1h30	-
Biomedical Engineering	-	-	1h30	1h30	-

The above table shows that the ESP courses are offered in all the departments in the faculty of technology at Tlemcen University. The hourly volume differs from one department to another according to the specialty and the level of study. The average of the teaching hours ranges between one hour and a half and three hours a week. The use of the dash in the table refers to the absence of the ESP course either because of the nullification of a language course or the teaching of the French language. Therefore, the number of hours indicated in each department varies depending on the specialty as each of the aforementioned departments encompasses a wide range of specialties.

2.10.3.2 The Department of Electrical and Electronic Engineering

The Department of Electrical and Electronic Engineering (EEE) is among the oldest departments of Tlemcen University. It was founded in 1987. It offers training in two main branches:

➢ Science and Technology stream: it includes Automation, Electronics and Electrical Engineering.

➢ Sector with national recruitment: Industrial Engineering, specialty of manufacturing engineering.

The department offers learning till obtaining License and Master's degrees. Concerning access to Doctorate degree, a particular procedure is followed. That is, it depends critically on human and material resources. In other words, access is not guaranteed to all students as they have to pass a contest and the admission depends on the number of positions available. Thus, learning is summarized as follows:
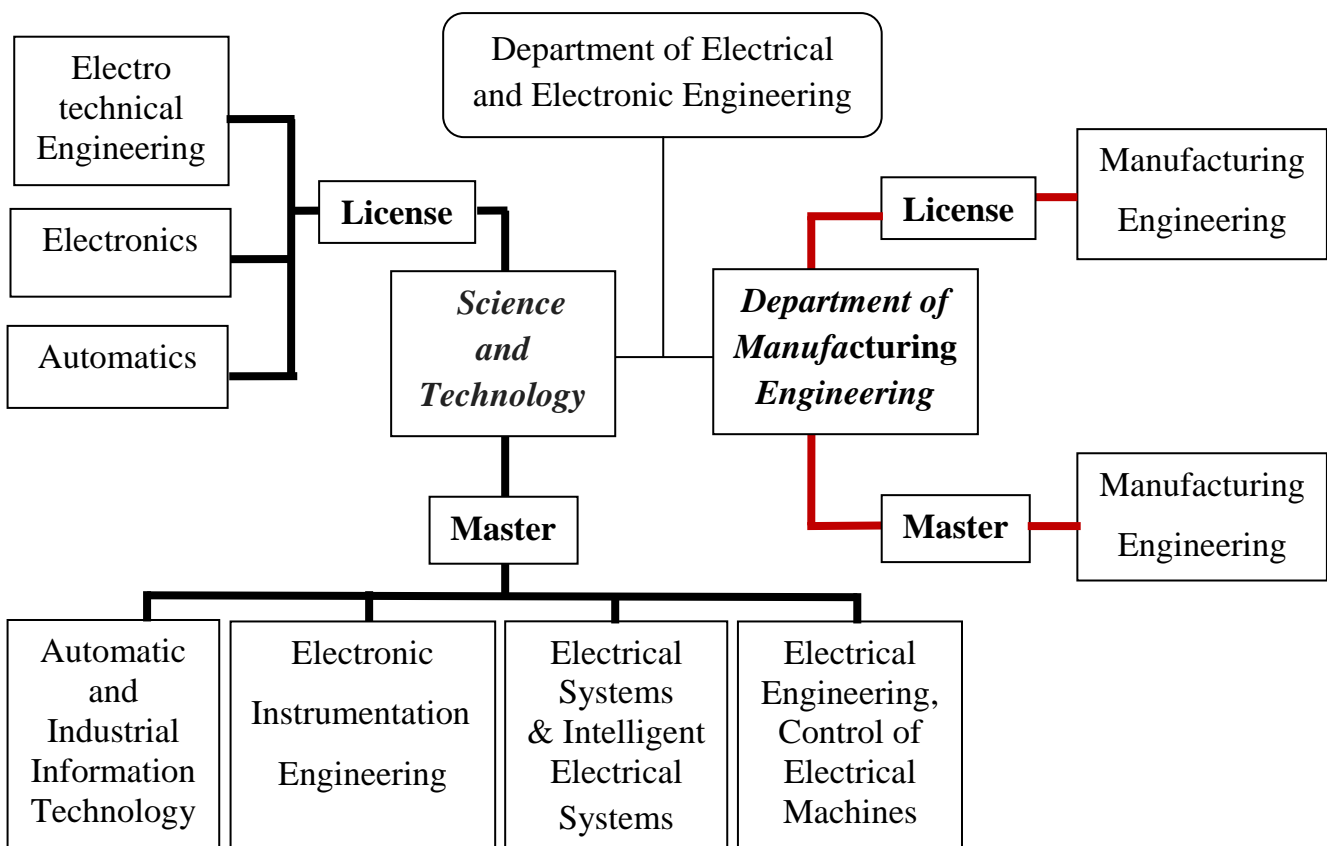
Figure2.8 Learning in the Department of Electrical and Electronic Engineering

2.10.3.3 Department of Manufacturing and Engineering Sciences

In an industrial world governed by competitiveness, the Algerian industry cannot continue to operate without an optimization of its resources and automation of its manufacturing units. Manufacturing activity is subject to constant change in technology and human knowledge. Though Manufacturing Engineering is little discussed in universities, it is of paramount importance for the development of the Algerian economy. This is why the Department of Manufacturing Engineering at Tlemcen University was implemented in 2011.

a.General Description

Manufacturing Engineering is a scientific and technological sector which offers a very wide range of career opportunities. It covers all the applications of science and technology to issues affecting the industry. It encompasses a set of techniques and methods that serve to improve and optimize the manufacturing field. Moreover, training in the field of manufacturing engineering aims at developing the students' manufacturing skills which are required in all areas of industry and service sectors for both technical and managerial purposes. Unfortunately, there is very little training in this area in Algeria. The objective of the implementation of this field of study is therefore to help students to obtain the necessary skills in the area of manufacturing engineering for the sake of the development of industry on regional, national and international scales.

The Department of Manufacturing Engineering at Tlemcen University offers learning in accordance with the LMD system. It welcomes the new baccalaureate holders wishing to follow studies, from the first year in manufacturing engineering. The degrees are part of a global learning framework in manufacturing engineering composed of a License degree with six (06) technological options and a Master's degree in manufacturing engineering with five (05) managerial options.

Concerning the first cycle, the students receive studies in two common core years. During this period, a set of fundamental subjects, namely mathematics,

physics and chemistry, as well as other subjects related to the field of manufacturing engineering are taught. Thus, the students will acquire, in addition to basic science knowledge, basic knowledge in manufacturing and technology. By the end of the second year, the students have to choose one of the six options. In the third year, in addition to training in manufacturing engineering, the students will follow five courses of 45 hours each in the technological option they have chosen. In fact, the choice of options enables the learners to acquire a set of technological skills that allow them to master the industrial processes necessary to apply the manufacturing techniques. These options are: automatics, data processing, electrical engineering, process engineering, mechanical engineering, and photovoltaic industry. The six options are presented as follows:

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                                        ┌─────────────────────────┐
                                        │   Photovoltaic Industry  │
                                        └─────────────────────────┘
                                        ┌─────────────────────────┐
                                        │   Process Engineering    │
                                        └─────────────────────────┘
                                        ┌─────────────────────────┐
┌──────────────────────────┐           │  Electrical Engineering  │
│ Manufacturing Engineering │           └─────────────────────────┘
│     Academic License      │──────     ┌─────────────────────────┐
└──────────────────────────┘           │ Mechanical Engineering   │
                                        └─────────────────────────┘
                                        ┌─────────────────────────┐
                                        │     Data processing      │
                                        └─────────────────────────┘
                                        ┌─────────────────────────┐
                                        │       Automatics         │
                                        └─────────────────────────┘
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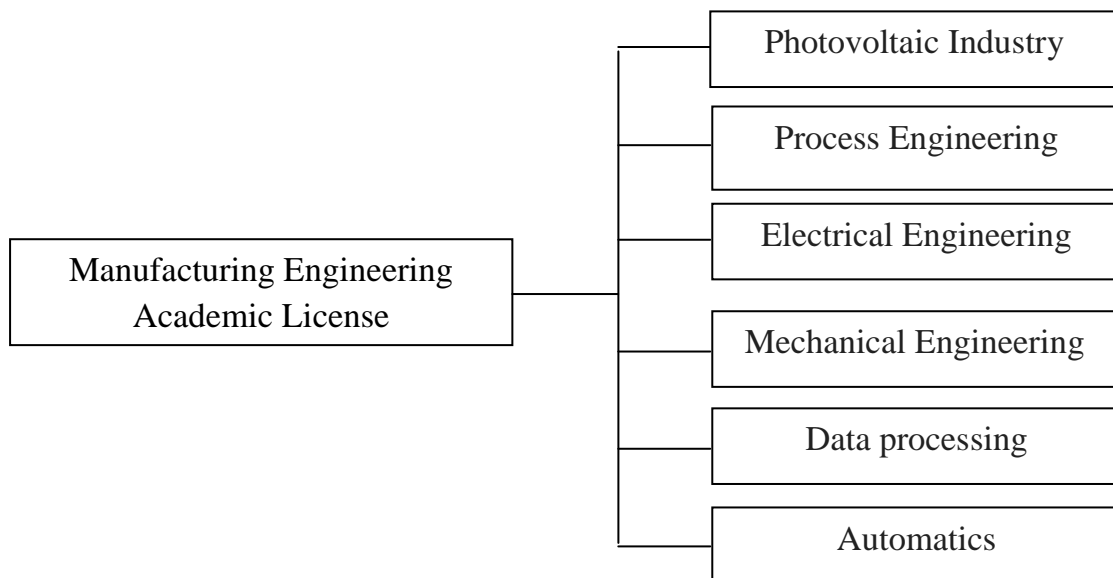
Figure 2.9 Options of the License degree in the Department of Manufacturing Engineering

After graduating from one of the License degree aforementioned options in Manufacturing Engineering, students can pursue their studies within two years in order to obtain a Master's degree in manufacturing engineering. In the second semester of Master1, students choose between five manufacturing options. This choice allows them to pursue five 45-hour courses, each with the aim to deepen the students' knowledge in the chosen option. Moreover, they have the possibility to choose two courses among the modules of the other options. These options are:

➢ *Manufacturing Engineering* where the students acquire skills in modeling, optimization, management and management of production systems.

➢ *Systems Engineering* where the courses focused on understanding systems, their design, and their modeling by systematic methodologies.

➢ *Management engineering*: this option is more management-oriented than the others; it is interested in the managerial aspects of systems.

➢ *Operation Security and safety*: in this specialty, the students will gain knowledge in the field of maintenance and reliability of the systems.

➢ *Logistic Chains*: this option is interested in modeling, optimization, management and management of logistics chains.

Training at this stage is presented in the following diagram:

```
          Manufacturing  Engineering Master's Degree

Manufacturing   Systems      Management    Operation Security   Logistic
Engineering     Engineering  engineering   and safety           Chains
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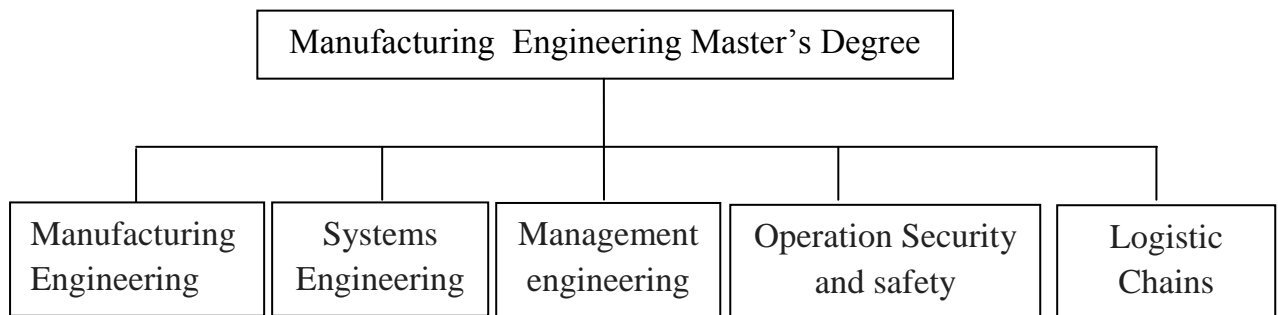
Figure2. 10 Master's degree options in the Department of Manufacturing Engineering

It is worth pointing that the department under investigation is referred to by different names. When it was first implemented, it was labeled the Department of Production Engineering. Later, the name was changed to the National Field of Manufacturing Engineering: Production. Recently, and after a wave of protests from the part of students pursuing their studies in this specialty, the department has been identified as the National field of Industrial Engineering. The reason behind this designation is to gain status in the Official Journal of the Algerian Government since the label given to the department first is not codified in the constitution. Nevertheless, the investigator refers to this study field as the Department of Manufacturing Engineering.

b. ESP in the Department of Manufacturing Engineering

In the Department of Manufacturing Engineering at Tlemcen University, the ESP course or technical English is considered as a transversal unit following the LMD system. It is regarded as a compulsory course. The course is delivered in an hourly volume of three hours per week. However, English language teaching differs from one level to another and from one semester to another. Thus, the following table summarizes the occurrence of the ESP course in the Department of Manufacturing Engineering at Tlemcen University in terms of degree, level, option and weekly hours of instruction.

Table2.3 the ESP Course in the Department of Manufacturing Engineering at Tlemcen University

Degree	*Level*	*Option*	*Time load*
License Degree	1st Year	Common Core	-
	2nd Year	Common Core	3h
	3rd Year	Automatics	3h
		Data Processing	3h
		Electrical Engineering	3h
		Process Engineering	3h
		Mechanical Engineering	3h
		Photovoltaic Industry	3h
Master's Degree	1st Year	Common Core	3h
	2nd Year	Management engineering	3h
		Logistic Chains	3h
		Operation Security and safety	3h
		Systems Engineering	3h
		Manufacturing Engineering	3h

In the two semesters, i.e., the first year, students in the Department of Manufacturing Engineering at Tlemcen University learn French as a language course. Starting from the second year to the last year, they receive ESP courses. Unlike the other departments where English teaching is programmed at the end of the day if not at the end of the week, the ESP course in the department under investigation is delivered during different periods of the day and the week. The sessions are scheduled in the morning or in the afternoon as well as at the beginning or the end of the week. In fact, this in itself signals the awareness of the administration of the vital role that the English language plays in today's world of science, technology and economy. The aim of the English course is to promote the learners' language skills to enable them to communicate effectively in the target situation, to equip them with the necessary language components they need in their studies, to conduct research and in their future career.

Despite the time load located for the English course in the Department of Manufacturing Engineering at Tlemcen University compared to other departments, this latter is still regarded as an additional module. In other words, the students do not give much importance to the ESP course as the rate of absences in the English course is the highest among the other disciplines. This is because of the coefficient which is just one. Another reason is that English instruction is assigned to untrained teachers who are recently License or Master's holders. In fact, those teachers find themselves teaching whatever aspect or skill of English without having any relation to the students' specific needs due to the absence of a well-defined syllabus, teaching method and materials, in addition to the fact of being part-time teachers with unmotivated salary.

2.11 Conclusion

The second chapter was devoted to describe other requirements in the process of ESP course design. It also attempted to portray the ESP teaching and learning situation at Abu-Bekr Belkaid University of Tlemcen with a special focus on the teaching of ESP in the Department of Manufacturing and Engineering Sciences.

Respectfully, the next chapter will provide a thorough presentation of the research methodology followed to conduct a needs analysis in the aforementioned department. Later, the rational for needs analysis was described. It will also analyze and interpret the results drawn from the students' and the teachers' questionnaires, the subject-specialists- and the administrators' semi-structured interviews and the workplace managers' structured interview. The data obtained will give important insights about the students' target and learning needs and determine the stakeholders' attitudes towards the integration of blended learning in the ESP course in the Department of Manufacturing and Engineering Sciences at Tlemcen University.

Chapter Three Needs Analysis and Identification

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          3.4.2.2 Students
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3.10 Summary of the Main Results and Discussion
3.11 Conclusion

3.1 Introduction

Demands of globalization to establish a one-world linguistic order to make students use a global status language which is English, continues to make pressure on the Algerian higher education leaders to implement English as a crucial part of the curriculum. Thus, the department of Manufacturing and Engineering Sciences at Tlemcen University, like all the faculties, devotes sessions of English within its curriculum to fit the needs of the students and to prepare them to act as global citizens.

Thus, the present chapter is devoted to a Needs Identification and Analysis of Manufacturing and Engineering Sciences students at Tlemcen University. The investigator proceeds to present the research design where the research method, the sample of informants and the instruments used to collect the data are described. Furthermore, processes such as triangulation, validity and reliability of the research instruments are also clarified. In addition, the researcher describes the rational for needs analysis applied in the present research paper.

In the last section, the researcher analyzes the collected data both quantitatively and qualitatively. This aims at identifying the students' target and learning needs, describing the ESP teaching situation in the Department of Manufacturing and Engineering Sciences at Tlemcen University, and determining the stakeholders' attitudes towards the integration of blended learning in the English course.

3.2 Research Objectives

While in Algerian higher education Arabic and French are the main mediums of instruction and scientific research, English is regarded as optional. The central role that the latter plays nowadays as the language of science, technology, and the key for development, imposes on the Algerian educational authorities to implement English as a second foreign language in higher education.

After the implementation of the LMD system in 2004, the Department of Manufacturing and Engineering Sciences introduced the teaching of the English language as part of its syllabus. This ESP course aims at enabling the students to read and write documents related to their area of specialism, and to promote their communicative skills to keep in contact with foreign colleagues.

The current research work aims at identifying the English language needs of first year Manufacturing and Engineering Sciences Master's students at Tlemcen University, and investigating whether the integration of blended learning within the ESP course can have positive or negative effects on the success of the English course. Thus, the objectives of the present research are:

1. To portray the present situation of the ESP course in the Department of Manufacturing and Engineering Sciences.

2. To describe the methodologies, techniques and teaching materials used by EST teachers to conduct their courses.

3. To identify and analyze the English language needs of Manufacturing and Engineering Sciences students.

4. To determine the stakeholders' attitudes towards the integration of blended learning in the ESP course.

5. To design an ESP blended course which satisfies the needs of Manufacturing and Engineering Sciences students .

6. And finally to evaluate the usefulness of the previously designed course.

To achieve these objectives, the investigator tries to employ the most suitable research method. Henceforth, the current study proceeds into two phases where two research methods are combined. While the first is a case study research through which needs analysis is conducted, the second illustrates the implementation of the ESP blended course through an experimental method. In fact, "combining the

advantages of the different methods can help to achieve an objective position" (Laamri, 2015:92) as it enables the researcher to gather, check, confirm and explain data at the same time.

Since the first step undertaken by the researcher to carry out her research is to analyze the English language needs of first-year Master's students in the Department of Manufacturing and Engineering Sciences at Tlemcen University, she decides to opt for a case study method. Then, the next section highlights the purpose and the different characteristics of this method.

3.3 Research Method

The first step undertaken in the current study is the analysis of the first-year Master's students' needs in the Department of Manufacturing an Engineering Sciences at Tlemcen University. Accordingly, the researcher opts for a case study research which "focuses on understanding the dynamics present in a management situation" (Eisenhardt 1989). The detailed data is gathered to describe the ESP situation in the Department of Manufacturing and Engineering Sciences at Tlemcen University and to have a clear vision about ESP teachers' and learners' attitudes towards the integration of blended learning as part of the ESP course. To achieve this objective, the investigator chooses the case study method to conduct a needs identification and analysis in the department under investigation.

Gall et al. (2005:433) define the case study as "the most widely used approach to qualitative research in education" .In the same vein, Merriam (1988:16) argues that the case study or the monograph describes and analyses one entity, a person, an object, an event…etc. This type of research is used in various fields mainly those requiring more detailed information collected from multiple sources. Case studies provide a rich and vivid description of events relevant to the case in the form of a chronological narrative as Stephen and Michael (1981:48) state that case studies are "in-depth investigations of a given social unit resulting in a complete, well-organized picture of that unit".

Yin (2014) proposes an insightful methodological definition of the case study research which signals the different steps and strategies used to collect and analyze the necessary data. In fact, case studies personify the phenomenon under investigation. That is, they bring real-life situations into the classroom through which the researcher tries to:

-recognize and identify the nature of the phenomenon under investigation or the unit of attention.

-Use multiple sources, i.e., triangulation of the research instruments such as *documents, interviews, direct and/or participant observation* to construct validity and collect data of the given case. This indeed nullifies the assumption that case study is the most common type of qualitative research, with respect to the fact that qualitative data are the primary choice (Ridder, 2017:286) as both quantitative and qualitative data are gathered from the aforementioned tools.

-Analyze the collected data and diagnose the causal factors as a basis for remedial or developmental treatment.

As any research method, the case study research may be relevant in situations as it may be unsuitable in others. In this regard, Umesha (2016) outlines the advantages and the advantages of the case study method as follows:

Table 3.1 Advantages and disadvantages of case study method (Adapted from Umesha, 2016)

Advantages	*Disadvantages*
The case study method enables the researcher to: ✓ understand fully the behavior pattern of the concerned unit. ✓ Obtain a real description of personal experiences which would explain the person's behavior in terms of inner strivings , tensions and motivations . ✓ Formulate relevant hypotheses along with the data which may be helpful in testing them. ✓ Generalize the results and enrich knowledge.	The case study method does not enable the researcher to: ✓ Compare the data gathered as the subject under investigation tells history in his own words, logical concepts and units of scientific classification have to be read into it or out of it by the investigator. ✓Collect information about impersonal universal, non-ethical, non-repetitive, practical aspects of phenomena. ✓It consumes more time and requires lots of expenditure.

Despite the aforementioned drawbacks which make case study research a subject to criticism, this latter seems to be suitable in this research work. This is because it enables the investigator to analyze the data in its context of use, that is, the use of the case study methods helps the researcher to observe and get in touch with the students, ESP teachers, subject-specialists and administrators as she aims at describing the English language situation and analyzing the students' needs in the Department of Manufacturing and Engineering Sciences at Tlemcen University. This, in fact, is not the case of the experimental research which isolates the case from its context as it emphasizes a limited number of variables (Zaidah, 2007:4). Moreover, this type of research enables the researcher to collect both quantitative and qualitative data and to construct validity throughout the triangulation of sources.

3.4 Sampling

Sampling is the most important process in research since it deals with the population from which the researcher obtains information to conduct his study. Sampling refers to **"the act, process or technique of selecting a suitable sample, or a representative part of a population for the purpose of determining parameters or characteristics of the whole population"** (Mugo, 2002:1).

Taylor-Powell (1998:2) argues that if each member of the population can be selected as a representative of the whole group since the researcher aims at generalizing, the *probability sampling* is appropriate, but if the investigator selects only the members having specific characteristics (i.e. not all the members of the population have the chance to be chosen), then *the non-probability sampling* is the most suitable.

3.4.1 Sampling Techniques

Sampling, in general be it *probability sampling* or *non-probability sampling*, is based on a set of techniques determining the type of the sampling chosen. Thus, Kothari (1985:15) points out that the probability sampling uses:

Simple random sampling: it involves picking samples at random so that each member of the population has an equal probability to be chosen.

Systematic sampling: the researcher picks some elements from a list of the population at random, and then, he chooses units at intervals which are defined by dividing the whole population on the list of the population.

Cluster sampling: the investigator divides the population into groups and clusters, then, he selects the sample according to the group not the individuals.

Stratified sampling: it involves the organization of the population under categories.

The non-probability sampling uses:

Convenience sampling: it implies that the researcher obtains information from an easier fixed population.

Purposive sampling: the selection of the population is tightly related to the purpose of research.

Quota sampling: the researcher divides the population into sub groups on the basis of a prescribed number of elements depending on specific proportions.

Regarding the present work, the researcher employed a probability sample to give the chance to each ESP member to be selected, and a simple random sample was used in order to ensure the collection of a great amount of detailed data in a short period of time.

3.4.2 Sample Population

As in any ESP situation, the investigator supports his work by the sources of information which may be "the potential students, the language teaching institute (teachers and administrators)… we might also want to consider past students" Robinson (1991:11). Hence, Hemche (2014:55) goes further and clarifies that when conducting a needs analysis, sources for data may include:

➢ Previous needs analyses, which can provide working examples as well as valuable insights into needs of students in similar programs and with similar experiences.

➢ Students themselves.

➢ Applied linguists, good sources for language requirements.

➢ Domain experts often referred to as insiders. This may include the ESP teacher, subject specialists or students who have previous experience in dealing with the target situation.

Thus, to obtain valuable information about the ESP situation in the Department of Manufacturing and Engineering Sciences at Tlemcen University, in general, and the students' needs and the stakeholders' attitudes towards the integration of blended learning in the English course, the researcher deals with the following population:

3.4.2.1 ESP Teachers

The informants are English language teachers. Four (4) teachers hold a Master's degree in Language Studies, three (3) are Literature and Civilization Master's holders, whereas only one teacher has a Magister degree in English Language and Education.

Seven (7) informants are part-time teachers in the Department of Manufacturing and Engineering Sciences, and only one informant is a full-time teacher. One informant has been teaching English at university for six (6) years. Five teachers have been working for three (3) years, and only two (2) respondents have taught English for two years.

3.4.2.2 Students

The total number of students is one hundred seventy (170) distributed into five groups; each group represents one speciality. The research concerns Master's students at the Department of Manufacturing and Engineering Sciences, at Tlemcen

University. Thus, Master's students were chosen as a sample in this research work because they are more aware of their needs and conscious of the important role that English language plays in today's world. In this same line of thought, Kennedy and Bolitho (1984:13-14) assert that **"the older the learner is, the more likely he is to have his own definition, ideas on what and why he is learning English the utility of learning English is likely to be more apparent."** For research convenience, the number of the informants questioned was 120 students, i.e. 70.58% of the students were engaged in the present work.

The students chosen in this study are between 22 and 26 years old. They are baccalaureate holders from scientific streams. They learned English for seven (7) years before entering university (four years in the middle school, three years in the secondary school), and three years at university.

3.4.2.3 Administrators

Brown (2016:44) claims that **"it is always a mistake to ignore or not include administrators in a needs analysis."** The respondents who took part in the present research work are three (3) administrators: the Dean of the faculty of technology, the Head of the Department of Manufacturing and Engineering Sciences and the teacher in charge of the English course   .

3.4.2.4 Subject Specialists

The informants who contributed to the current study are ten (10) subject-specialists.' They are PhD holders in Manufacturing and Engineering sciences and telecommunication. Four informants hold a Master's degree in Supply Chains and Engineering Management and three have a Magister degree in Automatics and Information Sciences. The respondents teach different modules including Waves and Vibration, Management, Automatics and Information Sciences.

2.4.2.5 Workplace Managers

Brown (2006: 102) provides a comprehensive view about the importance of investigating the workplace managers' needs. He maintains that:

> … the needs of employers, institutions, etc., have some bearing on the language learning situation (…) to define and validate defensible curriculum purposes that satisfy the language learning requirements of students within the context of the particular institutions that influence the learning and teaching situation.

Hence, the information gathered from workplace managers help to describe the entire professional context where English is used including the language use of professional groups, the required linguistic skills, topics, and relevant language aspects. Therefore, the course designer will be able to bridge the gap between the ESP courses at university and the realities of the students' future career, on the one hand, and **"to build competitive English abilities for learners to prepare them to enter the workforce"** (Kuo, 2016:1) on the other hand.

It is noteworthy that the field of Manufacturing Engineering in Algeria is a newly born area of inquiry. This is why the researcher faced some problems to find the working population to be included in the research and to get in touch with them since the majority of them are employed in the Saharan zones. Thus, the informants who took part in the present investigation are six engineers. They share the same features as they are Master's degree holders who had recently graduated from the Department of Manufacturing and Engineering Sciences at Tlemcen University. Also, they are currently working in public industrial institutions.

3.5 Framework for Needs Analysis

Brown (2016:4) explains that needs analysis is a continuous systematic process. The ultimate aim is to gather different types of data from various sources

for the sake of designing an effective course. In the terms of Brown (2016:4), the components of a needs analysis process are broken down into:

✓ *Stakeholders:* are people who have a sake or interests in the curriculum such as: teachers, students, administrators and parents.

✓ *Necessary information:* includes any and all types of quantitative and qualitative data revealed from the stakeholders and turned out to be available and appropriate in a needs analysis.

✓ *Defensible curriculum:* this latter satisfies the language learning and teaching needs of teachers and students. It is designed in a reasonable way that it can be successfully defended and accepted by the stakeholders.

(Brown, 2016: 4)

Therefore, this objective is to be achieved through the development of a needs analysis process which took place in the Department of Manufacturing and Engineering Sciences at Tlemcen University. In this regard, the next section provides a thorough overview of the procedural parameters that the investigator proceeds in.

The model used in the present needs analysis is the framework of Basturkmen (2013).The main reason for selecting this model is that it is integrative and comprehensive. It is largely based on Hutchinson and Waters model (1987) which distinguishes necessities, lacks and wants when carrying out target situation analysis. It also suggests a working analysis for both the present situation and the learning needs. This framework proposes a through identification of the teaching situation where the ESP course is run. Through this model, the following analyses take place:

-*Present situation analysis*: The level of the learners' ability to perform the language-related tasks, activities, and skills activities in relation to the demands of the target situation.

-Target situation analysis: Language-related tasks, activities, and skills that the learners should ideally be able to perform in the profession, work, or study situation they wish to enter or advance in.

-Learner factor analysis: Learner factors, such as their motivation, how they learn, and their perceptions of needs and wants in relation to the LSP course.

-Teaching context analysis: Factors related to the environment in which the LSP course will run and what the course and teacher can realistically offer.

In fact, the rationale for needs analysis process can be summarized in the following diagram:

```
                        ┌──────────────────┐
                        │  Needs Analysis  │
                        └──────────────────┘
                        ┌──────────────────┐
                        │     Source       │
                        └──────────────────┘

┌──────────────────┐ ┌─────────────┐   ┌──────────┐   ┌──────────────────┐
│ Subject-specialists│ │Administrators│   │ Students │   │ Language Teachers │
└──────────────────┘ └─────────────┘   └──────────┘   └──────────────────┘

        ┌───────────┐      ┌──────────┐ ┌──────────┐      ┌──────────┐
        │  Target   │      │ Present  │ │ Learning │      │ Teaching │
        │ Situation │      │Situation │ │Situation │      │Situation │
        │ Analysis  │      │ Analysis │ │ Analysis │      │ Analysis │
        └───────────┘      └──────────┘ └──────────┘      └──────────┘

                        ┌──────────────┐
                        │ Course Design│
                        └──────────────┘

                        ┌──────────────┐
                        │  EVALUATION  │
                        └──────────────┘
```
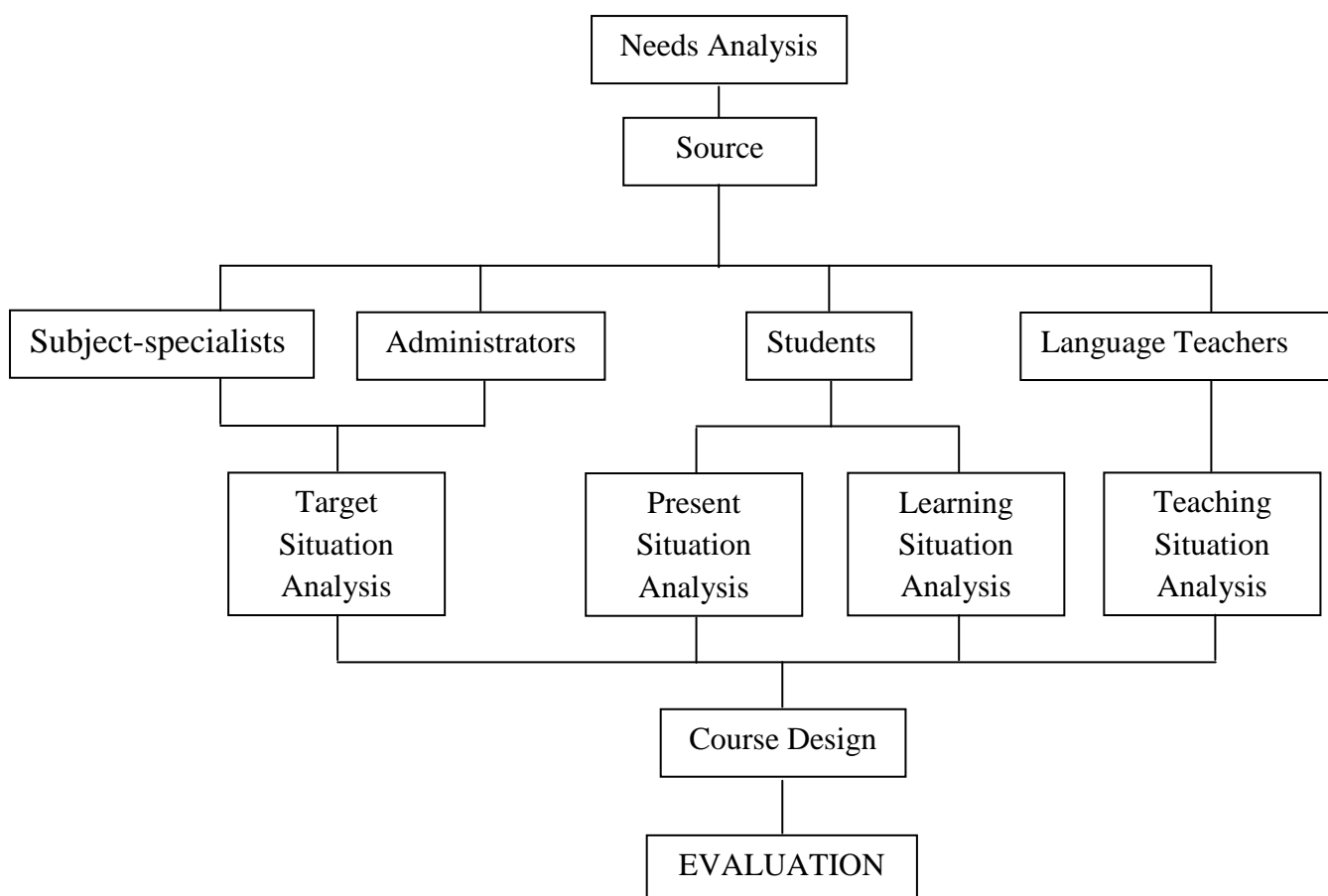
Figure 3.1 Rationale for Needs Analysis

Basturkmen (2013:30) outlines that needs analysis can **"**take a number of forms including questionnaires, interviews, observations of interactions and analysis of language use in the target situation, tests of performance and observations of ESP

learners carrying out tasks replicating those in the target situation**."** These tools enable the ESP teacher to gather important information about the learners' both target and learning needs, students' perceptions and reasons for learning English, and the learning environment.

3.6 Instruments

In order to gather valid and reliable data, Hutchinson & Waters (1987: 58-59) postulate that:

> There is a number of ways in which information can be gathered about needs. The most frequently used are: Questionnaires; Interviews; Observation… In view of the complexity of needs which we have seen, it is desirable to use more than one of these methods.

This means that the adoption of a triangular approach where multiple sources, methods and instruments may be used, serves to minimize the confusion that the misunderstanding of needs may cause.

Accordingly, Huhta et al. (2013: 17-19) produce a thorough overview of the different research tools used in needs analysis, acknowledge the advantages and disadvantages of each and give instances from the literature available on needs analysis. The following table summarizes them:

Table 3.2 Overview of research methods in needs analysis (Adapted from Huhta et al., 2013:17-19)

Method	Advantages	Disadvantages	Examples from the literature
Unstructured Interview	• exploratory character means that interviews may include aspects the interviewer had not previously considered	• risk of researchers influencing informants views (interviewer bias) • narrative data can be difficult to analyze and it may be difficult to draw comparisons between informants	Holme & Chalauisaen(2006) Jasso Aguilar (1999)
Structured Interview	• relatively low-cost , low-effort • potential for a large number of informants to be approached • yield standardized data, low risk of interviewer bias • comparisons can be drawn between informants • results may be generalizable	• important aspects may be neglected as a result of standardization • do not allow informants room to express own ideas and own answers	Matthes &Wordelmann (1995) Hecker (2000) Hall (2007)
Surveys and Questionnaires	• relatively low-cost, low-effort • potential for a large number of informants to be approached • yield standardized data • low risk of interviewer bias • sizable amounts of data can increase the reliability and validity of findings • results may be generalizable option of informant anonymity	• Standardized • may neglect important aspect • response rates tend to be low, ESP especially with questionnaires mailed to subjects • range of responses limited	Weiß (1992) Schöpper-Grabe & Weiß (1998)
Observation	• allows direct, in-depth, contextualized study of participants' actions: valuable source of data	• time-consuming • only case studies possible • potentially difficult to access data	Schroder (1984) Louhiala-Salminen (2002)

In fact, the present study uses three research tools: two questionnaires, two semi-structured interviews, and one structured interview. These instruments are designed to analyze:

➢ What the learners already know, have to know, and wants to know.

➢ What they have to do in the target situation.

➢ What should be done in order to learn.

➢ The stakeholders' attitudes towards the introduction of blended learning in the ESP course in the Department of Manufacturing and Engineering Sciences at Tlemcen University.

The main concern of this research phase, i.e., the case study, is to undertake a needs analysis process. It seeks first to analyze the needs of first-year Master's students in the Department of Manufacturing and Engineering Sciences at Tlemcen University. Then, it identifies the stakeholders' attitudes towards the integration of blended learning in the ESP course.

To meet these ends, the researcher recourses for different research instruments. The criterion of selecting the research tool, that is the questionnaires and the interviews, lies in the type of data that the researcher sought to collect and the source that provide it. Therefore, each tool will be presented below and its choice justified.

3.6.1 Questionnaire

Richards (2005: 60) posits that questionnaires are **"one of the most common instruments used"** .They are relatively easy to prepare. A questionnaire is constructed in the form of a list of written questions designed by the researcher and given to the informants requesting their answers. Questionnaires can be administered as handouts or electronically (by e-mail, Facebook etc.). Questionnaires provide **"a tool for eliciting information which the researcher can tabulate and discuss…A questionnaire serves as the major source of information, attitudes or knowledge"** (Taylor-Powell, 1998:2).

In the current study, the two questionnaires aim to investigate the students' needs, to identify the stakeholders' attitudes towards the importance of integrating blended learning in the English course, and to determine which type of materials is

suitable to meet Manufacturing and Engineering students' needs. Hence, in these questionnaires three types of questions were used:

Close-ended questions: this type of question requires from the respondent to answer by either 'yes' or 'no**.**' Close questions can **"**make analyzing the data relatively easy, but they restrict the responses**"** (Alby, 1999: 02).

Open-ended questions: they require from the informant a long answer in his own words. Open questions provide qualitative data that is why they are difficult to analyze.

Multiple-choice questions: this type of question involves a list of answers or alternatives from which the respondent selects one response or more. Multiple-choice questions are easier to analyze since they provide quantitative data.

Regarding the present research work, the investigator opted for two questionnaires; one was administered to Master's students and the second to the ESP teachers in the Department of Manufacturing and Engineering Sciences at Tlemcen University.

3.6.1.1 Students' questionnaire

The students' questionnaire was designed to investigate the English language needs of first year Manufacturing and Engineering Master's Students at Tlemcen University, and identify their attitudes towards the integration of blended learning in the English course. It was submitted to one hundred twenty (120) students during the second term of the academic year 2015-2016. The questionnaire was translated into Arabic in order to avoid any kind of misunderstanding of the questions and to allow the respondents to answer as clearly as possible. Twenty-eight questions, including closed, open and mixed types, organized in seven parts constitute the questionnaire (See Appendix B).

Part one: Students' profile

Questions 1 to 3: ask about the student's gender, age and English learning experience.

Questions 4 to 6: investigate the importance of learning English, the usefulness of the English course, and the students' proficiency level.

Part two: Present Situation Analysis

Questions 7 and 8: identify the students' weaknesses in the English language, and ask them to evaluate their proficiency level in given skills.

 Questions 9 and 10: requires from the students to specify the skills where they need more training.

Part three: Target Situation analysis

Questions 11 to 13: examine if the students practise English outside university.

Question 14: requires from the students to identify the English language skills and sub-skills that are important for their future career and the target situation.

Part four: Learner Factors Analysis

Question 15 : asks the respondents to describe their attitudes towards the ESP course at the beginning of their studies.

Question 16: identifies the learners' reasons to attend the ESP course.

Question 17: needs from the students to identify the aspects of English which require more teaching, and give the type and the way in which they want to learn English.

Questions 18 and 19: determines the type and the way in which the learners prefer to undertake the ESP course.

Part five: Teaching Situation Analysis

<u>Questions 20 to 23</u>: ask about the levels of study in which English is taught, the nature of the English course, the time devoted to English teaching, and its adequacy.

<u>Questions 24 and 25</u>: examine if any books, materials and technology are used in the English course.

Part six: Students' attitudes towards the use of a blended course

<u>Questions 26 to 28</u>: investigate the importance of learning English via a blended course and the students' suggestions in this case.

3.6.1.2 ESP teachers' questionnaire

The English language teachers' questionnaire was being carried out to have an overview of the teaching of the English language at the Department of Engineering and Manufacturing Sciences at Tlemcen University and to identify the language teachers' attitudes towards the integration of blended learning in the English course. It was administered to eight ESP teachers during the second term of the academic year 2015-2016. It contains thirty items classified under six parts (See Appendix C).

Part one: Teachers' Profile

<u>Questions 1 to 4</u>: ask about teachers' gender, academic degree, fields of study, and status in the faculty.

<u>Questions 5 to 8</u>: identify the teachers' teaching experience at university, EST, the department of Manufacturing and Engineering Sciences, and other departments.

<u>Question 9</u>: examines if the teachers had a specialized training in ESP

Part two: Present Situation Analysis

<u>Questions 10 to 11</u>: requires from the ESP teachers to identify the type of the course and the aspects of language they emphasize.

Question 12: asks the teachers to rate the four language skills in terms of importance.

Questions 13 and 14: investigate if the teachers use translation and the aspects of language in which they assign translation activities.

Part three: Learner Factor Analysis

Questions 15 and 16: require the class size and the rate of absences among students in the ESP course.

Questions 17 and 18: ask about the learner's motivation and the reasons behind this situation.

Part four: Teaching Situation Analysis

Questions 19 to 23 : investigate the existence of a teaching method, materials and programme followed in the English course.

Questions 25 and 24: identify the type of the English course, time load, and the most emphasized aspects of the language.

Questions 26 and 27: inquire if there is a collaboration with subject-specialists and the efforts made by the department to improve the ESP course.

Part five: Teachers' attitudes towards using blended courses

Questions 28 and 29: identify the ESP teachers' attitudes towards the integration of blended learning in the ESP course and their expectations regarding this type of instruction.

Question 30: asks the teachers to give some suggestions .

3.6.2 Interview

The interview refers to a conversation between the researcher and the respondent, aiming at collecting data about people's knowledge, attitudes and skills. It is **"**a more flexible form that can be used to gather information of greater depth and can be more sensitive to contextual variation in meaning**"** (Seale et al., 2011:183). Accordingly, Yin (1994:20) confirms that:

> Interviews are an essential source of case study evidence because most case studies are about human affairs, these human affairs should be reported and interpreted through the eyes of specific interviewees and well-informed respondents can provide important insights into a situation.

Thus, an interview consists of a set of questions asked directly by the researcher to the informant. It gives chance to the researcher to identify answers to preconceived questions, on the one hand, and to the informant to ask for explanations and clarifications for further elaboration of replies on the other. There are three (03) types of interviews:

The structured interview: takes the form of an oral questionnaire that makes the respondents answer the same questions with the same wording.

The semi-structured interview: involves an outline of the topics to be discussed with each informant without following neither the order nor the wording of the questions.

The unstructured interview: is conducted in the form of a general conversation where the interviewer presents the topic to the respondent who just gives his own view about it.

Regarding the present work, the researcher opts for two semi-structured interviews and one structured interview. These types of interviews enable the researcher to probe the informants' answers so that a large number of details is

provided. In addition, the data gathered from those types of interviews is analyzed qualitatively. The interviews were conducted in English, French, and Algerian Arabic. They lasted for one hour with workplace managers ,subject-specialists and administrators in the Department of Manufacturing and Engineering Sciences at Tlemcen University,

The aim of the interviews is to check the stakeholders' views about English language instruction in the Department of Manufacturing and Engineering Sciences at Tlemcen University and to identify their attitudes towards the integration of blended learning in the English course.

3.6.2.1 Administrators' semi-structures interview

The aim behind designing the administrators' interview is to shed light on the objectives of English language instruction in the Department of Manufacturing and Engineering Sciences at Tlemcen University. It was conducted in French with three informants, i.e. the Dean of the faculty of technology, the Head of the Department of Manufacturing and Engineering Sciences and the teacher in charge of the English course in the aforementioned department, and lasted for one hour. During the interview, some explanations and other questions were added where necessary.

The interview turns around five (5) main points (See Appendix D):

➢ Importance of English
➢ Objectives of the English course
➢ Problems encountered by the students
➢ Suggestions for improving the ESP course.

3.6.2.2 Subject-specialists' semi-structured interview

Throughout the use of the interview, the investigator intends to check the subject-specialists' views and attitudes towards English language instruction in the Department of Manufacturing and Engineering Sciences. It was conducted in

French with ten (10) teachers and lasted for around forty-five minutes. When interviewing the teachers, the investigator provided some clarifications and added other questions.

The interview tackled four (4) main points (See Appendix E):

➢ Teachers' profile

➢ The problems encountered by students in their field of study because of their English proficiency.

➢ Students' achievement in English.

➢ The importance of English in Manufacturing and Engineering studies and work place.

3.6.2.3 Workplace managers' structured interview

The workplace managers' interview aims at investigating the informants' perceptions and expectations regarding the ESP course in the Department of Manufacturing and Engineering Sciences at Tlemcen University as they are former students who had recently graduated from the same department. Through this structured interview, the researcher attempts to draw a clear view about the status of the English language in the Algerian professional settings.

The interview's scope covers six main points (See Appendix F):

➢ The workplace managers' profile

➢ The informants' proficiency level and vision about English

➢ The status of English in professional settings

➢ The importance of English in their domain

➢ The difficulties encountered at the workplace because of language

➢ Suggestions for improvement of the ESP course.

The use of these research instruments enables the investigator to gather a huge bulk of data about the ESP teaching and learning situation in the department under investigation, and determine the students' profile of needs. It also helps her to

construct validity, reliability and triangulation which are important elements in the process of needs analysis.

3.7 Triangulation

In social sciences in general and language teaching in particular, the use of triangulation dates back to Campbell and Fiskel (1959). According to Rahman and Yeasmin (2012: 156) triangulation refers to **"the combination of two or more theories, data sources, methods or investigators in one study of a single phenomenon to converge on a single construct, and can be employed in both quantitative (validation) and qualitative (inquiry) studies."** This means that the way in which the triangulation is established differs in terms of data sources, i.e., *data triangulation*, evaluators or *investigators triangulation*, perspectives that are *theory triangulation* and methods or *methodological triangulation* (Denzin, 1970). The following schematic representation illustrates the different types of triangulation:
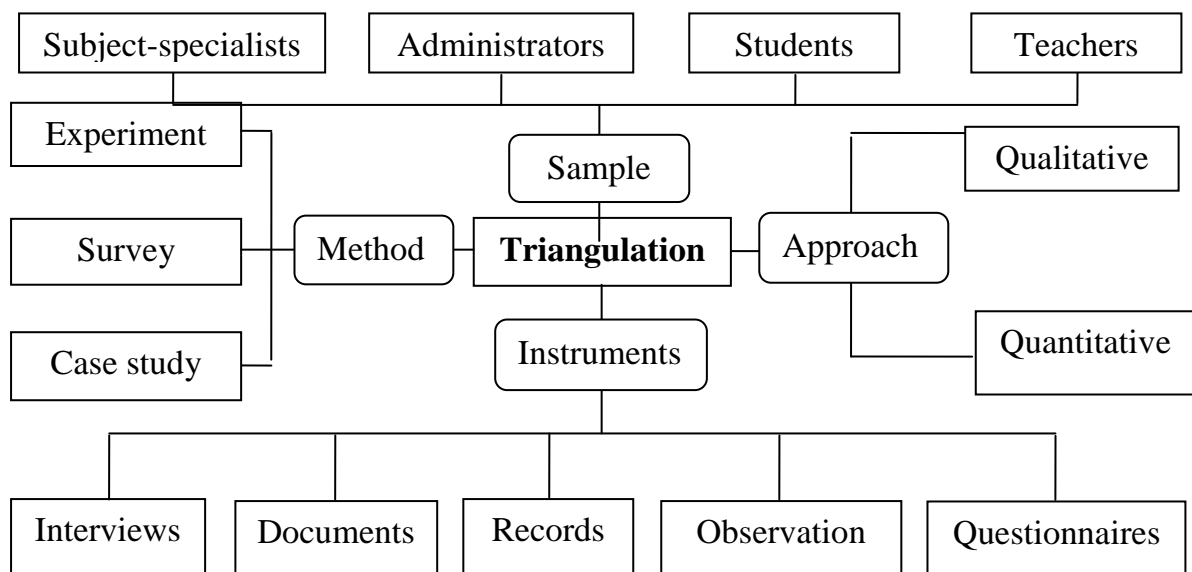
Figure3.2 Types of Triangulation (Adapted from Denzin 1970)

The aim of using a triangular approach is to cross-check the information to give more depth to results and therefore construct the validity of research. Effectively, by combining "multiple data sources, methods, analyses or theories, evaluators seek to overcome the bias that comes from single informants, methods,

observers or single theory studies**."** (Goodrick, 2014: iii.) This implies that triangulation enables the investigator to study the problem from different angles because one source cannot describe the situation adequately.

3.8 Validity and Reliability

Hyland (2006: 68) explains that validity and reliability in needs analysis procedures can be reached in three main ways. Using Hyland terms, these ways are:

✓ *Triangulation:* Conclusions are developed using a range of data sources, research methods or investigators.

✓ *Prolonged engagement:* The use of repeated observation and collection of sufficient data over a period of time.

✓ *Participant verification:* The analysis is discussed with participants and its "reality" verified by them.

As far as the present research work is concerned, the researcher opts for triangulation (see section 2.7) and participant verification.

3.8.1 Triangulation

As triangulation is considered as a crucial step in needs analysis, the researcher triangulates the data when she opts for both case study and experimental research. While the case study aims at analyzing the students' needs and identifying the stakeholders' attitudes towards the integration of blended learning in the ESP course, the experimental method targets the evaluation of the designed course. Moreover, multiple sources and tools are used, namely two questionnaires are administered to students and ESP teachers, two semi-structured interviews and one structured interview are conducted with subject-specialists , administrators, and workplace managers , in addition to a pre- and a post test delivered to students in the aforementioned department.

3.8.2 Participant Verification

The students' questionnaire was piloted to check its validity, reliability and applicability before the production of the final version. The questionnaire was first administered to four Master's students in the Department of Manufacturing and Engineering Sciences at Tlemcen University. In fact, this pilot study aims to check if:

❖ the questions were clear and easy to understand;

❖ the students were able to answer the questions;

❖ the time needed to answer the questionnaire was reasonable;

❖ the questionnaire contains items which are biased, embarrassing or irrelevant.

The students were asked to answer the questionnaire and complete the evaluation sheet (see table 3.3) which was designed to enable the informants to make comments and suggestions that may help the researcher promote the questionnaire.

Table 3.3 Questionnaire Pilot

Questions / *Informant*	Do you think that the questions are clear and easy?	Is there any item that you did not understand?	Are the questions relevant?	How long did it take you to finish the questionnaire?	Do you have any comment?
Informant 01	Yes	No	Yes	10 minutes	-
Informant 02	No	Yes	Yes	15 minutes	Don't use abbreviations
Informant 03	Yes	No	To some extent	15 minutes	-
Informant 04	Yes	No	yes	10 minutes	-

It is worth mentioning that the questionnaire is the only research instrument that was piloted. This is because of the number of informants which enables the researcher the check the questionnaire. The interview was not piloted because the questions can be subject to change at any time during the interview.

3.9 Data Analysis

The analysis of the data gathered constitutes an important step in reporting the findings of any research. Analyzing data refers to "the process of breaking down collected data into constituent parts in order to obtain answers to research questions" (Terre Blanche and Durheim, 2002:105).In this regard, Cooper and Schindler (2008:476) explain that the analysis of the data captured from questionnaires and interviews is processed according to the following steps:

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┌─────────────────────────────────────┐
│      Prepare data, clean and code     │
└─────────────────────────────────────┘
                    ↓
┌─────────────────────────────────────┐
│      Check reliability of instruments │
└─────────────────────────────────────┘
                    ↓
┌─────────────────────────────────────┐
│          Obtain critical value        │
└─────────────────────────────────────┘
                    ↓
┌─────────────────────────────────────┐
│        Interpretation of results      │
└─────────────────────────────────────┘
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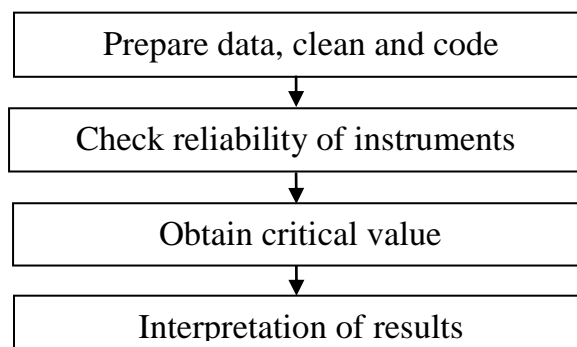
Figure 3.3 steps of data analysis (Adapted from Cooper and Schindler, 2008:476)

When analyzing data, the researcher checks the collected information to question their accuracy, and corrects the errors by asking the respondents about the same data differently i.e. by paraphrasing the questions or by giving more explanations and clarifications. Moreover, the investigator needs to put the reliability of the research instruments into question by pre-testing the instrument which enables the researcher to redefine the instrument and minimize the occurrence of errors. Thus, some respondents provide answers that do not reflect their opinion as the researcher's questions may influence the informant's attitude and this, therefore leads to the instability of the results. Depending on the type of the collected data, information is analyzed quantitatively or / and qualitatively.

3.9.1 Quantitative Analysis

The process of analyzing data quantitatively involves the use of statistics. The researcher uses descriptive statistics which comprise frequencies that can be presented within the text or in tables, graphic representation, tabulation and measures of central tendency.

The investigator proceeds through a set of techniques to analyze the data. Regarding the quantitative results, descriptive statistics in addition to qualitizing processes were used. Qualitizing implies "converting quantitative data into qualitative in order to create narrative descriptions from numerical data" (Parra, 2014:43).Therefore, the results were presented in frequency tables and /or visualized in graphic displays.

3.9.2 Qualitative Analysis

The qualitative approach "offers descriptions, interpretations and clarifications of naturalistic social contexts" (Parra, 2014:26).The analysis of data qualitatively involves formulating textual data where the researcher needs to go through the technique of *coding* or *content analysis* which refers to "the analysis on materials which researchers ask people to produce, such as essays, answers interview questions, diaries, and verbal protocols [detailed records]" (Coolican, 1994:108). That is, the investigator identifies the content of each answer and then classifies the responses together according to their main theme to provide more clarifications and explanations.

Burns (1999) suggests a five stages framework to analyze the qualitative data. These steps are:

✓ *Assembling data:* the researcher analyzes the data in relation to the research questions and the points appeared in the research instruments.
✓ *Coding data:* the data obtained from different research instruments is categorized under codes. Those codes are deduced from the data itself.

✔ *Comparing the data:* the data is compared for the purpose of cross checking.

✔ *Building interpretations:* the investigator interprets and reviews the data in order to draw conclusions about the matter studied.

✔ *Reporting the outcomes:* at this stage the researcher presents the findings in relation to the research questions.

As far as the present study is concerned, the researcher opts for a combination of both quantitative and qualitative processes to analyze data because they are regarded as a matter of continuum rather than a clear-cut dichotomy (Newman and Benz, 1998 qtd in Djebbari, 2009:95).

Framed into a mixed method research, the qualitative data was gathered by means of the questionnaires' rating and closed questions and the semi-structured interviews. However, the investigator makes use of open questions in the questionnaires and structured interviews to collect quantitative data .Accordingly, the next section is devoted to analyze the data gathered from the different research instruments employed in this study. Through the use of these tools, the investigator aims at analyzing Manufacturing and Engineering Master's students English language needs and identifying the attitudes of the stakeholders in the department under investigation towards the integration of blended learning in the ESP course.

3.9.3 Students' Questionnaire

Though the questionnaire was submitted to one hundred-seventy (170) students, only one hundred and twenty (120) of them answered and gave it back. This questionnaire enables the researcher to identify what language skills the learners need and the areas in which they need training. Moreover, it enables to determine the students' views regarding the existing course.

The students' questionnaire reveals important data concerning the target situation, the present situation and the learning factor analyses. In other words, the obtained results give insights into the students' necessities, lacks and wants in

additions to their learning needs and motivation. It also displays their perceptions regarding the ESP course and their attitudes towards the integration of blended learning. Therefore, it allows the researcher to identify and analyze the students' needs and draw clear conclusions about the course design.

Part One: Students' Profile

This section enabled the researcher to know who the students were. It provides data related to the students' age, gender, period of learning English ... etc. The results are analyzed as follows:

Question 1: Students' gender

The informants were of both sexes. There were seventy-five females (62.5%) and forty-five males , that is 37.5 %.

Question 2: Students' age

Table 3.4 Students' age

Number of respondents		Age	Level of study
Absolute Frequency	*Relative Frequency*		
15	12.5%	20	Master 1
20	16.67%	21	Master 1
40	33.33%	22	Master 1
35	29.17%	23	Master 2
10	8.33%	24	Master 2

The collected data showed that the majority of students were in the age group of twenty to twenty-four years old.

➤ **Part Two: Present Situation Analysis**

The present situation analysis allowed the researcher to determine the students' current needs , lacks, strengths and weakness, previous learning experiences, and to identify their proficiency level and perceptions at the beginning of the course.

Question 3: Period of learning English at university

The majority of students asserted that they started learning English at university from the 2nd year and continued till Master 2, i.e., they learned English for four (4) years.

Question 4: Importance of learning English

99.17% of students confirmed the importance of the English language as being the language of development and technology.

Question 5: Usefulness of English Language Course
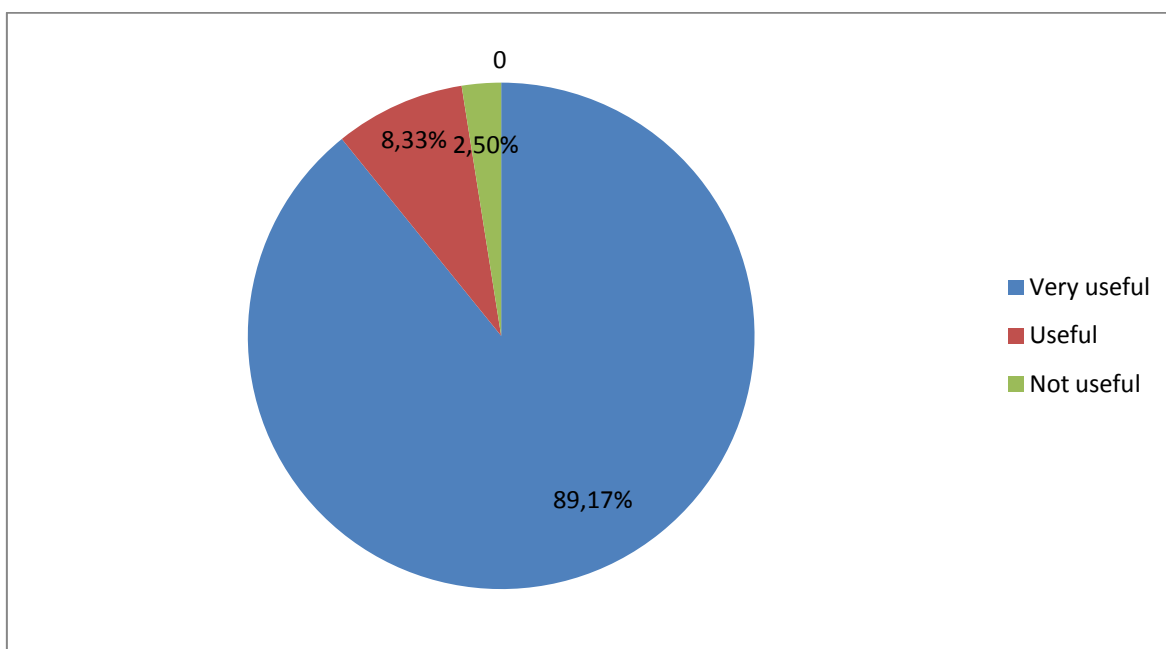
Figure 3.4 Usefulness of English Language Course

Concerning the usefulness of the English course, the majority of the informants 89.17% asserted that it was very useful, 8.33% qualified it as useful and only 2.5% found the English course as not useful.

Question 6: Students' proficiency level in English
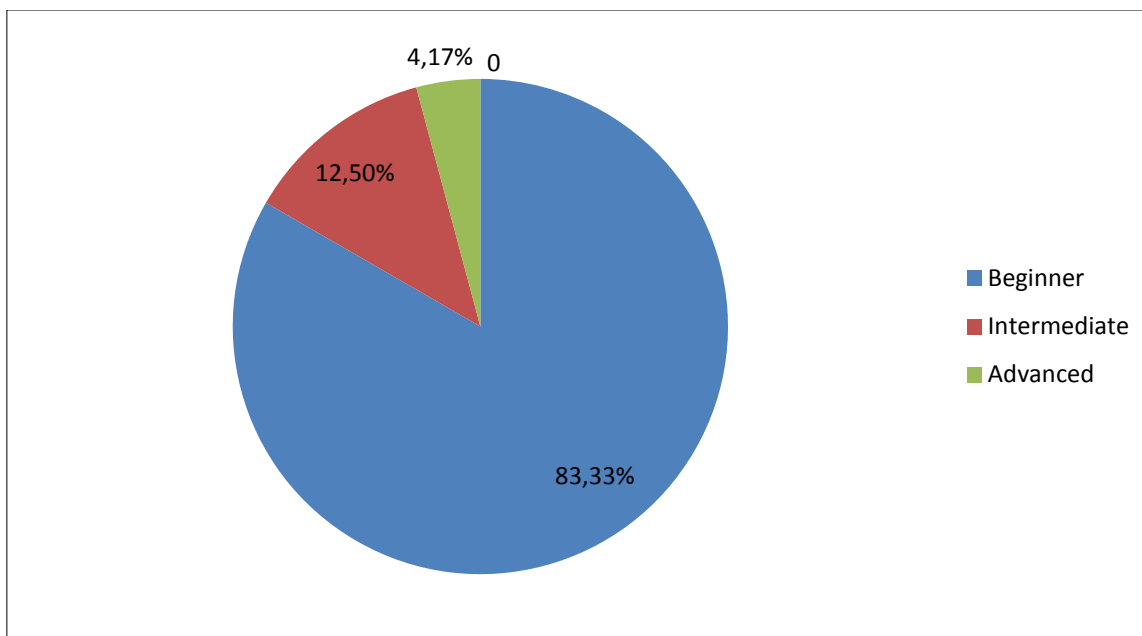
Figure 3.5 Students' proficiency level in English

Almost all students (83.33%) confirmed that they were beginners as they stopped learning English at university for one year. 12.5% of students argued that they had an intermediate level and only 4.17% of students considered themselves as advanced.

Question 7: Reasons for Learning English

Regarding the reasons for learning English, the majority of informants showed a great awareness about the status of English as a global language. Indeed, they agreed on the fact that the latter is the language of science, technology, international communication and economy.

The students also confirmed that they learned English in order to read books since the majority of documents in their field of study are published in this language. However, almost all of them emphasized that they needed English to communicate online and interact with native speakers. Other reasons were to conduct scientific research and mainly find a job in international companies or

abroad as having a certain proficiency level in English is considered as one of the most important requirements to be recruited.

Question 8: Students' lacks that need improvement

The informants confirmed that they needed to be trained in how to communicate effectively in real situations, i.e. they wanted to improve their speaking and listening skills rather than reading and writing which they considered as not important.

Question 9: Students' proficiency level in different areas of language performance
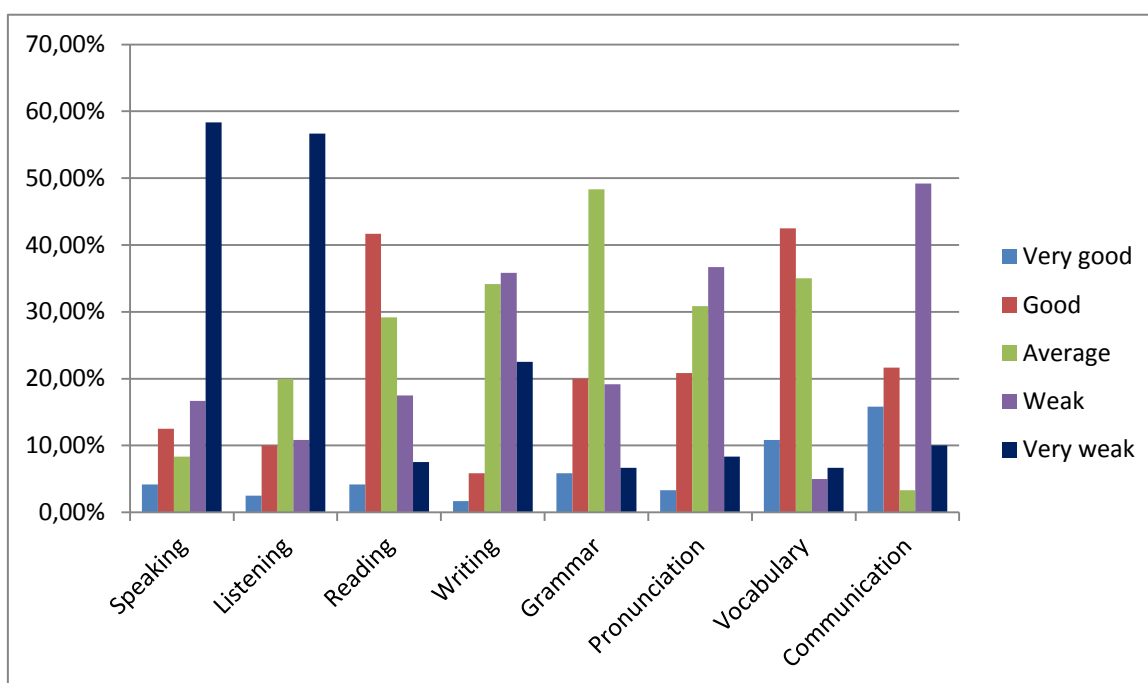
Figure 3.6 Students' level in different areas of language performance

Students considered their proficiency level as very weak in speaking (58.33%) and listening (56.67%), good in reading (41.67%) and vocabulary (42.50%), and average in grammar (48.33%). They viewed their achievement to be weak in writing, pronunciation and communication with 35.83%, 36.67% and 49.17% respectively.

<u>*Question 9:*</u> Tasks that need more training

Table 3.2 Tasks that need more training

Tasks \ Importance	Very Important	Important	Not Important
Speak about engineering and manufacturing related topics in English.	100%	-	-
Write about engineering and manufacturing related topics in English.	-	98%	-
Read engineering and manufacturing related books and articles.	-	91%	-
Translate engineering and manufacturing related materials.	-	-	79%
Pass English examination.	97.5%	-	-

All the informants asserted that they needed to improve their ability to speak about Engineering and Manufacturing related topics in English followed by passing English examination (97.5%). 98% of them rated writing and reading about Engineering and Manufacturing related topics in English as important tasks.

Part Three: Target Situation Analysis

The analysis of the target situation enabled the researcher to identify the necessities, that is, what the learners need to know in order to function effectively in the target situation.

<u>*Question 10:*</u> Students' efforts to improve their English proficiency level

While 80.83% of the students confirmed that they made efforts to improve their English, 19.17% of them found it unnecessary to do that.

<u>*Question 11:*</u> Out of class practice of English

From the informants' answers, it appeared that 83.33% of them confirmed that they used English outside school.

Question 12: Skills used in future careers
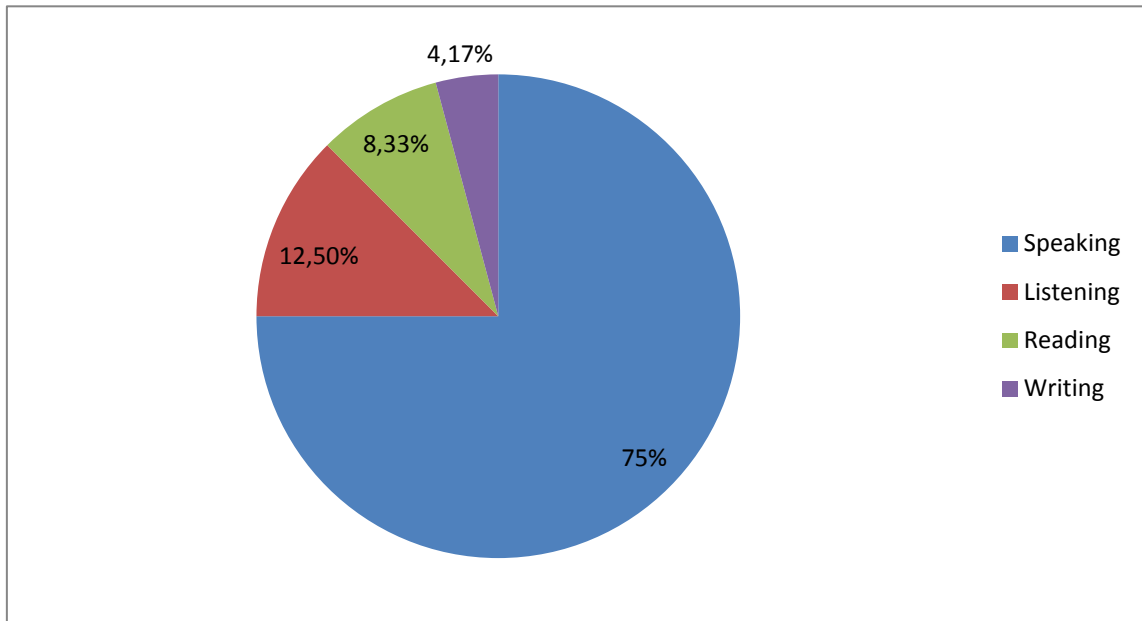
Figure 3.7 Skills used in future career

The informants' answers showed that the four language skills were of great importance. Thus, they focused on speaking (75%) and listening (12.5%). Then came Reading and Writing with 08.33% and 04.17 % respectively.

Question 13: Importance of skills and related tasks
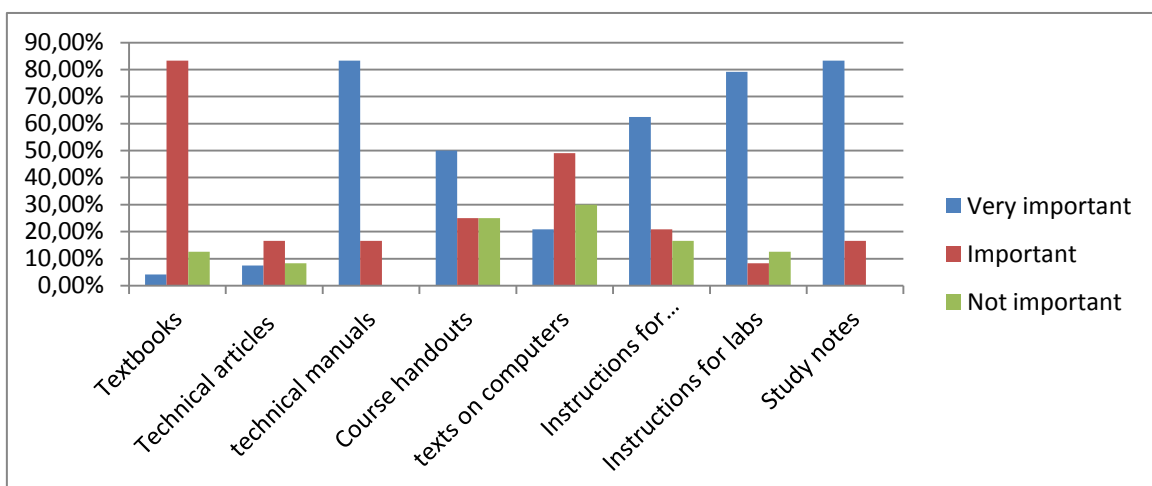
Figure 3.8 Importance of reading tasks

Concerning the reading tasks, the results revealed that the most important ones were reading study notes and reading technical manuals (83.33%), then came reading textbooks as important and reading texts on the computer with 30%.
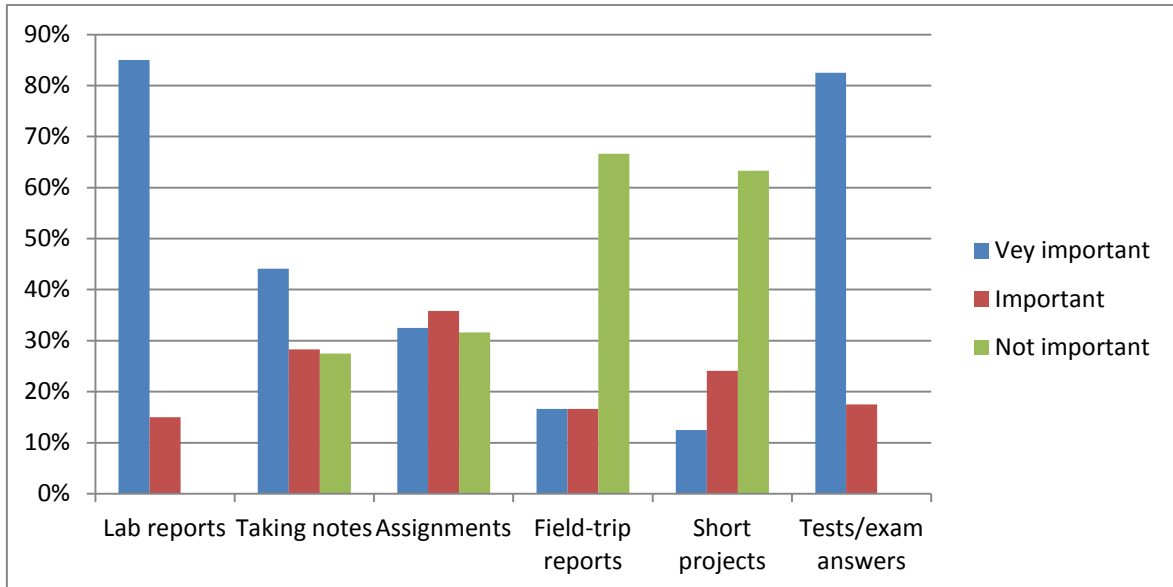
Figure 3.9 Importance of writing sub-skills

As for the writing skills, writing lab reports(85%), tests and exam answers(82%) and taking notes (44.10%) were perceived as very important . They considered writing assignments as important (35.83%).
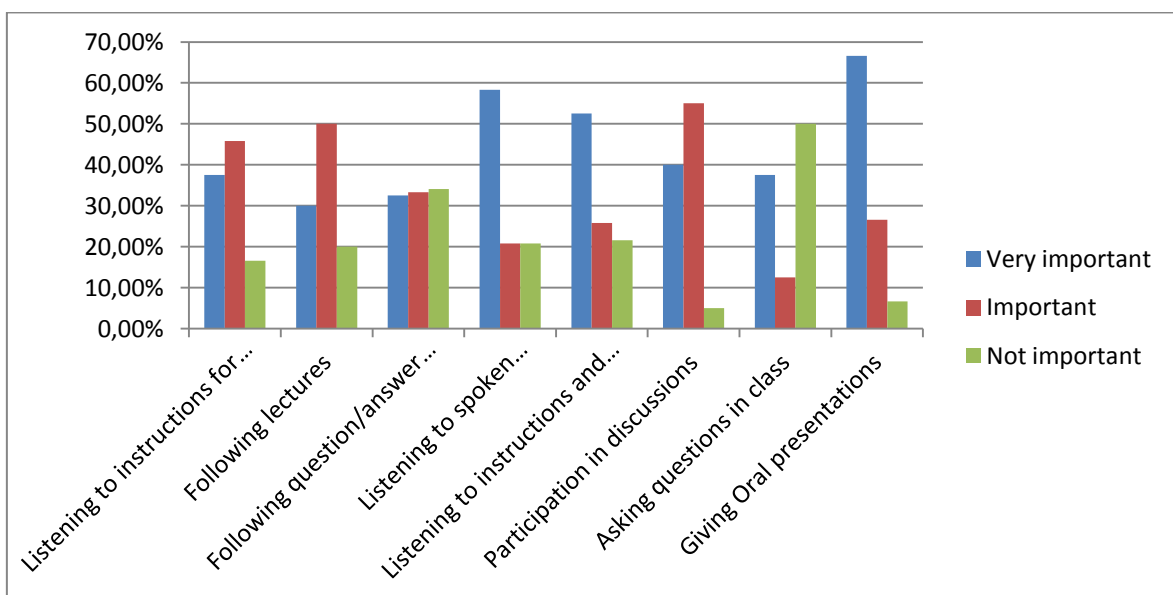
Figure 3.10 Importance of listening and speaking tasks

   Regarding the listening and speaking tasks, listening to presentations (58.33%) and giving oral presentations (68.33%) were recognized as very important, followed by listening to instructions for assignments (45.83%) and participation in discussions (55%).Then came following question/answer sessions in class (34.16%) and asking questions in class (50%) which were said not to be important.

➤ **Part Four: Learner Factor Analysis**

   Learner factor analysis permitted the investigator to determine the students' learning styles and strategies and measure their motivation and attitudes towards the ESP course.

Question 14: Students' attitudes towards learning English

   At the beginning of their studies, 69.16% of the respondents were favorable towards learning English while 30.83% of them stated that their impression was unfavorable.

Question 15: Reasons for learning English
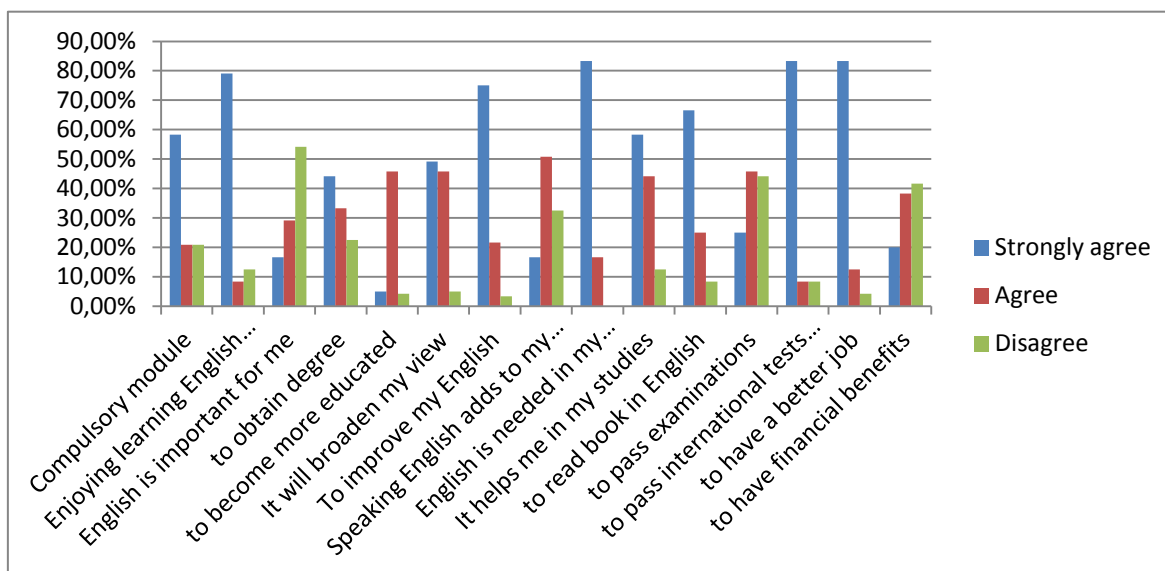
Figure 3.11 Reasons for learning English

83.33% of the informants strongly agreed on the fact that they learned English to pass international tests such as TOEIC, to have a better job, or because they will need it in their target career. Other reasons were mentioned: enjoying English, improving their proficiency level in this language followed by getting a social status.

Question 16: Aspects of English that need more teaching
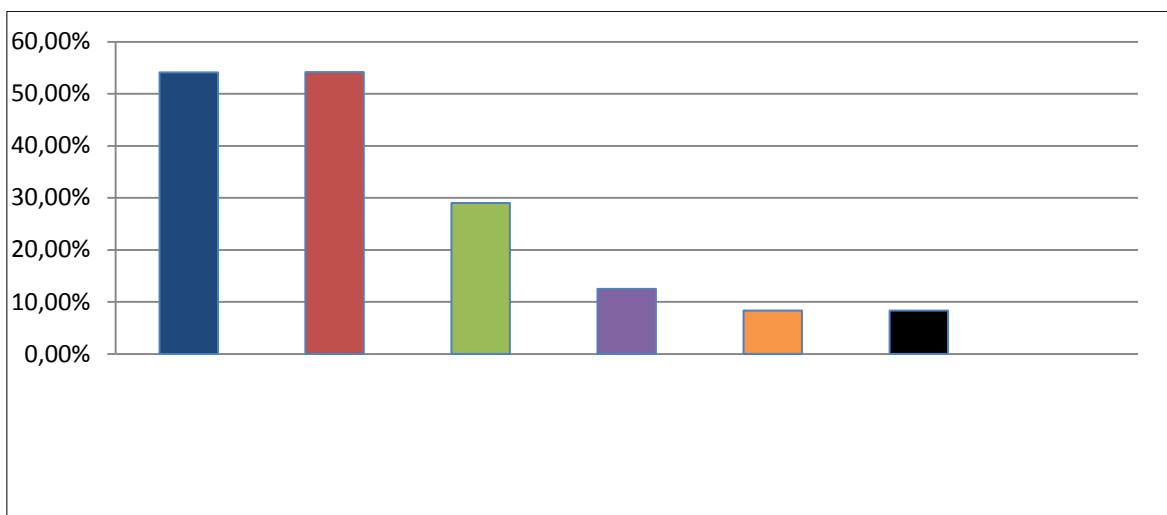
Figure 3.12 Aspects of English that need more teaching

Concerning the aspects of English that need more teaching, the majority of informants, that is 54.16%, gave priority to speaking and listening at the expense of technical vocabulary with 37.5 % and 29% respectively. Grammar came right after with 12.5% followed by writing and reading comprehension with 8.33%.

Question 17: Type of the English Course

While the majority of the informants that is 41.66 % preferred that the English course comprises both English for academic purpose (research and studies) and English for occupational purposes (work), 26.66 % of them wanted to learn only English for occupational purposes. The results are displayed in the figure below:
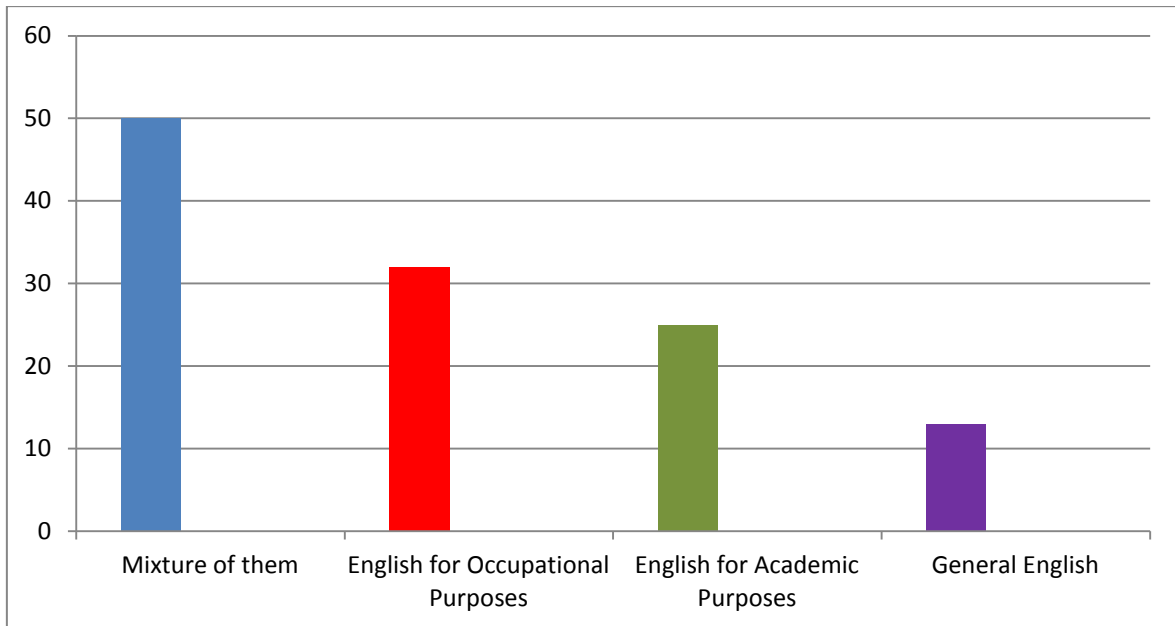
Figure 3.13 Type of English to be learned.

Question 18: Ways for Learning English
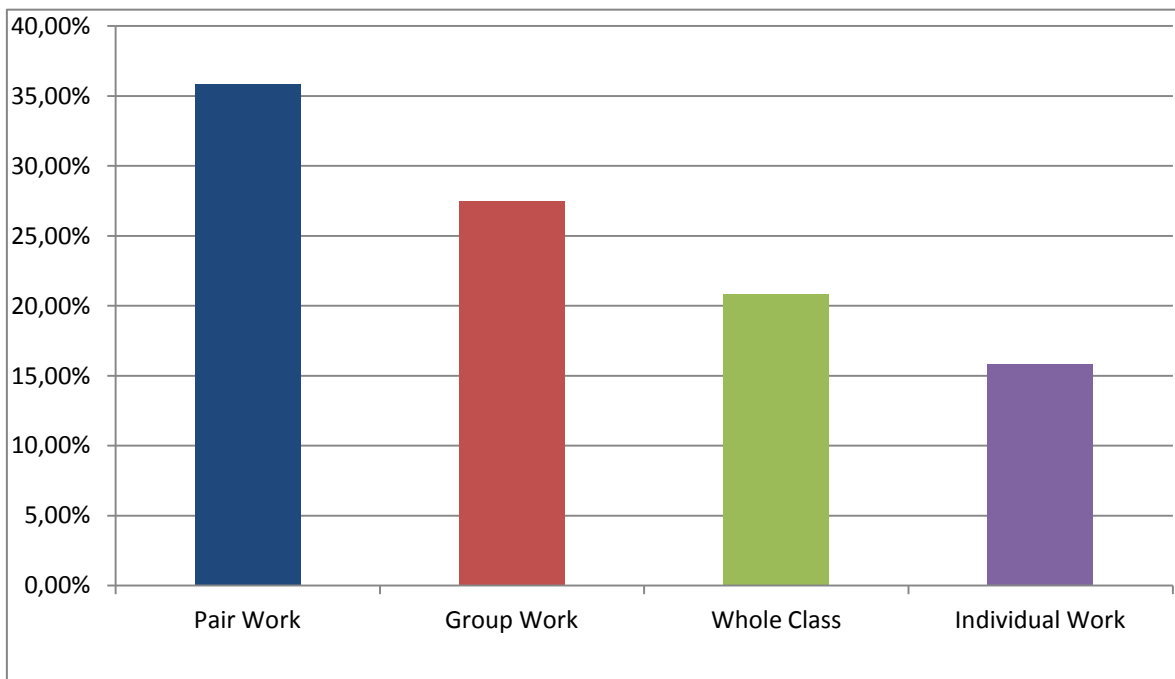
Figure 3.14 Classroom teaching practices

While 35.83% of the students preferred to learn English in pairs, 27.5% of them gave more importance to group work. Whole class work came right after with +20.83%, followed by individual work with 15.83%.

➢ **Part Five: Teaching Situation Analysis**

The teaching situation analysis was conducted to describe the environment where the ESP course is delivered. It enabled the researcher to identify the resources, time load, materials,..etc. available.

Question 19: Importance of the English course

95.83% of the students considered attendance in the English course as compulsory whereas 4.16% treated it as optional.

Questions 20 and 21: Time allotted
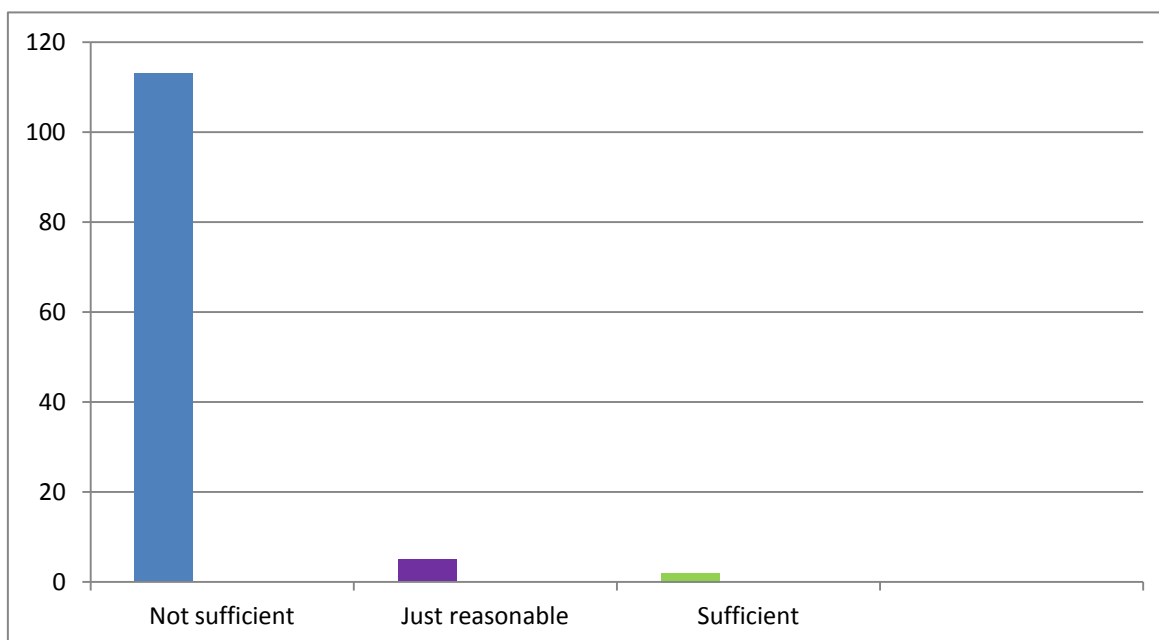
Figure 3.15 Time allotted to the English course

All the informants asserted that they learned English for three (3) successive hours a week scheduled either in the afternoon or in the morning . In fact, the majority of them (94.16%) perceived the time allocated to the English course as not sufficient.

Question 22: Use of books

When asking the informants if they use any books, 96.66% of them denied relying on any materials in the English course, except for 3.32% of the students who used some reading excerpts or manuals.

Question 23: Use of technology in the English course

Regarding the use of technology in the English course, 62.5% of the informants asserted that their English teacher used the data show equipment, laptops and tape recorders.

➢ **Part Six: Students' Attitudes towards the Use of Blended Learning**

This section allowed the investigator to identify the attitudes of first year Manufacturing and Engineering Sciences Master's students towards the integration of blended learning in the ESP course.

Question 24: Learning English through blended learning
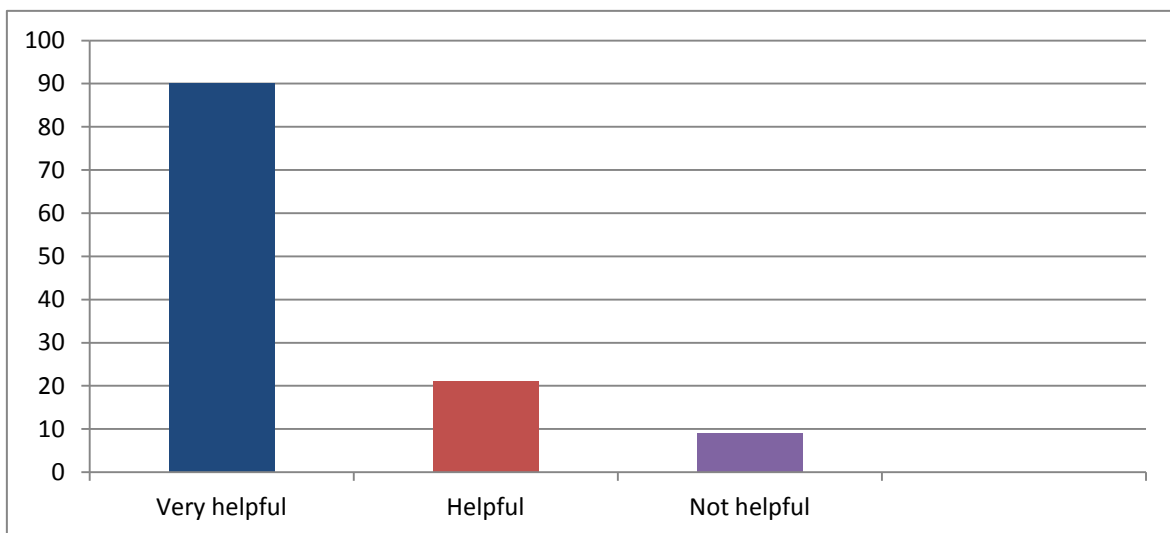
Figure 3.16 Learning English through blended learning

Concerning the integration of blended learning in the English course, a great majority of the informants (i.e. 75%) considered this type of instruction as very

helpful. 17.5% stated that blended learning is helpful and only 7.5% found it unhelpful.

Question 5 Advantages of Learning English via Blended Courses

The great majority of respondents (91.66%) acknowledged that learning English via blended courses has many advantages mainly to be kept in touch with the language outside university and ensure language exposure, and the availability of a multitude of learning materials. Only 8.33% denied its importance.

Question 26: Students' Suggestions

The majority of informants showed a high degree of awareness of the importance of integrating blended learning in the English course .Some of them suggested that they should be given the opportunity to interact with native speakers in order to improve their communication skills. They also called for the draw of a clear policy which governs English instruction as they insist on the fact that English is not only a matter of reading texts and doing related tasks.

3.9.4 English Language Teachers' Questionnaire

The English language teachers' questionnaire revealed very important data that will help the investigator in designing the course.

Part one: **Teachers' Profile**

This section enabled the researcher to know who the ESP teachers were. It provided data related to the teachers' gender, degree and field of study, status, their ESP and EST teaching experience, ... etc. The results are analyzed as follows:

Question 01: Teachers' Gender

The informants were English language teachers of both sexes. There were five (5) females and three (03) males.

Questions 02 and 03: Academic Degree and field of study

Table 3.3 Academic degree and field of study

Number of teachers	*Academic Degree*	*Field of Study*
04	Master	Language Studies
03	Master	Literature and Civilization
01	Magister	English Language and Education

Four (4) teachers hold a Master's degree in Language Studies, three (3) were Literature and Civilization Master holders, whereas only one teacher had a Magister degree in English Language and Education.

Question 04: status in the faculty

Seven informants were part-time teachers in the Department of Manufacturing and Engineering Sciences .Only one informant was a full-time teacher.

Question 05: English language teaching experience at university

Table 3.4 English language teaching experience at university

Number of Teachers	*Period of English Instruction at University*
01	06 years
03	02 years
05	03 years

One informant had taught English at university for six (6) years. Five teachers had worked for three (3) years, and only three (3) respondents had taught English for two years.

Question 06: ESP teaching experience

Table3.5 EST teaching experience

Number of Teachers	*Period of EST Instruction*
01	03 years
05	02 years
02	01 years

The majority of informants had a considerable experience in teaching ESP. One worked for three years as an ESP teacher, five respondents taught for two years, and the two others had been teaching the aforementioned module for only one year.

Question 07: Teaching English in the Department of Manufacturing and Engineering Sciences

While seven (7) informants had been working for one year in the Department of Manufacturing and Engineering Sciences, only one teacher had an experience of three years in the aforementioned department.

Question 08: Teaching English in other departments

Almost all the teachers had been working in other departments including that of Law, Information Sciences, Chemistry, Economics, CEIL (Centre d'Enseignement Intensif des Langues) , and other private schools.

Question 09: ESP teacher training

While the majority of teachers argued that they didn't receive any ESP teacher training which they considered as an important step in achieving the objective of ESP teaching which is still in its infancy in Algeria, only one considered her

Magister studies as an initial training that helped her acquire some knowledge about the ESP teaching operation.

Part Two: Present Situation Analysis

The present situation analysis allowed the researcher to determine the ESP teachers' views regarding their students' current needs , lacks, strengths and weakness, previous learning experiences.

Question 10: Type of the English course

While five informants insisted that they taught more often General English and English for Manufacturing and Engineering, only three posited that they gave more importance to English for Manufacturing and Engineering.

Question 11: Focused language items
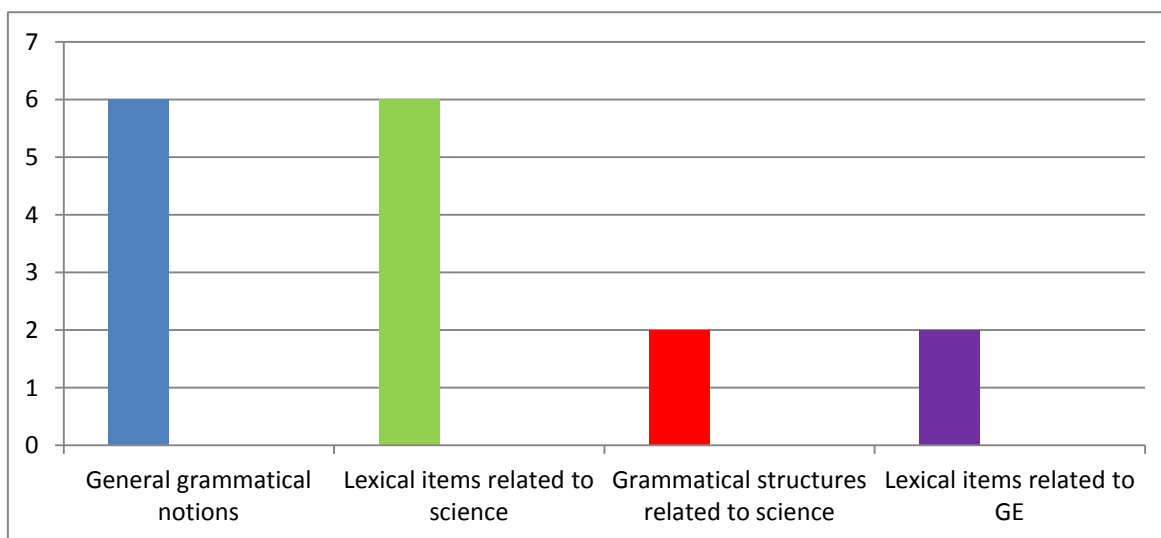
Figure3.18 Focused language items

The collected data revealed that the teachers concentrated on both general grammatical notions and lexical items related to science in their teaching. And only two asserted that they gave more importance to lexical items related to GE and grammatical structure related to science.

Question 12: Emphasized Language Skills

Table3.6 Emphasized language skills

Skills	Listening	Speaking	Reading	Writing
Rank	04	03	02	01

All the teachers believed that the four language skills were important. In fact, six teachers ranked Writing and Reading at the top followed by speaking then Listening.

Questions 13 and 14: Use of translation

The great majority (6) of the teachers agreed on the use of translation of lexical items in the English course mainly from English to Arabic or vice versa and sometimes from English to French. Thus, only two of them asserted that they did not rely on translation in order to create a context for English language learning.

Part Three: Learner-Factor Analysis

Learner factor analysis permitted the investigator to determine the students' learning styles and strategies and measure their motivation and attitudes towards the ESP course from their teachers' point of view.

Question 15: number of students

The language teacher confirmed that the number of students turned around 17 in each group.

Question 16: Students' attendance

All the teachers confirmed that attendance of the English language course was compulsory though they noticed significant absences from the part of the students.

Questions 17 and 18: Students' motivation

All the teachers stated that at the beginning of their university studies, the students were moderately motivated because they emphasized more on their field of study but after graduation their motivation increased because they faced the real situation where English became a necessity mainly when writing reports and conducting scientific research.

Part Four: Teaching Situation   Analysis

The analysis of the teaching situation gave the researcher the chance to identify the teaching method, materials, and the different circumstances in which the ESP course was undertaken.

Question 19: Teaching method

The majority of the informants posited that they did not follow a precise method in teaching English. They confirmed that they combined between Grammar Translation Method, Communicative Language Teaching and the Audio-lingual method depending on the type of the task.

Questions 20 and 21: Teaching materials and programme

All the informants argued that they had been given a syllabus designed by the teacher in charge of the English course at the department of Manufacturing and Engineering Sciences, but no one of them used it because of its grammatical nature.

Question 22: The form of the English course

All the teachers confirmed that the English language course took the form of "Cours /TD", i.e. a lesson followed by different activities such as grammar exercises, reading a text aloud, etc.

Question 23: Type of teaching materials

Six (6) informants argued that they used textbooks related both to science and GE. The two other teachers asserted that they relied on self-designed materials. The results are presented as follows:
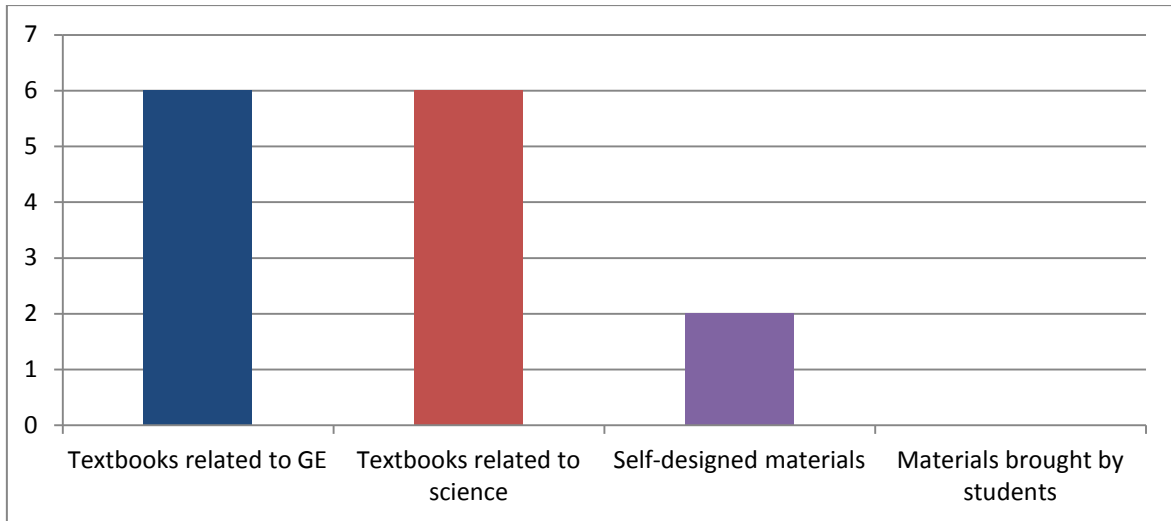
Figure 3.19 Type of teaching materials used

Question 24: collaboration with subject specialists

Though the majority of teachers were aware of the importance of collaboration between language teachers and subject-specialists, only three of them met with teachers of Manufacturing and Engineering to discuss and comment their course content according to the whole program of speciality.

Question 25: Subject-specialists' attitudes towards the English language

All the teachers acknowledged the efforts put in by the Department of Manufacturing and Engineering Sciences either by recruiting qualified teachers, or providing the most suitable materials to create a supportive environment for teaching and learning English.

Question 26: Instructional recommendations

Almost all the language teachers strongly agreed on the fact that more time should be allotted to English instruction as three hours per week were insufficient, and disagreed on the idea that teaching should focus on General English. Six of them agreed that teaching should focus on the type of English needed in their field.
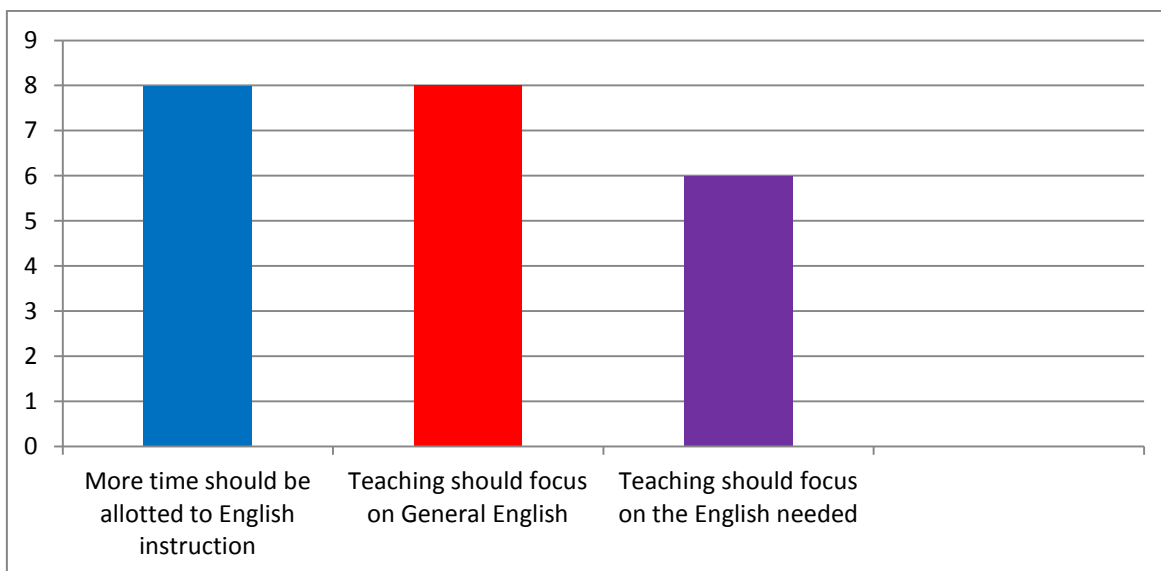
Figure3.20 Instructional recommendations

Part Five: Teachers' attitudes towards using blended courses

This part was devoted to identify the ESP teachers' attitudes towards the integration of blended learning in the ESP course.

Question 27: Usefulness of blended learning

Six teachers showed positive attitude towards the integration of blended learning in the English course mainly in enhancing the learners' communication skills. Two of them denied its usefulness in the light of the absence of a supportive environment and available materials.

Question 28: Teachers' Expectations

When using blended courses, language teachers expected high achievements from the part of their students. The informants also confirmed that blended learning will prepare the students for real life and explore new ideas.

Question 29: Teachers' Suggestions

All the informants showed high degree of awareness regarding the importance of teaching English via blended courses. They stated that the latter was the only solution to ensure language practice outside university, on the one hand, and give the learners the ability to be guided by their teachers on the other.

3.9.5 Subject-specialists' interview analysis

The subject-specialists' interview revealed important data about the importance of English in the target situation.

Teachers' Profile

04 female and 06 male teachers were interviewed. The teachers were in the age group of twenty-five (25) and sixty-nine (69) years old. 03 teachers were PhD holders in Manufacturing and Engineering sciences and telecommunication. 04 informants hold a Master's degree in Supply Chains and Engineering Management and three others had a Magister degree in Automatics and Information Sciences. The respondents taught different modules including Waves and Vibration, Management, Automatics and Information Sciences.

Status and Importance of English

All the informants were aware of the importance of the global status of English and as a language of world economy, technology and science. All the respondents showed high degree of awareness about the vital role that the English language played in the field of Manufacturing and Engineering Sciences. They

confirmed that a great number of documents in their field of specialism and conferences are published and conducted in English.

The subject-specialists stated that they faced many situations in which English was used such as reading texts and manuals, writing articles, using the Internet . They added that they needed English also to undertake research and attend international conferences.

Regarding the importance of English in the workplace, the teachers argued that knowledge of English was considered as a requirement in the labour market. They confirmed that one of the conditions to gain a job was to be communicatively skillful in English.

Students' Problems in Academic and Professional Contexts

The teachers asserted that the students encountered many problems mainly in writing about Engineering and Manufacturing related topics in English, reading Engineering and Manufacturing related books and articles, and translating Engineering and Manufacturing related materials.

They also confirmed that lack of English competence constituted a handicap in their professional career. They stated that they faced several difficulties to speak with and understand foreign colleagues speaking about Manufacturing and Engineering sciences, do research, publish scientific articles and attend international conferences.

The informants posited that the students were not well prepared to use English to meet their work requirements because they did not have enough knowledge about English for Occupational Purposes .They added that what they received at university was elementary English.

Subject-Specialists' Suggestions

The subject-specialists were well-aware of the vital role that the English language is playing nowadays. They suggested that the English course should be varied in order to meet both the students' current needs and the requirements of the target situation.

3.9.6 Administrators' Interview

The administrators' interview exposed valuable data about English language instruction in the Department of Manufacturing and Engineering Sciences at Tlemcen University.

Importance of English in the Department

All the informants posited that great amount of work in the Department of Manufacturing and Engineering Sciences at Tlemcen University was conducted in English as there was a collaboration between the aforementioned department and the Department of Management Engineering of Missouri-Rolla University (USA) since 2003.

ESP Teaching in the Department

The administrators pointed out that among the objectives drawn for teaching English in the Department of Manufacturing and Engineering Sciences at Tlemcen University was to respond to the world changes which required a high command of English. When learning English at university, students were expected to be fluent communicants who had a set of skills covered in English either in speech or technical writing in order to succeed as engineering professionals.

The three respondents asserted clearly that they were not satisfied with the ESP teaching in the Department of Manufacturing and Engineering Sciences at Tlemcen University. They justified their attitudes by saying that the ESP teachers

did not receive any specialized training. They added that a set of conditions should be set by the government for the recruitment of ESP teachers.

The administrators also confirmed that there were no clear criteria which allowed them to evaluate the success of the English course. However, they asserted that it was noticeable from the students' grades and their achievement that there was a gap between the objectives drawn for this course and what was taught in reality.

Students' Problems

All the informants agreed that students in the Department of Manufacturing and Engineering Sciences encountered many problems when learning English because of lack of practice. They outlined that the learners found themselves dealing with grammar blocks rather than communication activities.

Administrators' Suggestions

The administrators suggested that a specialized training should be offered for ESP teachers. They called for an official programme provided by the government in order to rule the teaching and learning of English in the Department of Manufacturing and Engineering Sciences at Tlemcen University.

3.9.7 Workplace Managers' Interview

The structured interview was conducted with informants who recently graduated from the Department of Manufacturing and Engineering Sciences at Tlemcen University and were newly recruited in the industrial field. The interview aimed at collecting data about the use of the English language in the professional life. It also intended to draw clear conclusions about the different skills needed, the tasks performed and the difficulties encountered by the managers in the English language.

The structured interview revealed very important data which was analyzed in the following way:

The workplace managers' profile

05 male and one female respondents were interviewed. They were in the age group of twenty-four and twenty-seven. All the informants were Master's degree holders. They graduated from different specialties from the Department of Manufacturing and Engineering Sciences at Tlemcen University. The informants were full time recruited in various industrial companies over Algeria. General information about the respondents is presented in the following table:

Table3.7 Workplace managers' general information

Informant	*License Degree*	*Master's Degree*	*Position*	*Company*	*Mode*
01	Photovoltaic industry	Operation security and safety	Maintenance engineer	Sarl Sison Bouira	Full time
02	Electrical engineering	Logistic chains	Control quality engineer	IRIS Setif	Full time
03	Process engineering	Logistic chains	Method and quality management engineer	EURL Saterex IRIS	Full time
04	System engineering	Automatics	Information system engineer	L'entreprise populaire de Ghazaouet	Full time
05	Data processing	Logistic chains	Methods engineer	IRIS Sat	Full time
06	Process engineering	Process engineering	Production and infography engineer	SARL IMS	Full time

The informants' proficiency level

When asking the workplace managers to identify their proficiency level in the English language, all the informants were self-rated as intermediate. They said they were not fluent communicants due to the lack of control over the speaking skill. They considered the lack of practice of speaking and listening skills at university as the main reason for such situation. They also clarified that the ESP course they had at university was grammar based. It prepared them to read and respond to texts not to communicate effectively in real life situations.

The Importance of English in Their Domain

In contrast with the situation in the past, English is generating considerable interest in the professional life. The informants asserted that having command of the English language became one of the principal requirements for recruitment.

When asking the respondents about the importance of using English in their professions, all of them agreed on the usefulness of this language in their work sectors. They confirmed that they needed English when they had training abroad. As they had investments with foreign and multinational companies, the workplace managers seemed to be in need of high English language proficiency level . They stated other instances where English was used. This includes reading device manuals and giving presentations.

Difficulties Encountered at Workplace Because of Language

All the informants confirmed that they had problems when communicating in English. They asserted that they did not have difficulties to read or write in English. They could not express their opinions. The respondents highlighted the problem of using technical English. They also had difficulties in interacting with foreign investors and giving presentations in English.

Workplace Managers' Suggestions

The workplace managers recommended that the existing ESP course which was delivered in the Department of Manufacturing and Engineering Sciences at Tlemcen University needed to be refined. They said that lack of practice of speaking and pronunciation had to be taken into consideration when designing the ESP course. The informants also insisted on the fact that they were taught by untrained novice ESP teachers. Regarding the content, they suggested that technical English should be taught in context, i.e., integrated in the four skills, not as isolated items or word lists.

3.10 Summary of the Main Results and Discussion

The needs identification and analysis conducted in the present research work was based on Basturkmen's (2013) framework. This model is built on Hutchinson and Waters' (1987) approach and analyses the present situation, target situation, learner- factor and the teaching situation.

Language teachers' and students' questionnaires, in addition to subject-specialists' , administrators' and the workplace managers' interviews revealed very important data which allowed the researcher to draw a clear picture of the English language teaching and learning situation in the Department of Manufacturing and Engineering Sciences at Tlemcen University. They also enabled her to analyze the students' needs and identify not only their attitudes but also their teachers' opinion on the integration of blended learning in the English course.

Regarding the present situation analysis, the findings showed that the students' English language proficiency is at a beginner level as they stopped learning English for one year because there is no provision of ESP course in the first year license degree, and this prevents them to act well in their academic and future professional career. Students and teachers assert that a great number of books in the field of Manufacturing and Engineering Sciences are in English. So it is important to have a certain command of this language for easy understanding and use. The findings also

reveal that students cannot understand English native speakers. They are also unable to recognize the technical vocabulary used in Manufacturing and Engineering Sciences, and produce correct discourse. For these reasons, students need to develop the four language skills with more focus on speaking and listening in order to speak, write and read Manufacturing and Engineering related topics, books and articles.

As far as the target situation analysis is concerned, the stakeholders agree on the importance of the English language. The subject-specialists and administrators highlight the vital role that English plays to do their jobs since the nature of the Manufacturing and Engineering profession requires high knowledge in this language in order to develop a career and international relations, writing reports, decoding devices' regulations which are written in English, and using English communication skills effectively when negotiating with other professionals. They state that nowadays English-speaking professionals are more demanded in the work market because companies ask for mastery of English as an essential requirement to be recruited. In fact, English learning is no longer a luxury, but a necessity.

Concerning the teaching situation analysis, the results obtained from language teachers' and students' questionnaires revealed that the English language course in the Department of Manufacturing and Engineering Sciences at Tlemcen University takes the form of "cours / TD." It is compulsory though a great number of absences is noticed. The time allotted to it is three successive hours per week starting from the second year .This time is considered to be insufficient to cover many aspects related to the English language. The language teachers relied on self-designed materials and textbooks related to science in the light of the absence of an official programme delivered by the department. Regarding the way in which the students prefer to practice the English language, pair work tasks are preferred.

As far as the learning factor analysis is concerned, the data gathered show that the students at the Department of Manufacturing and Engineering Sciences at Tlemcen University are motivated to learn English though their attitudes towards the ESP course was unfavorable at the beginning of the course. They assert that the

course content neither matches the learners' area of specialism nor addresses their interests. Among the reasons that the students mention for learning English is that they need it both in their studies and target career. Another important reason is to pass international tests such as TOEIC which becomes a trend nowadays to gain a job and urges the students to be fluent communicants in English.

Finally, the informants are conscious about the vital role that blended learning plays in the process of teaching and learning ESP. They show positive attitudes towards the integration of this type of instruction .In fact, their answers reveal that the integration of the hybrid learning in the English course will **"**open new horizons into the ESP teaching field**"** (Posteguillo et al. 2001:269). Furthermore, the use of technological supports contextualizes the language, stimulates the learners' attention as it keeps them attracted, and therefore, enhances their motivation and promotes their linguistic and communicative competencies.

To conclude, the analysis of the learners' target and learning needs as perceived by the stakeholders in addition to the identification of their attitudes towards the integration of blended learning in the ESP course in the Department of Manufacturing and Engineering Sciences at Tlemcen University enable the investigator to deduce valuable conclusions to be explored when designing the course.

3.11 Conclusion

The third chapter was devoted to the description of the ESP teaching and learning situation at Tlemcen University with a special focus on the teaching of EST in the Department of Manufacturing and Engineering Sciences. This chapter also attempted to analyze and interpret the results drawn from the students' and language teachers' questionnaires in addition to subject-specialists' and administrators interviews. In fact, interesting results were achieved in terms of students' needs and the stakeholders' attitudes towards the integration of blended learning in the English course. The NIA which revealed that the stakeholders are well-aware not only of the

importance of English in their academic and professional career but also the crucial role that blended learning plays in ensuring high quality teaching /learning process.

As needs analysis is regarded as an ongoing process, the next chapter is expected to the design of an ESP blended course .The researcher tries to use the data gathered from the students' target and learning needs and the identification of the stakeholders' attitudes towards the integration of blended learning in the ESP course to design the materials.

CHAPTER FOUR   ESP Blended Course Design

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 4.6Conclusion

4.1 Introduction

In the previous chapter, the researcher tried to analyze and interpret the data obtained from the different research instruments used in the present study in order to describe the ESP current situation in the Department of Manufacturing and Engineering Sciences at Tlemcen University by conducting a Needs Analysis through which she analyzed students' target and learning needs and identified the stakeholders' attitudes towards the integration of blended learning in the English course. In the light of the results, the investigator attempts to suggest a course which will , hopefully , improve the teaching of ESP in general , and inspire the EST teachers to select and design the most suitable and relevant teaching materials.

Henceforth, the current chapter constitutes a remedial to the current ESP teaching and learning situation in the Department of Manufacturing and Engineering Sciences at Tlemcen University. Thus, the investigator suggests a blended ESP course where much focus is put on listening and speaking skills as a response to the obtained results, on the one hand, and to raise learners' autonomy and motivation, and enhance learner-centeredness approach on the other.

4.2 Blended Course Description

This blended course is a fourteen-week course of three (03) hours per week given to 25 students. It is designed to meet first year Manufacturing and Engineering Master Students' needs and targeted to improve their academic and professional performance in English. There is a focus on using both everyday and workplace English with more emphasis on active speaking, technical writing and communication skills.

The course covers a wide range of grammar areas necessary for students of Manufacturing and Engineering. It also assigns a set of tasks including reading and listening comprehension, writing, note taking, summarizing, report writing along with grammar, pronunciation and vocabulary. Thus, the course is designed around face to face and online tasks. In other words, the students are acquainted with the

course topic in the classroom then they are required to solve regular assignments online and vice versa. This approach ensures exposure to English outside the classroom. It certifies flexibility in terms of time and place which makes the students learn at their own pace.

4.2.1 Course Content

The course contains four units designed to meet Manufacturing and Engineering students' needs throughout a set of carefully selected language activities which are tightly related to the type of exercises taken in the TOEIC. Each unit is organized in five parts (see section 4.2.3)

4.2.2Topic and Text Selection

In the context of ESP, it is impossible to design a course without updating materials. Preparing these materials is not an easy task. The process of materials selection and adaptation constitutes an issue for ESP teachers who are not specialists in the subject area. Thus, the complexity lies in making decision about the topics and the texts to be tackled in the course and suit the students' field of study. In fact, translating the content that the students dealt with in their subject-matters in the ESP course will be interesting for them and increase their eager to explore the content presented to them.

Regarding the present course, the investigator proceeded towards the first step which is the choice of proper topics. The informants involved in the current study are first-year Master's students specialized in Manufacturing and Engineering who seem to be well aware of the content of their area of specialism. After analyzing their needs, the investigator was urged to select topics that fit the learners' specialty and match with their expectations. The main target of designing an ESP course for Manufacturing and Engineering students is to develop their communication skills through topics which are tightly related to their field of study. Therefore, choosing materials that are closely connected to the subject area enhances the students' motivation. It helps them formulate their language profile, understand technical

documents and obtain knowledge about issues in the field of manufacturing and engineering sciences such as production, designs, functions and applications, processes and systems. The researcher also tried to generate topics that simulate situations that the students require in their daily professional settings. Examples include job searching and telephoning.

Subsequently, the selected topics should be interpreted in the form of teaching materials. The most common is the text. Because of the importance of text selection in the ESP materials design, the researcher selected carefully a variety of authentic adapted texts taking into account their suitability for the proficiency level and relevance to the students' needs. Therefore, the investigator chose materials from subject area topics and tried to develop a set of language activities to accompany them. The aim was to attract the students and motivate them.

4.2.3 Tasks Description

The present ESP course incorporates a variety of language tasks. The aim is to promote the students' four language skills and help them reinforce appropriate language use thanks to the grammar and vocabulary assignments that the course provides.

4.2.3.1 Listening Comprehension

This type of task will help the students develop their listening comprehension skills and test how well they understand spoken English. Listening comprehension tasks cover the following items:

❖ **Photographs:** This section includes a variety of activities where the students will look at a picture and at the same time they will hear four statements from which they will try to choose the one that best describes the picture. Then, they will look at the same picture and listen to a set of questions which they have to answer in a precise time limit. After that, they will hear four possible answers from which they must choose the best one that matches the question.

❖ **Questions - responses:** in this section, the students will be given a handout containing a chart with the different types of questions in English and they are asked to place a tick under the type of question they hear. This activity in fact fits as a listening and a grammar practice which helps the students understand the types of questions in English and the appropriate answers to such questions.

Other tasks may ask the students to listen to a set of questions and predict the correct answers, or to hear some answer choices and inquires from them to give the appropriate questions. The latter will reinforce the students' attention and understanding of the whole question or response.

❖ **Short conversations:** Students will listen to a short conversation between two people about a specific issue where they are asked to analyze it and understand its purpose, and later on try to answer as many questions as they can.

❖ **Short talks:** Students will listen to a single speaker (a monolog) talking about a particular topic from which they have to answer a set of questions written on the board. Thus, another activity may be used. Some questions will be given to students who are asked to underline the keywords and listen to the talk and try to give their own responses. In fact, this exercise helps the students focus on key information, paraphrase the information they hear; and therefore, they better understand the talk and predict the correct answers.

4.2.3.2 Reading Comprehension

In this section, students will be exposed to a set of authentic texts representing every day English and real-world workplace communications. Those materials comprise a variety of questions and activities which enable them enhance their reading comprehension skills and measures how well they understand written English. These exercises are summarized as follows:

❖ **Incomplete sentences:** students are required to fill in the gaps using the appropriate word or phrase in order to make the sentences grammatically correct. Therefore, this type of language practice will develop accuracy by analyzing sentences, predicting the most convenient answers and at the same time reinforcing their vocabulary.

❖ **Text completion:** Similar to the previous activity, this section asks the students to fill in blanks but this time in a long text. In fact, this will help the students understand sentence structure in a context and check its grammatical appropriateness. From this perspective, vocabulary and grammar knowledge will be reinforced.

❖ **Reading comprehension:** Students will read different texts and try to answer a variety of comprehension questions including multiple choice ones. It makes them apply reading strategies such as scanning and skimming, employ reading skills and sub skills and therefore draw a real purpose for reading a text. Hence, students will be familiarized with different text genres such as advertisements , announcements , letters , e-mail , CVs,...etc.

4.2.3.3 Vocabulary Tasks

The vocabulary section enables the students to enrich their vocabulary. It emphasizes on the identification of terms and keywords that are frequently used in everyday and workplace English. Therefore, students will expand their vocabulary throughout a set of exercises including word formation, completing gaps, matching words with pictures, choosing the correct word, categories, odd one out and words that go together activities.

4.2.3.4 Grammar Tasks

In the field of Manufacturing and Engineering, students are required to write lab and technical reports which constitute a challenging task for their ability to write in correct academic English, mainly in ESP where English is not the students'

native tongue. Thus, the investigator selected a variety of grammar activities which help the students overcome this problem. The grammar blocks which are suggested are:

-Parts of speech

-Questions

-Causative

-Prepositions

-Tense

-Passive and active voice

-Reported speech

-Relative Pronouns.

4.2.3.5 Communication Tasks

This section gives the students the opportunity to interact with others in a real professional environment by taking part in a discussion, a negotiation, and a debate. Thus, the learners will enhance their speaking skill throughout a set of tasks which allows them to actively practice English. The exercises are described as followed:

❖ **Read a text aloud:** Students must read a text aloud with proper emphases, rising and falling intonation, and pauses.

❖ **Describe a picture:** Students will orally describe a picture with as many details as they can.

❖ **Propose a solution:** Students will be exposed to a problem and they are asked to try to respond with solutions to this problem.

❖ **Express an opinion:** Students are required to express their points of view regarding the specific topic.

In order to develop the students' writing skills, the investigator proposes a multitude of activities where the students are asked to write sentences and compositions based on a picture, respond to written requests and write different types of essays.

4.2.4 Course Objectives

In the context of ESP, Long (2005:19), states, " instead of a one-size-fits-for-all approach, it is more defensible to view every course as involving specific purpose, the difference in each case being simply the precision with which it is possible to identify current or future uses of the L2. It varies from little or no precision in the case of most young children, to great precision in that of most adult learners."

The objectives of the course are furnished below:

By the end of this course, students will be able to:

➢   Give more effective presentations in English,

➢   Contribute successfully in meetings held in English,

➢   Be familiar with the type of questions included in international exams such as the TOEIC,

➢   Deal with clients, customers and colleagues in English more confidently and competently,

➢   develop their language and communication skills in a professional technical context in their industry.

4.2.5 Blended Course Components

As a first step to consider when designing a blended course is to decide what parts of the course are to be put online and which ones to be taught face to face. Therefore, it is widely acknowledged that in almost all blended courses, half and half technique is the most commonly used. To put it differently, 50% of the course tasks are performed in traditional classroom instruction and the other 50% of the

assignments are delivered in an online environment (Osguthorpe & Graham, 2003; Eunjoo, 2006; Usta, 2007).
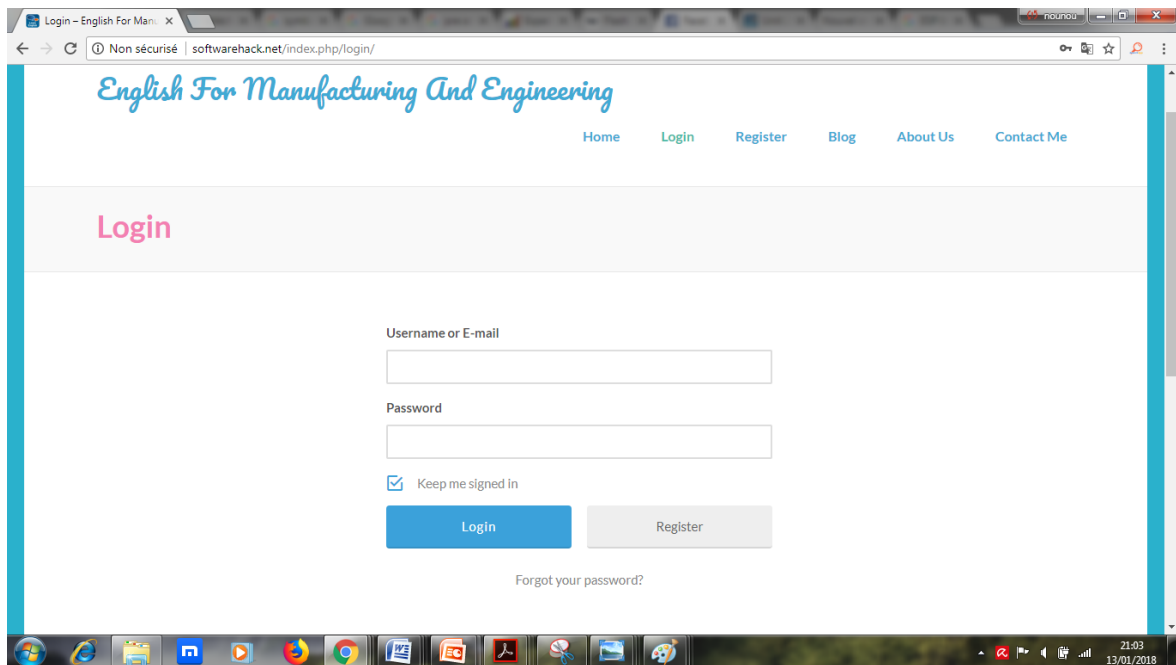
4.3 Course Website Presentation

To ensure the effectiveness of the ESP blended course, the researcher exploited the advantages of technology in combination with traditional classroom instruction. The course intended for first-year Master's students in the Department of Manufacturing and Engineering Sciences at Tlemcen University . It was developed in a new platform with a set of improvised learning materials.

4.3.1 Access Guidelines

Prior to the application of the ESP blended course, the investigator in collaboration with the ESP teacher devoted a session of three hours to give a presentation to introduce blended learning, its advantages and the benefits that the learners will gain from implementing it in the ESP course. In this session, the researcher randomly assigned the participants in the experimental and control groups. It was held one week before the winter holidays to ensure that the course starts by the beginning of the second term. The informants were informed about the objectives of the course as well as the content and the way in which the lectures will be taken. To avoid any upcoming technical problems, the investigator provided an insightful roadmap on how to access the course content website. Therefore, the following steps are pursued:
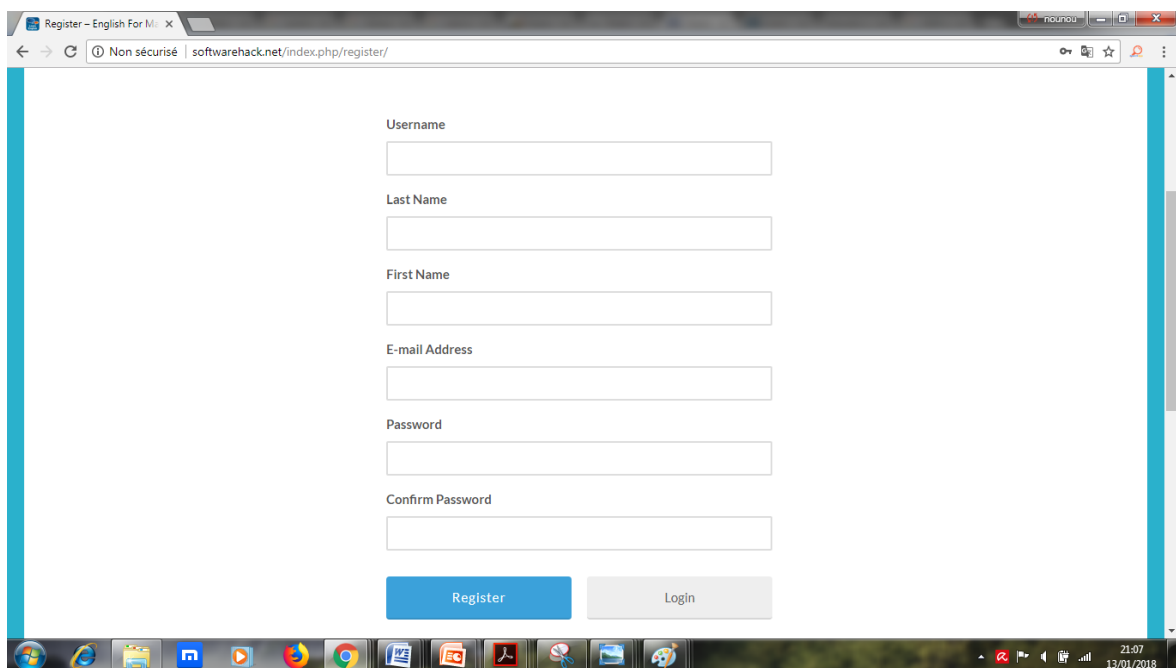
As soon as the user logs in the website, he is automatically directed to the login page if he is previously subscribed in the website; otherwise he has to click on the register page in order to be able to view the content.

Figue4.1 Login Page

In order to have access to the system, the students have to subscribe. In this stage, they will be given a username and a password.

Figure4.2 Register Page

After subscribing, the students can easily check the course content. At first, they are directed to a screen which, as it is encapsulated in figure 4.7, includes at the top:

Figure 4.3 the Course Content Page

a. Home: it is the main page in the website as it is the first that the users consult. It serves to conduct the visitors of the website to the other pages. The home page in the present course takes the user to the front page.

b. *Units:* it displays the different units that the course covers. The present course is organized into four units. By logging in the unit title, the student is directed to the different tasks it includes.

c. *Account:* in general, this page allows the users to log into the site and edit their profiles. It contains information about the users and the members who are subscribed in the website. It also enables the students to exit the course website.
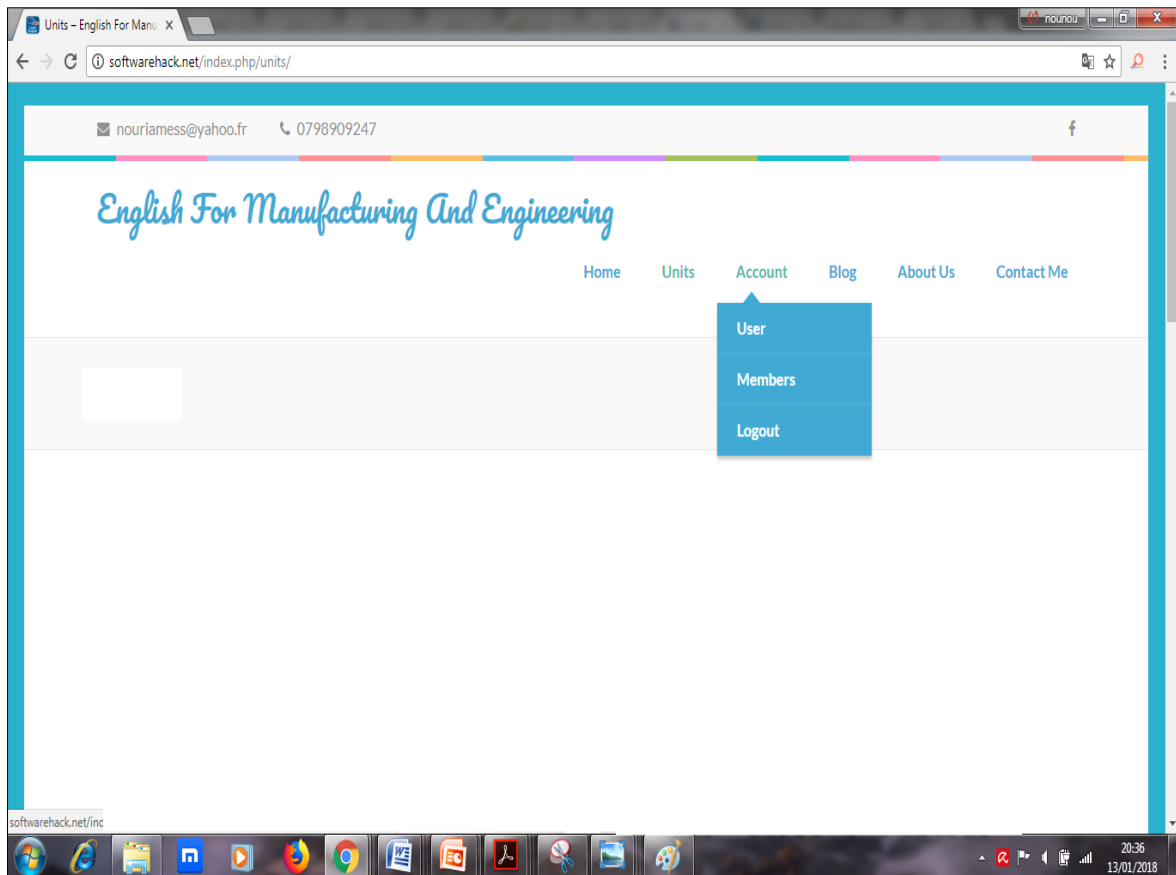
Figure 4.4 the Account Page

4.3.2 Blended Course Overview

When designing a blended course, the researcher has to select an online environment to present the course. Pacheco (2005:11-12) outlines that a well-designed online course should contain the following components:

1. General information

2. Course information

3. Schedule

4. Resources

5. Multimedia presentation of content

6. The virtual classroom

7. Assessment and testing

4.3.2.1 General Information

This component presents the interface of the course website. It contains course name, learners' level, course hours, instructor contacts, course prerequisites, technology tools, etc. It shows the course general layout.

Regarding the present course, the front page consists of three main parts. The first carries the title of the course and the different icons used to surf on the website. These are the home, login, register, blog and contact me pages. The figures below exhibit these elements.

Figure4.5 The course Front Page

In the middle of the front page, the researcher displays some pictures and videos to increase the students' motivation to visit the website. This is presented in the following figure.
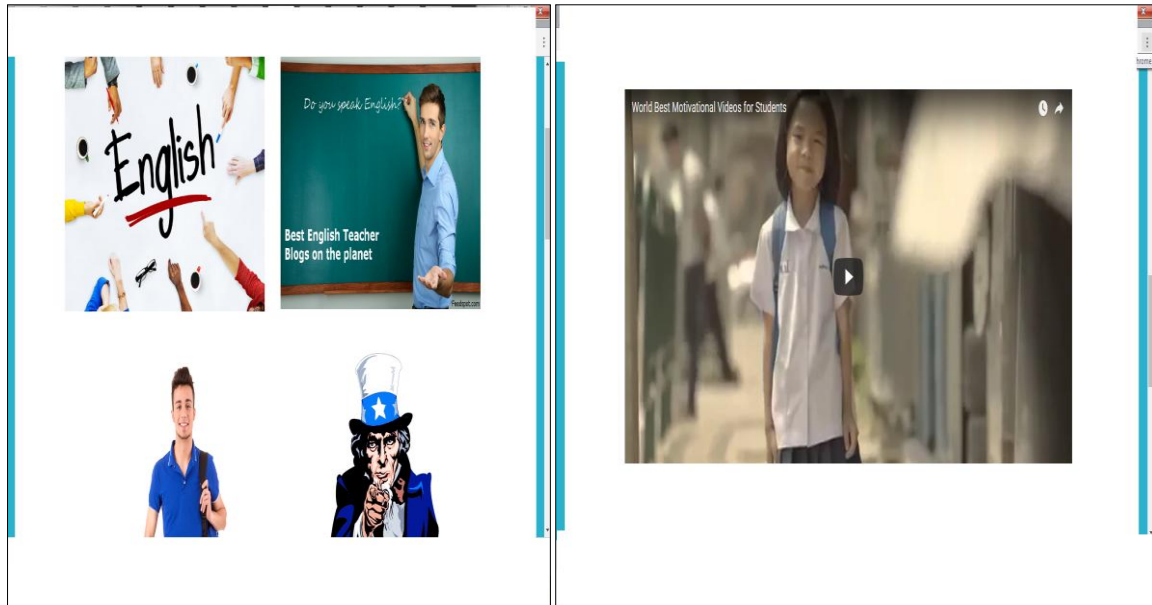
Figure4.6 the Middle interface

The third part of the front page is located at the bottom. It covers icons related to *Categories* which contains the website elements that are frequently accessed, the *Archives* where the previously posted materials are classified chronologically, the *Calendar* to inform the students when they reach the course. The following figure illustrates the third part of the front page.
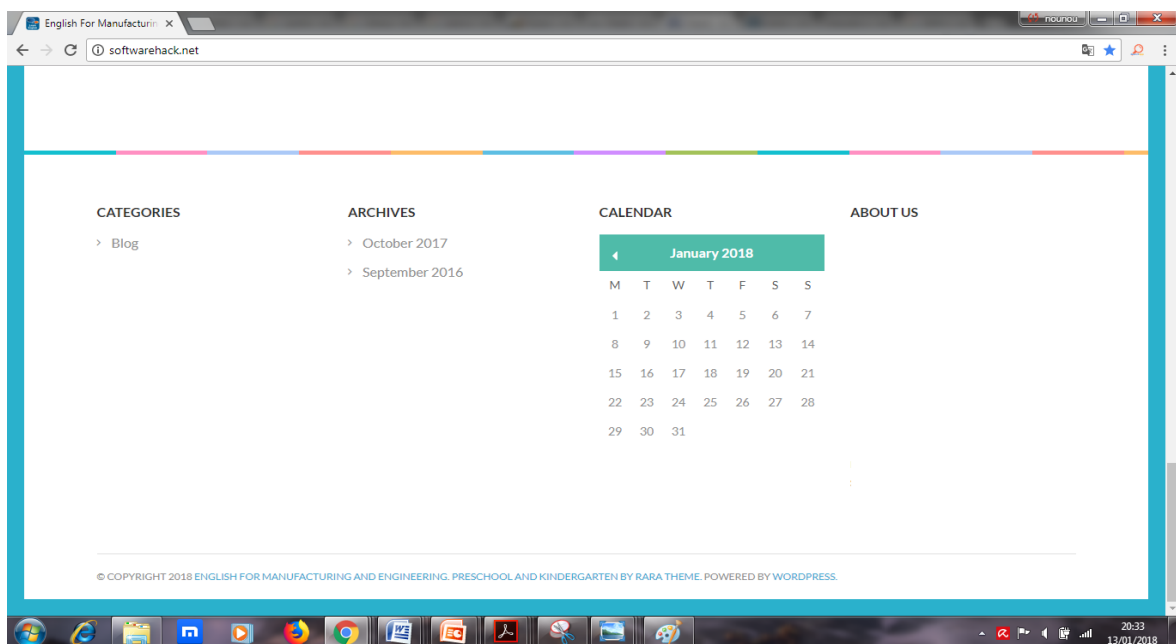
Figure 4.7 View of the Front Page Bottom

As it is illustrated in figure4.5, the *Contact Me* page is designed to enable the learners interact with the teacher. It is mainly devoted to discuss technical problems or difficulties faced by the students when visiting the website, ask questions and / or inquire explanations about the tasks edited.
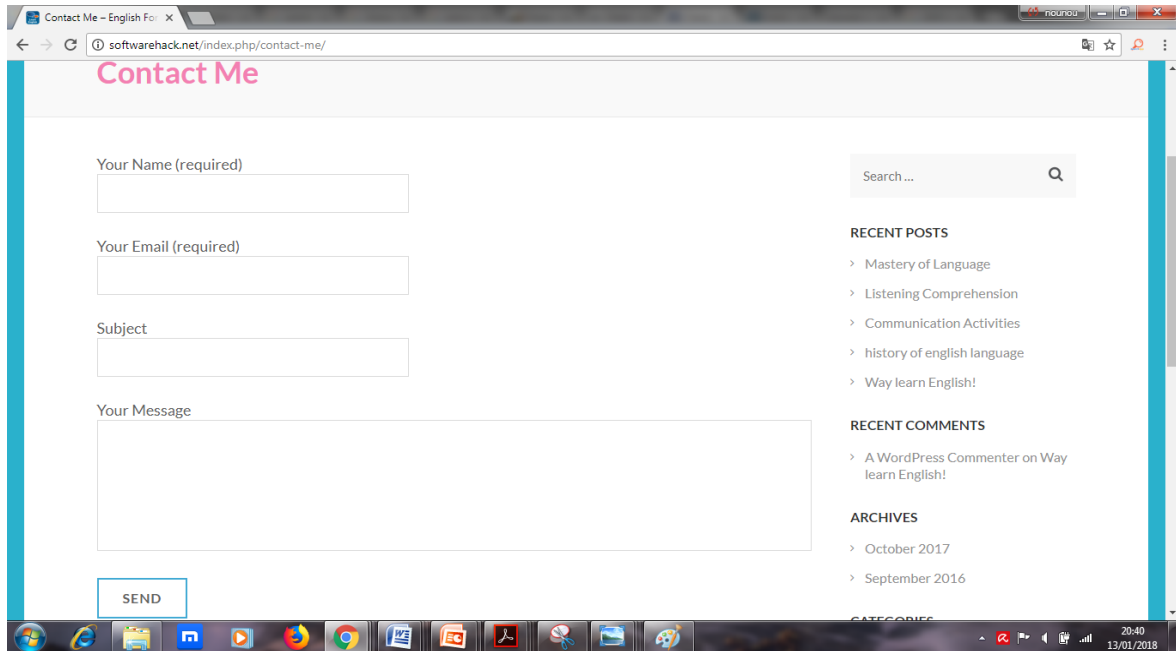
Figure 4.8 Contact Me Page

4.3.2.2 Course information

Course information covers the description of the course, the objectives and the units to be included. This part is considered as the most important as it clarifies the content of the course.

As far as the ESP Blended course designed in this study, the elements already mentioned are used. First, the *About us* icon is designed to clarify the objectives of the course. The figure 4.6 displays this part.
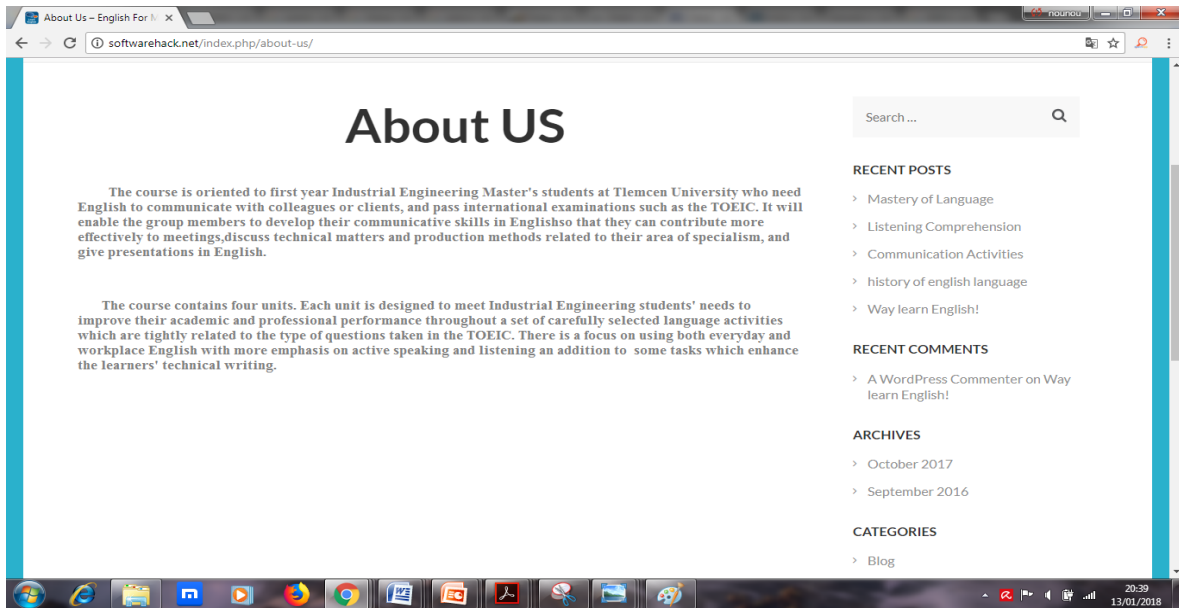
Figure 4.9 View of the *About us* Page

4.3.2.3 Schedule

The schedule represents the calendar in which the researcher sets the timeline of the course. It helps the students to have an idea about the topics, the tasks, the tests and the assignments to be fulfilled in each session and the way in which they are sequenced. As it was already stated, the ESP blended course designed for Manufacturing and Engineering students ensures a teaching time load of fourteen weeks, i.e., an average of forty-two hours. It is worth mentioning that seven weeks were subtracted from the total number of weeks. Four weeks were devoted for the first and the second term exams, one for correction, two others for spring holidays. This makes a sum of seven weeks. Henceforth, the course entails four units. Each unit contains five parts. In one part, one hour is consumed. Then, the total time load average of twenty-one hours was scheduled for face-to-face instruction and twenty-one other hours for online learning. The traditional classroom teaching is planned on Tuesday. Likewise, the online instruction is set before and after the face-to-face course. The following seven weeks schedule is set for the current blended course.

Table4.2 ESP Blended Course Schedule

Week 1		Pretest	
Weeks	**Units**	**ESP Blended Course**	
		Face to Face Instruction	***Online Instruction***
Week 2	*Unit one:* Job Application	***Listening*** **-**Applicants and job descriptions -Summarizing ***Speaking*** -Role play: job interview. - Phone conversation.	*Listening:* -Making conclusions *Reading:* - Type of the text. -Completing a CV. *Vocabulary:* - Jobs and descriptions. *Grammar:-* Prepositions. *Writing:* - Application -CV.
Week 3	*Unit Two:* Engineering	***Vocabulary*** -Abbreviations and definitions. ***Listening*** -Completing a diagram. ***Speaking*** - Oral presentation. -Describing -comparing	*Listening:-* Describes a picture. *Speaking:* -Choosing an engineering career. *Reading:* - Comprehension questions. *Grammar:* - Simple present *Vocabulary: -* Filling in the gaps *Writing:* -Completing sentences with adjectives
Week 4	*Unit Three:* Technical Functions and Applications	*Listening:* -Completing notes. -Choosing the correct word form *Reading: -*True/false questions *Grammar: -*Wh questions (who?)	*Listening:* -Applications and descriptions *Reading: -* Device components *Grammar:* -Relative pronouns
Week 5		*Speaking: -*Discussing features of materials -Preparing a talk *Vocabulary: -*Describing materials	*Speaking: -*Explaining functions and applications *Vocabulary:* -Adjectives
Week 6	*Unit Four:* Design and Systems	*Listening: -*Meeting Agenda -Summarizing solutions of a meeting *Reading:* -Comprehension questions *Vocabulary: -*Synonyms and opposites *Speaking: -*Conducting a meeting	*Listening: -*Writing notes from a meeting *Writing: -*Writing a paragraph *Speaking: -*Preparing a talk *Grammar: -*Active and passive voice
Week 7		***Post test***	

4.3.2.4 Resources

The resources cover the learning materials that the researcher used to support the course content. The materials can be web pages or download files. They can be texts, e-books, online dictionaries, lecture notes, audio and video files. Regarding the current course, the investigator recommended for a set of learning resources. These are:

a. Dictionaries: among the learning materials that are advised to be used are online dictionaries. They help the students not only to check the meaning and spelling of words but they ensure the words' right pronunciation. They enlarge the learners' vocabulary luggage by providing a list of synonyms and opposites as well as the items use in context. They also extend their knowledge of collocations. Examples of these dictionaries are:

- Merriam Webster online dictionary ;
- Oxford collection of dictionaries
- Cambridge dictionary.

b. E-books: are considered as reference tools. They help the learners to widen their knowledge in terms of language and subject- matter. The investigator suggested a set of e-books that allowed the students to be acquainted to different texts and permit them to perform a wide range of reading, writing, grammar and vocabulary assignments. Examples of these e-books are:

- Technical English Vocabulary and Grammar;
- English for Mechanical Engineering;
- English for Electrical Engineering;
- Professional English in Use : Engineering;

c. **Blogs:** a blog is "an online diary" (Cobanoglu, 2006: 83) or a web journal where users edit and update their thoughts, ideas and comments chronologically (Nicolaou and Constantinou, 2014:95). The use of blogs in an ESP course creates a

sense of continuity and cooperative learning ((Asoodar, Atai, Vaezi & Marandi, 2014; Fola-Adebayo, 2014; Kelly, 2008; Montero-Fleta & Pérez-Sabater, 2014; Sun & Chang, 2012).

Regarding the present ESP blended course, the researcher supported the website with two blogs, one designed to publish further reading texts and the second to post grammar and vocabulary lessons. The aim was to give the students the chance to respond and comment on an issue. In this way, discussion is raised. The figure below illustrates the use of blogs in the ESP blended course.
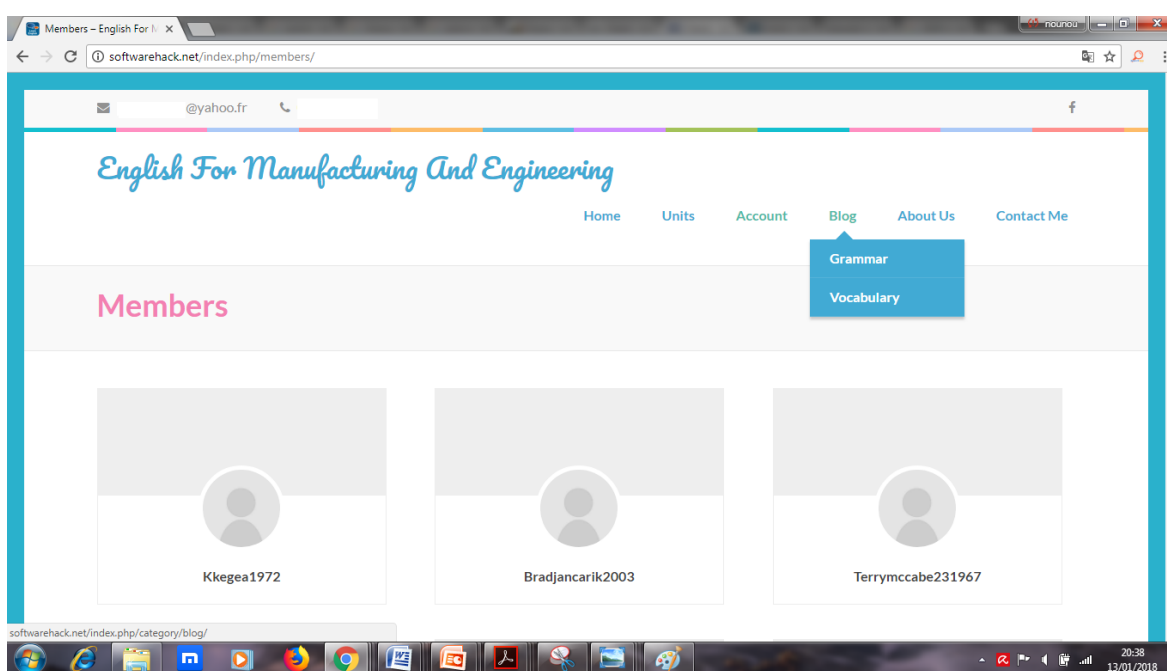
Figure 4.10 Blog Page

d. Language Online Supports: the use of the net creates many possibilities in the context of language teaching and learning. It provides a huge bulk of sources that the teachers and learners can explore. These resources ensure autonomous learning and enhance deep learning strategies.

Since grammar is considered as the backbone of any language, the investigator created an online classroom and recommended for the students to subscribe. The 'Grammar Flip' is the platform selected for this purpose. The following figure illustrates the online support used.
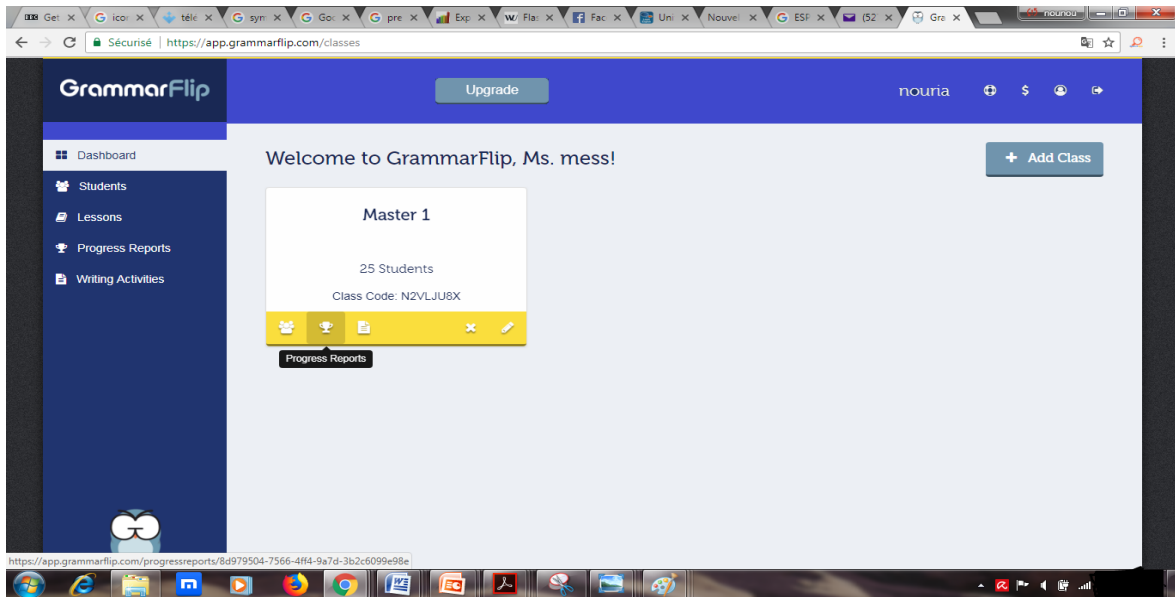
Figure4.11 Grammar Flip

This platform provides different grammar blocks. These are presented in a logical way, that is, from simple to complex grammatical items. Besides, lectures about writing techniques are also presented. This is illustrated in the following figure:
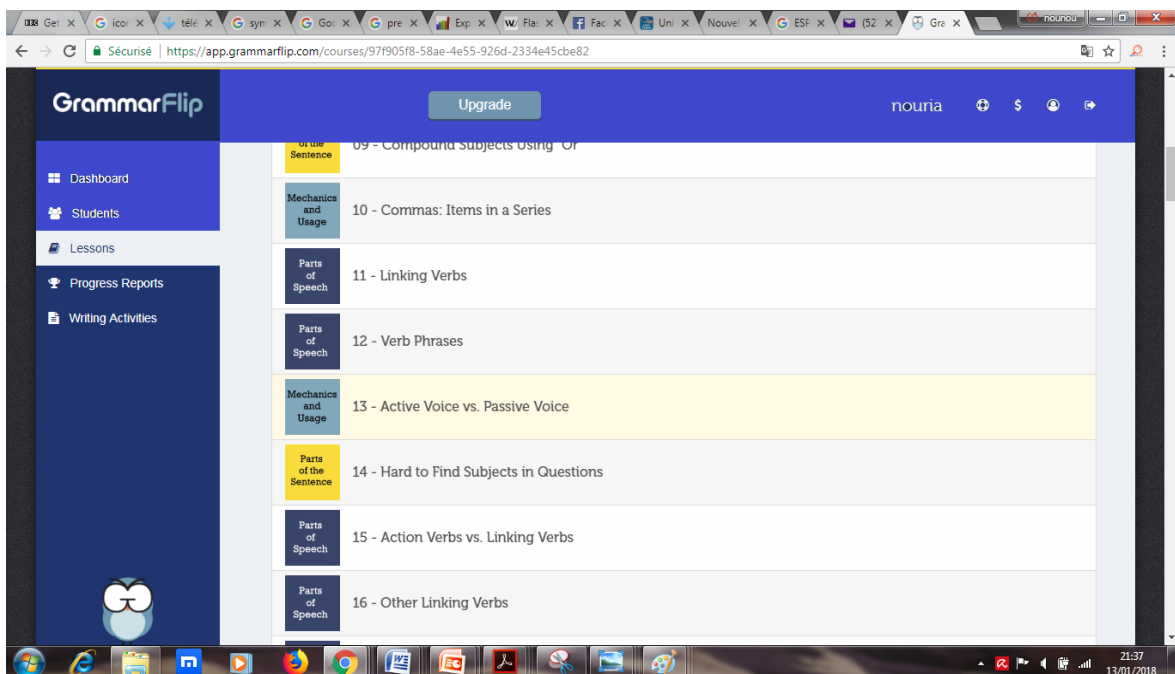
Figure4.12 Grammar Flip Lessons

The website also provides lessons in the form of videos. This, therefore, enables to create a virtual real-time classroom. The grammar blocks are explained in detail. The figure below represents the video lessons.
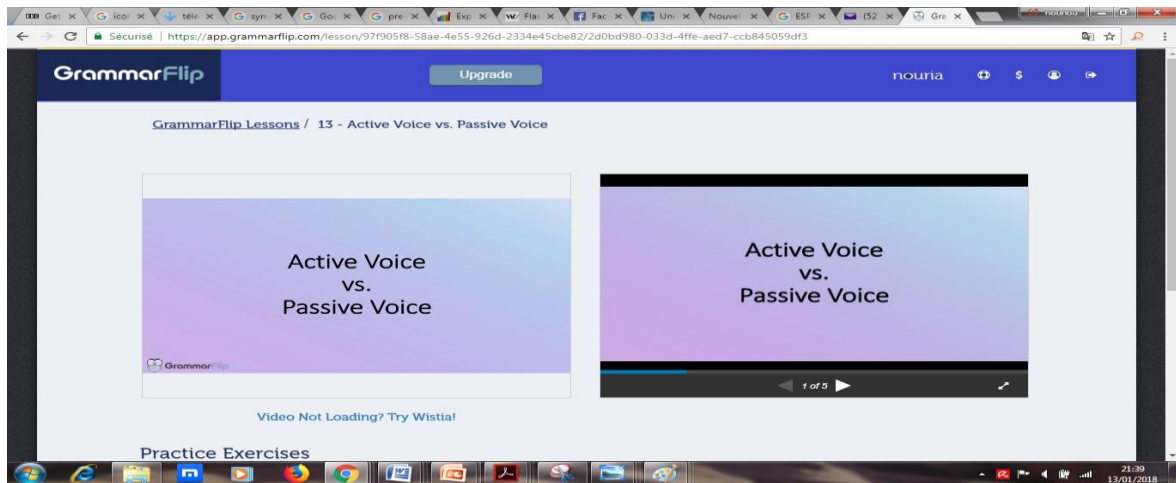
Figure4.13 Video Lesson in Grammar Flip

The Grammar Flip enables the students to perform a wide range of grammar activities online. It also provides a set of grammar tasks integrated in writing materials. This is exemplified in the following figure.
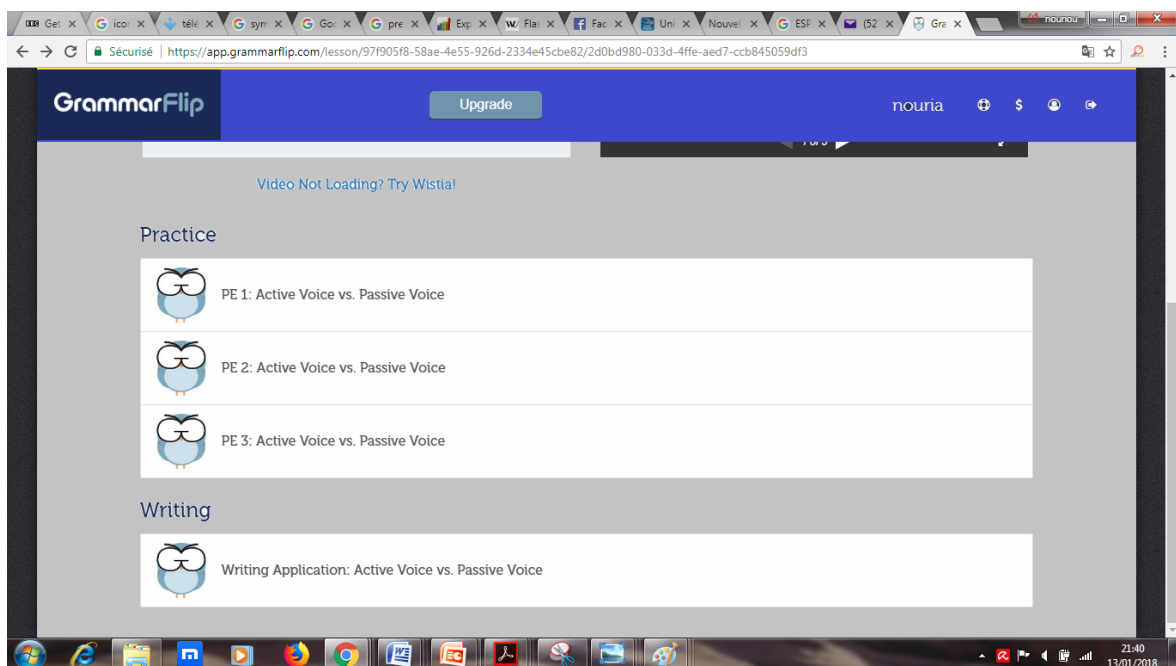
Figure4.15 Grammar Flip Activities

4.3.2.5 Multimedia presentation of content

The multimedia presentation of the content is regarded as the most difficult step in a blended course design mainly if the designer is not an expert in the field of ICT as in the present case. This step involves the creation of an online content. In order to motivate the learners and accommodate the course with their different learning styles, the researcher integrated different audiovisual tools as a way "to transfer basic lecture materials, including lecture notes and summaries to the Web and integrate the media such as sound, image, and video" (Pacheco, 2005:11).

a. Course Template

In the context of language teaching and learning, there is a tendency to use Learning and Course Management Systems (LMS, CMS). These refer to **"**online learning platforms used either to provide a digital supplement for a traditional classroom that meets regularly in person or to host an online course that does not hold regular in-person meetings**"** (Coble, nd)[2]. Accordingly, Watson and Watson (2007:29) define those platforms in terms of their usability. They assert that Learning and Course Management Systems are:

  ➢ Used primarily for online or blended learning,
  ➢ supporting the placement of course materials online,
  ➢ associating students with courses,
  ➢ tracking student performance,
  ➢ storing student submissions and mediating communication between the students and well as their instructor .

Regarding the present research work, the investigator selects the 'WordPress' as a platform to present the ESP blended course designed for first-year Master's students in the Department of Manufacturing and Engineering Sciences at Tlemcen University. This CMS enables its users to create, design, edit, organize and publish content on the web.

---

[2] nd : no date found
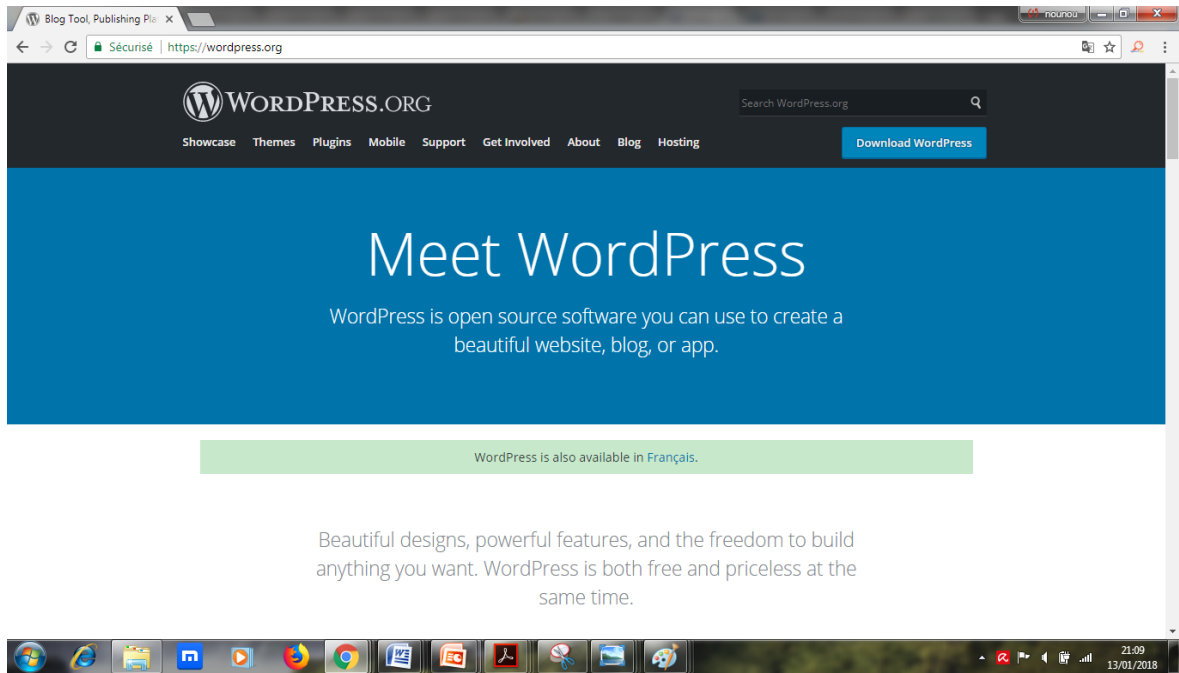
Figure4.16 WordPress Platform

b. **The Units Presentation**

The ESP blended course that the researcher designed to meet the needs of first-year Master's students in the Department of Manufacturing and Engineering Sciences at Tlemcen University comprises four thematic units. These units are targeted to achieve the following objectives:

Table4.3 Units' Themes and Objectives

Unit	Unit Theme	Objectives
01	Job Application	-Listening to notes and advertisements -Listening for gist -summarizing an listening script -Listening and giving opinion -Preparing a job interview -Making a phone call -Reading a text -Answering questions -Completing a form -Matching jobs with descriptions -Writing a CV and letter of application

02	Engineering	-Listening for gist -Analyzing information related to pictures according to a listening script -Respond to a listening passage -Completing a diagram -Giving presentations -Interpreting pictures -Comparing -Reading a text -Answering questions -Completing a passage with words from a list
03	Technical Functions and Applications	-Listening to a conversation -Completing notes -Choosing the best answer -Matching items with descriptions -Describing materials -Explaining features and applications -Preparing a talk -Reading a text -Answering questions -Completing sentences with present or past or prepositions
04	Designs and Systems	-Listening to a conversation -Matching extracts with meeting agenda items -Making notes -Responding to a listening passage -Conducting a meeting -Giving a presentation -Preparing a talk - Reading a text -Answering comprehension questions -Writing a descriptive composition

Below is the units' presentation in the website, the students have to click on the unit icon on the top . Then, the following page is displayed.
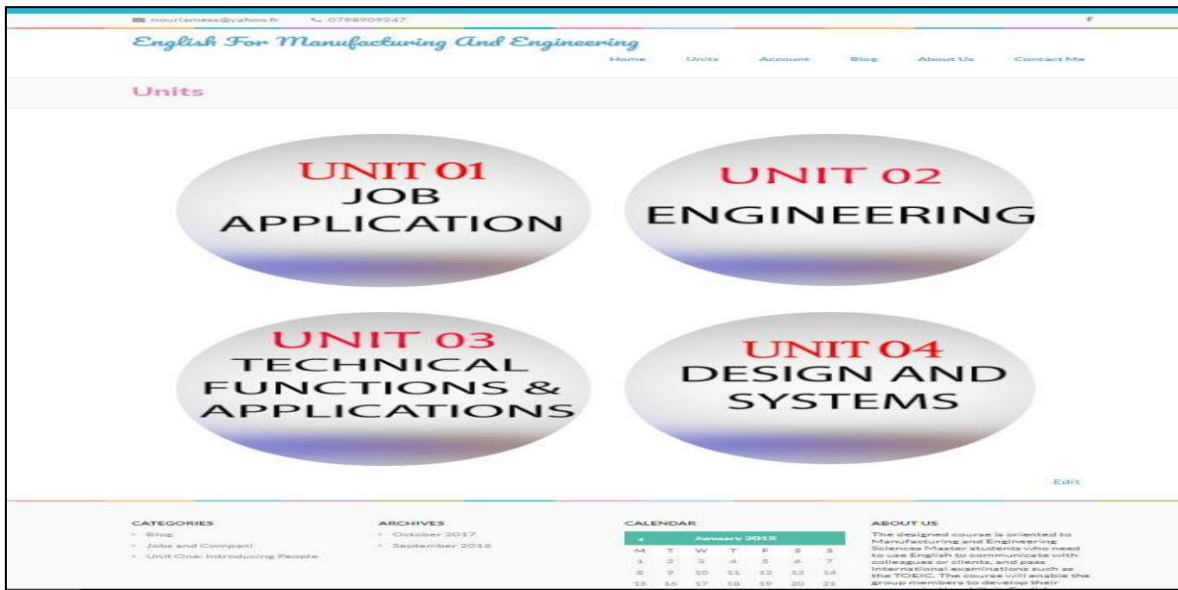
Figure4.17 Units Presentation

Each unit is divided into four sections. These are Listening, Reading, Speaking and Writing. Within each section a set of tasks is provided .The following figure illustrates them.
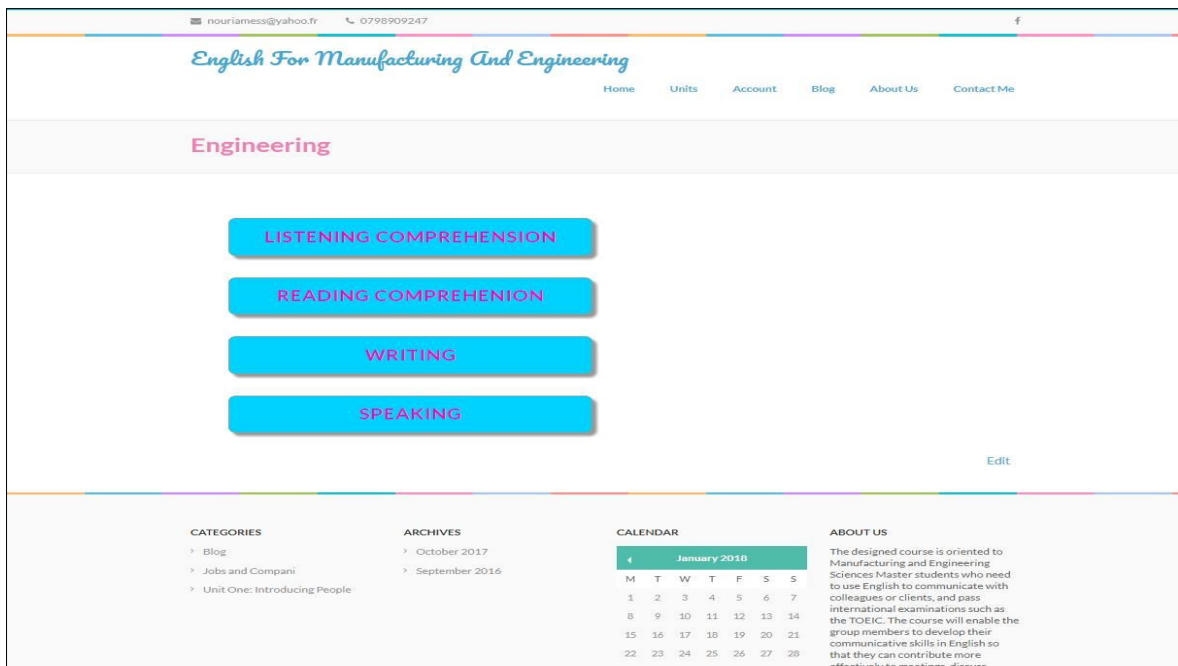
Figure4.18 Unit Sections

4.3.2.6 The virtual classroom

Since the main objective of blended learning is to enhance communication in multi-directions, that is, between the teacher and the students or among the learners themselves. The teacher has to explore interaction tools as part of the blended course. In this way, a real-life classroom is created. Consequently, the students will be engaged in collaborative and/ or private discussions.

As a working way to ensure interaction between the students and the teacher, the researcher provides a multitude of communication tools. These are used to give explanations and clarifications or as part of the tasks. That is, the students are assigned to perform some activities via these instruments.

To do so, the students are asked to give their names and e-mails to ensure responses to their enquiries. They have to identify the type of the problem they encounter, i.e., technical or content related matters. Then, the learners must explain the issue in detail and click on the *send* option. In fact, this message will be directly transformed to the teacher's e-mail who will respond to it. These tools are presented as follows:

a. Synchronous Communication

Synchronous communication implies interacting with each other at the same time. It enables the students to take part in real conversations online. For this reason, the researcher employed some synchronous tools to ensure outside use of the English language both orally and by writing. This type of communication allows real-time discussion and collaboration between students-students and students-teacher. It also helps them to provide feedback immediately. Among these tools, Facebook group messenger, Yahoo group messenger and phone calls are used.

Figure4.19 Synchronous Communication Tools

Facebook and Yahoo group messengers are types of instant messaging. The integration of these applications in the ESP blended course creates opportunities for the researcher, the ESP teacher and the students to chat and interact via group and private messages. They allow them to text messages and exchange written and audio files.

b. Asynchronous Communication

As opposed to synchronous, asynchronous communication means that interaction does not occur in real time. That is, there is a time delay between transmission and response. The researcher opts for this type of communication to permit the learners to formulate their thoughts without interruptions. It also enables them to access the tasks and respond to them anytime and anywhere. Asynchronous communication gives the learners the chance to check their answers and search extra information.

Regarding the current study, the investigator makes use of e-mail and Yahoo group. As its name denotes, Yahoo Group is one of the most famous discussion boards on the net. The use of this online material enables the users to communicate

to each other by means of posted messages. This feature permits the researcher and the informants to send, receive and read messages via e-mail, i.e., private or on the group website. While the first is used to respond to the students inquiries privately, the latter is used mainly to post news and give general remarks concerning the course. The figures below illustrate the two online tools used in this study.
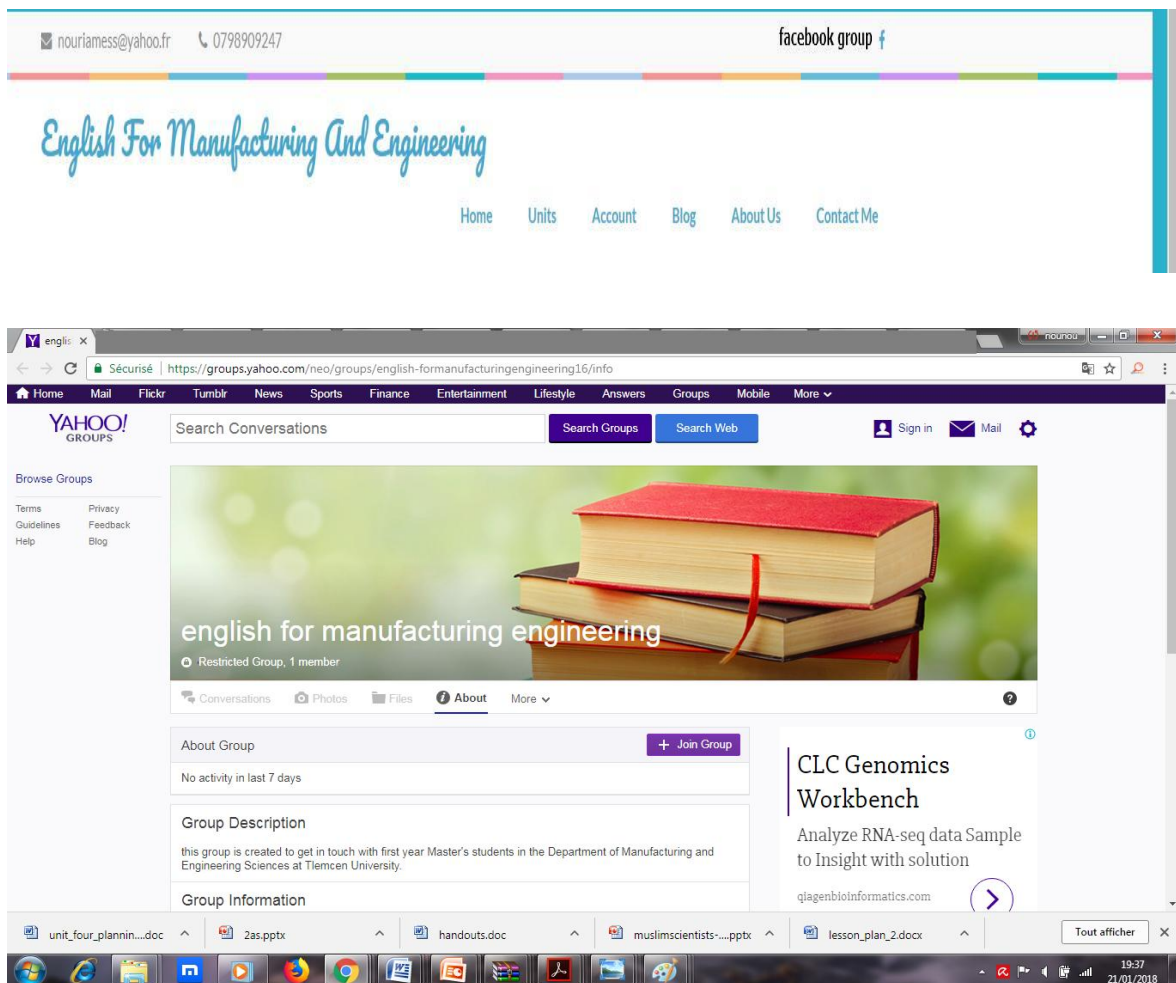
Figure4.20 Asynchronous Communication

4.3.2.7 Assessment and Evaluation

In this context, assessment and evaluation refer to the delivery of tests online. It includes "the criteria that will be used to determine course grades (…) a performance progress tracking system accessible to students via online" (Pacheco, 2005:12). Because of the time constraint, it was difficult for the researcher to implement such a system in the ESP blended course designed for Manufacturing

and Engineering students. Nevertheless, the course website offered the students the opportunity to track their answers after accomplishing each task. This was done via a simple response tracking system which helped the learners to check the right answers. It also enabled them to track their progress through self-assessment. It is noteworthy that the pretest and the post-test were the only tools in response to the standard testing concept. The pretest was employed to identify the students' abilities before attending the course and the post-test was used to gauge the learners' performance at the end of the treatment. Likewise, the variety of assignment delivered in the course can serve as another continuous and progressive evaluation criterion.

4.4 Sample Unit Design

The designed course is oriented to first-year Manufacturing and Engineering Master's students who need to use English to communicate with colleagues or clients, and pass international examinations such as the TOEIC. The course will enable the group members to develop their communicative skills in English so that they can contribute more effectively to meetings, discuss technical matters and production methods related to their area of specialism, and give presentations in English.

In this section, the second unit entitled 'Engineering' is displayed.

4.4.1 Objectives

By the end of this unit, students will be able to:

-Listen for gist

-Analyze information related to pictures according to a listening script

-Respond to a listening passage

-Complete a diagram

-Give presentations

-Interpret pictures

-Compare

-Read a text

-Answer questions

-Completing a passage with words from a list

4.4.2 Unit Content

The unit is organized into five parts: listening, reading; speaking and writing. Pronunciation, grammar and vocabulary practice is integrated within the four-language skills.

Listening

Task one (Online): Look at the pictures and listen carefully to the statements from which you choose two that best describe each picture:
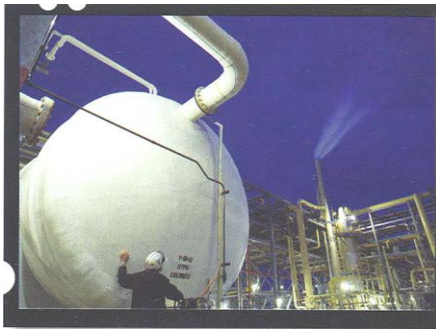
Picture1   Picture 2

 Script 1   The statements

- o *The inspector is checking the equipment.*
- o *They are working on an assembly.*
- o *The hot melting steel is being poured into the mold.*
- o *The holding tank is being tested.*
- o *The steel worker is wearing protective eyewear.*

o *The structure is being built out of food.*

Task two **(F2F):** Here is an extract from a lecture about engineering. Listen to the second script and say whether the following statements are "*true*" or "*false*"

a. Non-metals are used by engineers.

b. Cast iron contains more carbon than steel.

c. Chromium improves the properties of steel.

d. Copper contains iron.

e. Bronze is an alloy.

LISTEN *Script 2*

Engineers have to know the best and most economical materials to use. They must also understand the properties of these materials and how they can be worked. There are two kinds of materials used in engineering: metals and non-metals. We can divide metals into ferrous and non-ferrous metals. The former contain iron and the latter do not contain iron. Cast iron and steel, which are both alloys, and mixture of iron and carbon, are the two most important ferrous metals. Steel contains a smaller proportion of carbon than cast iron contains. Certain elements can improve the properties of steel and are therefore added to it. For example, chromium may be included to resist corrosion and tungsten to increase hardness. Aluminum, copper, and alloys, bronze and brass, are common non-ferrous metals. Plastics and ceramics are non-metals; however, plastics may be machined like metals. Plastics are classified into two types: thermoplastics and thermosets .Thermoplastics can be shaped and reshaped by heat and pressure but thermosets cannot be reshaped because they undergo chemical changes as they harden. Ceramics are often employed by engineers when materials which can withstand high temperatures are needed.

(Adapted from *English for Mechanical Engineering, 2008 :28)*

Task three (F2F): Listen again to the second script and complete the diagram.

```
                    ┌─────────────────────┐
                    │ Engineering Materials │
                    └─────────────────────┘
                               │
            ┌──────────────────┴──────────────────┐
       ┌─────────┐                           ┌─────────┐
       │ Metals  │                           │         │
       └─────────┘                           └─────────┘
            │                                     │
     ┌──────┴──────┐              ┌──────────┬────┴─────┐
 ┌─────────┐  ┌─────────────┐  ┌──────┐  ┌──────┐
 │         │  │Ferrous Metals│  │      │  │      │
 └─────────┘  └─────────────┘  └──────┘  └──────┘
      │              │              │
 ┌────┴───┐     ┌────┴────┐    ┌────┴─────┐
```

Copper				Steel	Termoplastics	

Reading

Text

Engineering is based on many other sciences, such as physics, chemistry, mathematics but also mechanics, thermodynamics and analysis.

It is a science, discipline, art and profession of acquiring and applying technical, scientific and mathematical knowledge to design and implement materials, structures, machines, devices, systems, and processes that safely realize a desired objective or inventions. Its main focus is to design or develop structures, machines, apparatus, or manufacturing processes, or works utilizing them singly or in combination; or to construct or operate the same with full cognizance of their design; or to forecast their behavior under specific operating conditions; all as respects an intended function, economics of operations and safety to life and property.

This broad discipline can be further divided into sub disciplines, each with a more specific emphasis on certain fields and particular areas, for example: civil, mechanical, electrical, electronic, marine, automotive, aeronautical, heating and ventilation, mining and medical engineering.

(Adapted from *English for Mechanical Engineering, 2008:26*)

Task four (Online): Read the following text and answer the following questions:

1. What is the text about?

2. What are the disciplines that engineering encompasses?

3. How does the author define engineering?

4. What are the subcategories of engineering?

5. Give a title to the text.

Grammar

Grammar
tip

Task five(Online): Fill in the gaps correct present form:

It's 10 o'clock on Monday morning in Atomic Ltd. In the Research and development department they ---- (have) a meeting at the moment. Everybody who is involved in the new project _____ (attend) it . At the moment Bob ---- (present) his ideas. He has prepared an interesting PowerPoint presentation and while showing it, he ---- (explain) several features.

They ---- (organize) such meetings every Monday morning. After these meetings, they all ---- (return) to their desks where they continue with the tasks.

In the production department the foreman _____ (walk) around the production plant and ---- (control) the process. He always _____ (make) sure that things ---- (not go) wrong as that ---- (be) usually very costly.

Outside, at the loading ramp a van is parked. Some workers ---- (load) the truck with the faulty components they received yesterday. They ---- (send) them back to the manufacturer.

Writing

✍

   Task six: Your department asked you to prepare brochures to distribute in the university open day. Write a composition of about ten lines in which you describe your field of study. Try to attract new high school graduates to enroll in your specialty.

Speaking

🗣))

Task seven (**Online**) Listen to the technical words and mark the stressed part of each word.

machine   mechanic   mechanical   machinery   mechanics
technical   technician   technology

Task eight (**F2F**): Use information from the previous task to prepare an oral presentation about engineering, its branches, and its scope of study.

Task nine (**Online**): The following pictures represent two different branches of engineering.

> ➢ Describe each branch.
> ➢ Compare between the scope of each branch.

Task ten (**F2F**): Watch the video "*Meet a Manufacturing Engineer*" where Rebecca Miller, a quality control engineer with GE Aviation, describes the work of manufacturing engineering and the reasons why she finds her field rewarding. Do the same thing and prepare a talk of ten minutes about which manufacturing engineering career you want to pursue in the future.

Vocabulary

Task eleven (**Online**)**:** Complete the following sentences with a form of the word in brackets.

1. In the ☐ industry, ☐ develop processes for producing plastics, fibers, medicines, etc. from simple chemicals. (chemistry)

2. Producing steel using the Bessemer process is one of the best-known ☐ processes. (industry)

3. Most ☐ devices need oil as a lubricant. (mechanics)

4. Following the earthquake, every building had to be inspected to see whether it had suffered any ☐ damage. (structure)

5. Certain chemicals are added to glue to ☐ it. (hard)

6. Excavators and power shovels are two types of ☐ equipment used by ☐ they are removing rocks from the ground. (mine)

4.5 Conclusion

In this chapter, the investigator aimed at proposing some teaching materials that may help and facilitate teaching and learning ESP in the Department of Manufacturing and Engineering Sciences at Tlemcen University. Thus, the investigator had designed a blended course which is hoped to meet the needs and expectations of the target students. For this purpose, a wide range of language and skills tasks was suggested. The aim of the ESP blended course was to help the students improve their communicative competencies and ensure continuous exposure to the English language. The integration of blended learning in the ESP course tended mainly to enhance the learners' motivation towards the course and enable them build their autonomy.

Thus, in the next chapter, the researcher will try to measure the effectiveness of the ESP blended course on the students' performance in the English language. To achieve this aim, an experimental method will be used. Accordingly, pre- and post test as well as a course evaluation checklist will be delivered to Manufacturing and Engineering students. The findings of the experiment will be analyzed and interpreted in order to respond to the last research hypothesis.

CHAPTER FIVE   Experiment Design and Results

5.1 Introduction

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        5.4.1.3 Speaking Test

        5.4.1.4 Writing Test

     5.4.2 Course Evaluation Checklist

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        5.6.1.2 Reading Pretest

        5.6.1.3 Writing Pretest

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        5.6.2.2 Reading Post test

        5.6.2.3 Writing Post test

        5.6.2.4 Speaking Post test

        5.6.2.5 Comparision of the control and experimental group post test

        5.6.2.6 The experimental group pre- and post test scores

     5.6.3 Course Evaluation Checklist Analysis

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        5.6.3.5 Course Objectives

        5.6.3.6 Tests

        5.6.3.7 Web Assignments

        5.6.3.8 Students' Suggestions

5.7 Summary of the Main Results and Discussion

5.8 Conclusion

5.1 Introduction

In the previous chapter, the investigator suggested a blended ESP course as a remedial to the current ESP teaching and learning situation in the Department of Manufacturing and Engineering Sciences at Tlemcen University. The course focused on promoting the students' listening and speaking skills as a response to the results obtained from the needs analysis process. It aimed to raise learners' autonomy and motivation, and enhance learner-centeredness approach. The integration of blended learning tended to extend the teaching load of the ESP course.

Thus, the current chapter is devoted to test if the ESP blended course helped the students to promote their language skills and communicative competencies. In this part, the researcher provides a detailed account for the experimentation of the course. She describes the research method , the population and the instruments that she uses. Then, the results of the tests and the course evaluation checklist are analyzed and discussed to help the investigator check the feasibility of implementing a blended learning in the ESP course. In fact, the aim is to answer the fourth research question.

5.2 Research Method

In social sciences, scholars were urged to use a scientific and systematic basis to find reliable and quantified measurable data. This idea gives birth to the experimental research in applied linguistics. This type of research **"**uncovers causal links by answering questions such as '*What's the reason for*', '*What happens if? When.....?*' And '*what effect does something have.....?*"** (Dornyei, 2011) . This implies that the experimental approach tends to establish cause-effect relationships. To achieve this goal, the researcher explores an independent variable to stimulate other variables and **"**measures the effects of the manipulation by some statistical means**"** Ekmekci (2012: 1). To put it differently, suppose that (A) is the independent variable and (B) is the dependent variable. In order to diagnose the

effect of (A) on (B), (A) is manipulated through an intervention or a treatment. Therefore, the effect of the intervention is observed on (B). Concerning the present study, the independent variable is the ESP blended course that the investigator designed and the dependent variable presents the tests' scores through which the effectiveness of the course is measured.

Gay (1992: 298) states that **"the experimental method is the only method of research that can truly test hypotheses concerning cause-and-effect relationships. It represents the most valid approach to the solution of educational problems, both practical and theoretical, and to the advancement of education as a science."** In the same line of thought, Freedman (2014: 14) outlines the different reasons to undertake experimental research. The latter helps the investigator to:

➢ provide a basis for comparing two or more conditions.

➢ Control or account for the effects of extraneous factors, providing the highest degree of confidence in the validity of outcomes.

➢ draw meaningful conclusions about observed differences

Thus, the experimental method is conducted in order to check if an intervention makes difference. Similarly, Lamri (2015: 98) clarifies that in education, **"experimental designs are especially practical to address questions about the efficiency and impact of specific courses because they provide a systematic and logical method to resolve the problem"**. Accordingly, Qasim et al. (2014:426) categorize experimental research under three main types: pre experimental research, true experimental research and quasi-experimental design.

❖ *Pre-experimental research:* has a pretest and post test but there is no control group.

❖ *True experimental research:* in this type of experimental research, the investigator delivers both pretest and posttest to experimental and control groups where the subjects are assigned randomly.

❖ *Quasi-experimental design:* it involves the use of both pretest and posttest to the experimental and the control groups, but the subjects are not randomly assigned.

Regarding the current study, which aims to assess the effectiveness of the ESP blended course that was designed for first-year Manufacturing and Engineering Masters' students, the researcher opts for a true experimental design for many reasons. To begin, true experimental research is considered as "the standard for evaluating the success of an instructional programme or intervention in changing and/or improving students' performance" (Meddour, 2014:143).This can be achieved through the notion of causality which is considered as the defining feature of true experimental research. The investigator could interpret the scores of the pretest and post-test and justify the causes of differences in the findings obtained.

In true experimental design, there is "a great leverage and control over the study, mainly in the form of selecting the participants and randomly assigning participants and/or events into two or more study groups" (Levy and Ellis, 2011:153). For this research, the random assignment of the informants in experimental and control groups was feasible. This is because the students were not administratively grouped. Practically, first-year Master's degree is considered as a common core specialty, the fact which enables the investigator to undertake a true experimental research and gives each subject the chance to be assigned to each sample group. The students were randomly assigned into control and treatment groups.

Hence, the investigator opts for *the pretest-posttest with control group design* to assess the effect of implementing an ESP blended course for first-year Master's students in the Department of Manufacturing and Engineering Sciences at Tlemcen University. This type of research is regarded as "the most commonly used experimental design due to its recognized strength in controlling threats to internal validity" (Levy and Ellis, 2011:153).

In this design, the informants are dispatched into two groups: the experimental group and the control group. Three periods of time are distinguished namely the beginning of the research, during the treatment, and the end of the experiment. Regarding the evaluation process, two measurements are undertaken. These are the pretest and the post-test. Each measurement is delivered twice, to the experimental group and to the control group.

At the beginning of research, a pretest is undergone with both groups; the experimental group and the control group. During the second period, the experimental group receives the intervention. That is, it experiences the implementation of the ESP blended course while the control group does not. Finally, at the end of the experiment, a post test is delivered to both groups. Levy and Ellis (2011:154) argue that there should be no significant difference between the control group's pretest and post-test scores. However, significant differences would be noticed between the experimental group's pretest and post-test scores, and the post-test scores of the control and experimental groups. Therefore, these parameters are summarized in the following table:

Table 5.1 Pretest- Post test with Control Group Design (Adapted from Levy and Ellis, 2011:154)

		Time →		
		Beginning	During	End
		Measure	*Treatment*	*Measure*
Randomly Assigned	Group (A) (The experimental group)	pretest	ESP blended course	Post test
	Group (B) (The control group)	pretest	No T$_X$	Post test
In an ideal case- desired observed differences		No Diff	-	Sig. Diff
In ideal case-graphic representation		**A**		
		B		

Regarding the present research, the first case may not be applicable, that is no difference is recognized between the scores of the pretest and post-test scores of the control group. The reason is that the same course content was delivered to the two groups. The only difference lies in the mode of delivery. The control group received the content in the traditional way whereas the experimental group was taught via blended learning. Moreover, the same tests are administered to both groups. Thus, the possibility of the difference to happen is equal to its occurrence.

The notion of randomization in true experimental design ensures the establishment of internal validity. In other words, random assignment of the participants excludes variation as it helps to form homogeneous groups. Therefore, in the pretest-posttest with control group design, multiple forms of data are highly advised. Practically, sources of information and research tools are of paramount importance in the experimental method. The aim is to establish pertinent explanations and interpretations about the feasibility of the ESP blended course and thus find answers to the research questions. Information about the population that contributes in the experiment and the procedural parameters conducted will be highlighted in the coming sections.

5.3 Sample Population

Regarding the present research work, the number of the sample which took part in the experimental research is fifty students. They are enrolled in the first year Master in the Department of Manufacturing and Engineering Sciences at Tlemcen University. The informants were selected from the population which filled the needs analysis questionnaire. They were randomly and equally assigned in the two groups, i.e., twenty-five students in the control group and the same number in the experimental group.

In experimental research, the sample population is usually divided into two groups. These are the control group and the experimental group. The informants share the same characteristics. The only difference between them is that one receives the program and the other does not.

5.3.1 Control group

The control group is the group of participants which is isolated from the research in the sense that this group is not exposed to the intervention. Rather, it helps the research to build conclusions about the applicability of the treatment. It is used as a tool to measure and explain the changes in the experimental group because of the variable to be analyzed.

5.3.2 Experimental group

The experimental group is the group of informants with whom the intervention is conducted. It is the subject of the changes that may happen because of the treatment. When testing the effects of the intervention, the results obtained are contrasted with those of the control group.

5.4 Instrumentation

In scientific research, the quality is not only associated to the methodology and sampling, but it is attributed to the selection of the appropriate instruments to gather data. Regarding experimental research designs, the most used research instruments are tests and evaluation checklists.

5.4.1 Test

To collect relevant data about the students' performance before and after the intervention, "researchers have at their disposal a powerful method of data collection" (Cohen et al., 2007: 414) which are tests. As a research tool, the test enables not only to "offer teachers a valuable opportunity for quick, relevant and focused feedback on students' performance" (Cohen et al., 2007: 415) but it serves as a way to evaluate language programs, methods and materials.

Regarding the current study, the researcher explores a pretest and a post-test. The first one serves as a placement test aiming to determine the state of the learners' knowledge before the ESP blended course begins. It allows the investigator to

identify the students' weaknesses, lacks and strengths to be taken into account to start the program. The second is recognized as an achievement test. It helps to check the effectiveness of the ESP blended course. The post test permits to evaluate the students' progress at the end of the course.

In view of the above explanation, the researcher decides to adapt TOEIC sample test for many reasons. The ESP blended course that was designed was based on the students' needs. The findings of the needs analysis revealed that first year Manufacturing and Engineering Master's students required to improve their speaking and listening skills. Reading and writing came at the end of the learners' perceptions of the course content. Since the research took into account these results, it is difficult to the investigator to explore a traditional approach to language testing. The latter gives more importance to accuracy at the expense of fluency. The tests are framed in a text followed by a set of comprehension questions in addition to some grammar, vocabulary and pronunciation tasks. They do not assess the speaking and listening skills though the exposure of ESP learners to "test items that are capable of prompting their use of English in real life situations" (Agbatogun, 213:146) is highly recommended .This, in fact, may affect the process of English language learning as mastery of the four skills is highly emphasized. As a response to this issue, proficiency tests like TOEIC is appropriate.

Both the pretest and the post-test used in the current study cover TOEIC question- style. The purpose of using this test is threefold. First, to evaluate the effectiveness of the ESP blended course designed for first-year Manufacturing and Engineering Maser's students; second, to assess the students' proficiency level in the four language skills; third, to familiarize the learners with the type of questions found in such language proficiency tests as among the reasons that drive the students to learn English is to pass the TOEIC test. In this investigation, each test covers questions and tasks related to the four skills. Regarding the topics included, the pretest incorporates everyday English whereas the post test is somehow technical. That is, the pretest is more general in content unlike the post test which is more specialized.

5.4.1.1 Listening Test

The listening test aims to identify to what extent the students understand spoken English. It also assesses the students' listening abilities through four categories of questions. The listening test lasts for 30 minutes and the students are asked to respond on the TOEIC answers sheet .

a. Photographs: In this part, the students are exposed to two pictures. They also hear four statements for each picture. The statements are spoken only once and the learners are asked to choose the statement that best describes the picture.

b. Question-Response: The students hear two questions, each with three responses. They are instructed to select the best answer to the question which is spoken only once.

c. Conversations: the learners listen to a conversation between two people. They have to answer three questions about what the speakers say.

d. Talks: In this last part of the listening test, the learners hear a talk given by a single speaker. They are asked to answer three questions about what the speaker says.

5.4.1.2 Reading Test

The purpose of the reading test is to evaluate the students' reading comprehension. It also assesses their grammar and vocabulary as they are integrated within the reading tasks. The test lasts for 45 minutes. It compromises three parts.

a. Incomplete Sentences: the students are given three sentences, each with four choices. In each sentence, a word or a phrase is missing. The learners are asked to choose the item which best completes the sentence.

b. Text Completion: the learners read a text in which a word or a phrase is missing in some sentences. Below each sentence, four possibilities are provided. The students have to identify the element that best completes the text.

c. Reading Comprehension: in this section, the students read a text followed by four questions. Below each question, four choices are given. The learners have to select the best answer that fits the question.

5.4.1.3 Speaking Test

The speaking test aims to assess to what extent the students are able to communicate effectively in English in daily life and workplace contexts. It allows the investigator to test the learners' grammar, vocabulary and pronunciation. The test lasts for 45 minutes .It is organized into six parts.

a. Read a Text Aloud: in this part, the students are asked to read a text aloud. Regarding the evaluation criteria, the learner receives two scores; one for pronunciation and the second is related to intonation. The scoring scale is presented as follows:

Table 5.2 Read a Text Aloud Evaluation Criteria (Adapted from ETS, 2012:9)

	Score	*Response Description*
Pronunciation	3	Pronunciation is highly intelligible, though the response may include minor lapses and/or other language influences.
	2	Pronunciation is generally intelligible, though it includes some lapses and/or other language influences.
	1	Pronunciation may be intelligible at times, but significant other language influence interferes with appropriate delivery of the text.
	0	No response OR no English in the response OR response is completely unrelated to the test.
Intonation and Stress	3	Use of emphases, pauses, and rising and falling pitch is appropriate to the text.
	2	Use of emphases, pauses, and rising and falling pitch is generally appropriate to the text, though the response includes some lapses and/or moderates other language influences.
	1	Use of emphases, pauses, and rising and falling pitch is not appropriate, and the response includes significant other language influence.
	0	No response OR no English in the response OR the response is completely unrelated to the test.

b. Describe a picture: the students are instructed to describe a picture in as much details as they can. They are assessed in terms of pronunciation, intonation, grammar, vocabulary and cohesion. A detailed presentation of the evaluation criteria is displayed in the following table.

Table 5.3 Describe a Picture Evaluation Criteria (Adapted from ETS, 2012:9)

Scores	Response Description
3	The response describes the main features of the picture. ➤ The delivery may require some listener effort, but it is generally intelligible. ➤ The choice of vocabulary and use of structures allows coherent expression of ideas.
2	The response is connected to the picture, but meaning may be obscured in places. ➤ The delivery requires some listener effort. ➤ The choice of vocabulary and use of structures may be limited and may interfere with overall comprehensibility.
1	The response may be connected to the picture, but the speaker's ability to produce intelligible language is severely limited. ➤ The delivery may require significant listener effort. ➤ The choice of vocabulary and use of structures is severely limited OR significantly interferes with comprehensibility.
0	No response OR no English in the response OR the response is completely unrelated to the test.

c. Respond to Questions: in this part, the learners are asked to answer three questions about a specific topic. In addition to grammar, vocabulary and pronunciation, the students are assessed in terms of relevance and completeness of content.

d. Respond to Questions Using Information Provided: the students read the information provided and answer three questions. All the aforementioned components are taken into account.

e. Propose a Solution: in this part, the learners are exposed to a problem. They are asked to propose a solution.

f. Express an Opinion: the students are asked to give their opinion about a specific topic.

5.4.1.4 Writing Test

The writing test is set to assess the learners' ability to use written English to perform communication tasks. It measures different aspects of the students' writing abilities. The test lasts for one hour .It is presented into three parts.

a. Write a sentence based on a picture: in this task, the students are given two words or phrases that they should use to write a sentence which is based on a picture. The evaluation criteria cover the appropriate use of grammar and relevance of the sentences to the picture.

b. Respond to a written request: this part of the writing test provide the learners with an e-mail to read. Consequently, they are required to respond to this e-mail. The learners are scored on the basis of their appropriate use of grammar and vocabulary items in addition to the variety of content and the organization of the writing piece.

c. Write an opinion essay: the students respond to a question in a form of an essay. They are asked to state, explain and give their opinion about a matter. The students are assessed in terms of the arguments and examples the students give to support their opinion, in addition the correct use of language.

5.4.2 Course Evaluation Checklist

In addition to the pretest and the post-test scores, the investigator makes use of an evaluation checklist. The latter is a form of questionnaires that enables the students to express their views on aspects related to the teaching process. It gives them the chance to assess the course content, materials, the teacher performance and so forth.

The evaluation checklist consists of different parts related to the course content, materials and the teacher's performance. The grid was administered to the students online at the end of the treatment. It was sent to the twenty-five students who took part in the experiment of the ESP blended course. It asks them to rate a range of statements given to them. The checklist is framed in a Likert scale of five items: strongly agree, agree, neutral, disagree and strongly disagree. The grid also tends to gather the perceptions of the students regarding the ESP blended course content, objectives and materials.

5.5 Experimental Research Procedure

The ESP blended course was scheduled to the experimental group during the second semester of the academic year 2016-2017. The students undertook both face to face and online instruction. The control group was provided the same content but in a traditional classroom. During the week before the winter holidays, the researcher in collaboration with the ESP teacher in charge of first-year Manufacturing and Engineering Master's degree administered the pretest to both groups. After fourteen weeks, i.e., one month before the end of the year, the students set for the post-test. Thus, it is noteworthy to clarify that it was impossible to substitute the traditional test with the final test for many reasons. First, the policy of the department emphasizes the unification of tests. Second, the ESP teachers refused to apply the post test .They argued that it was time-consuming. They also claimed that it was needless to assess the students in terms of the four skills. During summer holidays, the investigator administered the course evaluation checklist to the experimental group. The learners respond to the form online.

In fact the design of the present experimental research is presented as follows:

```
                          ┌─────────────────────┐
                          │ Experimental Research│
                          └─────────────────────┘
                                    │
          ┌─────────────────────────┴─────────────────────────┐
   ┌──────────────┐                                    ┌──────────────┐
   │ Control Group│                                    │ Experimental │
   └──────────────┘                                    │    Group     │
          │                                            └──────────────┘
      ╭────────╮                                              │
      │Pre-Test│                                          ╭────────╮
      ╰────────╯                                          │Pre-Test│
          │                                               ╰────────╯
   ┌──────────────┐                                    ┌──────────────────┐
   │  Usual ESP   │                                    │ Implementation of│
   │   Course     │                                    │ESP Blended Course│
   └──────────────┘                                    │    Designed      │
          │                                            └──────────────────┘
      ╭─────────╮                                             │
      │Post Test│                                         ╭─────────╮
      ╰─────────╯                                         │Post Test│
          │                                               ╰─────────╯
          │                                            ┌──────────────────┐
          │                                            │Course Evaluation │
          │                                            └──────────────────┘
          │            ┌─────────┐                           │
          └────────────│ Results │───────────────────────────┘
                       └─────────┘
```
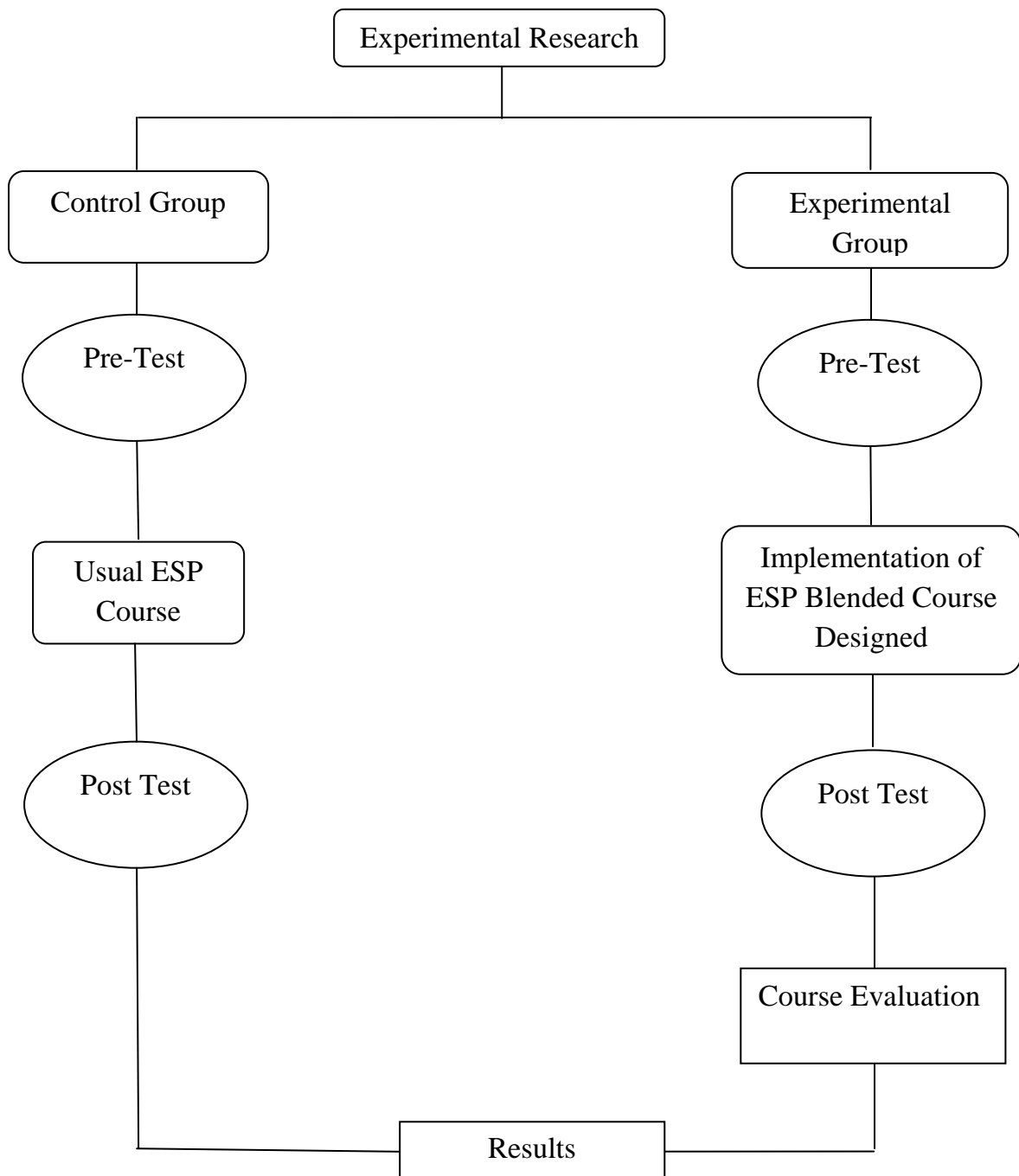
Figure 5.1 Design of the Experimental Research

5.6 Data Analysis

Through the use of pretest and post-test and the course evaluation grid, the investigator aims to assess the impact of the ESP blended course on the

performance of the first-year Master's students in the Department of Manufacturing and Engineering Sciences at Tlemcen University. The results obtained from both the experimental and the control groups are compared. To do so, the researcher explores measures of central tendency to analyze the results. These cover the mean and the standard deviation. The mean refers to the average of the scores that the students obtain. The formula of the mean is presented as follows:

$$X = \frac{\Sigma\, Fx}{N}$$

X: is the *Mean*,

Fx: is *Score Frequency,*

N: is the *Number of Scores*, and

Σ: *The Sum*

However, the standard deviation is related to the difference and variation of the scores. It is used to check "to what extent the data are similar and the degree to which data differ" (Nunan 1999: 28). The formula of the standard variation is as follows:

$$SD = \frac{\sqrt{\sum Fx^2 - X^2}}{N}$$

Moreover, the data gathered from the course evaluation checklist is analyzed quantitatively and later interpreted to draw clear conclusions about the students' attitudes towards the ESP blended course.

5.6.1 Pretest analysis

As it was already explained, the pretest was framed in TOEIC style-questions. It was organized in four parts covering the four language skills. Each part is analyzed separately. The data gathered from the pretest revealed important results.

5.6.1.1 Listening Pretest

As it was previously highlighted, the listening test consisted of four parts (see section 5.5.1.1). The test is out of ten. Thus, the scores that the students obtained in the listening pretest are displayed in the table below:

Table 5.4 Listening pretest scores and mean

Control Group		Experimental Group	
Informant	**Scores**	**Informant**	**Scores**
1	02	A	4
2	01	B	1
3	04	C	00
4	01	D	5
5	03	E	6
6	06	F	4
7	05	G	1
8	05	H	2
9	04	I	2
10	01	G	3
11	01	K	3
12	00	L	5
13	03	M	6
14	02	N	6
15	01	O	8
16	02	P	4
17	04	Q	00
18	04	R	3
19	02	S	5
20	03	T	7
21	03	U	5
22	00	V	3
23	03	W	1
24	04	X	5
25	7	Y	4
Sum of Scores	*98*		*93*
Mean of Scores	*3.92*		*3.72*

The above table shows that the control group obtained 98 as a sum of scores and the experimental group had 93. Comparing the scores' mean, the statistics reveals 3.92 for the control group and 3.72 for the treatment group . The results clarify that there is a slight difference between the scores of both groups.

5.6.1.2 Reading Pretest

The table below presents the scores that the experimental and the control group obtained from the reading pretest. The test is organized in three parts. It is out of ten.

Table 5.5 Reading pre-test scores and mean

Control Group		Experimental Group	
Informant	**Scores**	**Informant**	**Scores**
1	6	A	4.5
2	8	B	5
3	6	C	3.5
4	7.5	D	7
5	6.5	E	8.5
6	06	F	5.75
7	2.25	G	4
8	7.5	H	3.75
9	4.5	I	5.25
10	3	G	6
11	2.75	K	6.75
12	4	L	5.25
13	8	M	7
14	4.5	N	6.5
15	3	O	9.75
16	7	P	6.75
17	6.5	Q	3.5
18	4.25	R	4.5
19	4.5	S	6
20	4.25	T	8.5
21	6	U	5
22	4	V	3.5
23	8.5	W	3
24	6	X	5.5
25	9	Y	6
Sum of Scores	*139.5*		*140.75*
Mean of Scores	*5.58*		*5.63*

As far as the reading pretest is concerned, the table shows that the total of the scores is 139.5 for the control group and 140.75 for the experimental group. This makes a mean of 5.58 and 5.63 respectively.

5.6.1.3 Writing Pretest

The writing test is composed of three parts. The following table displays the scores that the students in the control and experimental groups had in the writing pretest. The score is out of ten.

Table 5.6 Writing pretest scores and mean

Control Group		Experimental Group	
Informant	**Scores**	**Informant**	**Scores**
1	03	A	02.5
2	01	B	03
3	03.5	C	01
4	02.5	D	04
5	01.75	E	6.5
6	06	F	02
7	4.25	G	0.5
8	03	H	04
9	04	I	03.25
10	01.25	G	03.5
11	01	K	02
12	02	L	05
13	02.75	M	04
14	03	N	06.5
15	00	O	08.25
16	01.25	P	04
17	03.25	Q	0.5
18	05	R	02
19	02	S	05.75
20	05	T	08.5
21	01	U	03.25
22	0.75	V	03
23	03.25	W	01.75
24	04	X	06
25	08.75	Y	03.75
Sum of Scores	*80*		*94.5*
Mean of Scores	*3.20*		*3.78*

In view of the table above, the sum of score that the control group had is 80 whereas it is 94.5 for the experimental group. As for the mean, it is 3.2 for the control group and 3.78 for the experimental group.

5.6.1.4 Speaking Pretest

The speaking test consists of six parts. The performance of the control and the experimental groups in the speaking pretest is illustrated in the table below. The score is out of ten.

Table 5.7 Speaking pretest scores and mean

Control Group		Experimental Group	
Informant	**Scores**	**Informant**	**Scores**
1	01.5	A	03
2	01	B	00
3	02	C	00
4	0.5	D	03
5	03	E	05.5
6	05.5	F	03.5
7	05	G	02
8	05	H	03
9	02.5	I	01
10	0.75	G	03
11	01.5	K	02.5
12	00	L	04
13	04	M	05.75
14	01	N	05
15	0.5	O	07
16	02	P	03
17	02.75	Q	00
18	05	R	04
19	02	S	04.75
20	03.5	T	08
21	02.75	U	05
22	01	V	01
23	02	W	01
24	05	X	04.75
25	07.5	Y	03.5
Sum of Scores	*67.25*		*83.25*
Mean of Scores	*2.69*		*3.33*

As it is demonstrated in the table above, the sum of score that the control group gained is 67.25 which make a mean of 2.69. However, the experimental group got 83.25 as a total of the scores and 3.33 for the mean.

5.6.2 Post test analysis

After the treatment which consisted in providing the first year manufacturing and engineering Master's students, i.e., the experimental group, with an ESP blended course, a post-test was set. It covers four sections related to the four-language skills. Each part is analyzed in depth. The aim is to assess the students' progress after attending the ESP blended course and measure the outcomes of such a course on their achievements.

5.6.2.1 Listening Post test

The listening post test consists of four parts. The score is out of ten.The results revealed from the control and the experimental groups listening post test are presented in the following table.

Table 5.8 Listening post test scores and mean

Control Group		Experimental Group	
Informant	**Scores**	**Informant**	**Scores**
1	04.75	A	05
2	02.25	B	03.5
3	04	C	01
4	05	D	07
5	02.75	E	06.75
6	06	F	05.5
7	04.5	G	01
8	05.25	H	04
9	04	I	02
10	01.75	G	03.5
11	04	K	04.25
12	01.75	L	07
13	07	M	08
14	02.75	N	06.5
15	02.5	O	09
16	04.5	P	04
17	05	Q	01

18	02.5	R	03
19	04.75	S	06.5
20	03	T	08.5
21	05	U	05
22	01.5	V	02
23	03.5	W	03.25
24	03	X	07
25	09	Y	04.25
Sum of Scores	*100*		*118.5*
Mean of Scores	*04*		*04.74*

The table above illustrates that the control group obtained 100 as a sum of score and a mean of 04. However, 118.5 was the total of scores of the experimental group with 04.74 as a mean.

5.6.2.2 Reading Post test

The table below summarizes the scores obtained by the control and the experimental groups in the reading post test which is composed of three sections. The test is out of ten.

Table 5.9 Reading post test scores and mean

Control Group		Experimental Group	
Informant	**Scores**	**Informant**	**Scores**
1	07	A	05.5
2	08	B	07
3	07	C	04.5
4	07.5	D	09.5
5	06.5	E	10
6	07	F	07.5
7	03.5	G	06.5
8	07.5	H	07
9	04.5	I	07
10	05	G	08
11	02.75	K	07
12	05	L	05.5
13	08	M	07
14	05	N	08
15	03	O	10
16	07	P	06.75
17	6.5	Q	03
18	05	R	04.5

19	04.5	S	06.5
20	05.25	T	10
21	06	U	07.5
22	04.5	V	04
23	08.5	W	05
24	06.25	X	05.5
25	09	Y	08
Sum of Scores	*149.75*		*170.75*
Mean of Scores	*5.99*		*6.83*

The results of the reading post test revealed that the control group had a sum of scores of 149.75 whereas the experimental group got 170.75. Both groups obtained mean of 5.99 and 6.83 respectively.

5.6.2.3 Writing Post test

The writing post test is organized in three parts. The scores that students in the control and experimental groups gained in this test are out of ten. They are presented in the table below.

Table 5.10 Writing post test scores and mean

Control Group		Experimental Group	
Informant	**Scores**	**Informant**	**Scores**
1	04	A	04
2	01	B	05.5
3	03.5	C	02.75
4	03	D	04
5	01.75	E	07.25
6	06.5	F	03.5
7	05.5	G	02
8	03	H	06.25
9	04	I	04.25
10	01.25	G	03.5
11	01	K	03.5
12	03.5	L	07
13	02.75	M	04.5
14	04.5	N	07
15	02	O	08.75
16	02.5	P	06.5
17	05	Q	0.5
18	05.5	R	02.75
19	02	S	06

20	05.25	T	08.5
21	01	U	05
22	02	V	03.75
23	04.25	W	03
24	06	X	07.5
25	09	Y	03.75
Sum of Scores	***89.75***		***121***
Mean of Scores	***3.59***		***4.84***

As the table shows, the control group obtained 89.75 as a total of scores. and a mean of 3.59. The sum of scores of the students in the treatment group is 121 and the mean is 4.84.

5.6.2.4 Speaking Post test

In the chart below, the researcher visualizes the scores that the students had in the speaking posttest. The test is out of ten and consisted of six sections.

Table 5.11 Speaking post test scores and mean

Control Group		Experimental Group	
Informant	**Scores**	**Informant**	**Scores**
1	02	A	04.5
2	02.25	B	02.25
3	03	C	02
4	01	D	04.75
5	04.75	E	06
6	06	F	04
7	05	G	05
8	05.5	H	05.5
9	03	I	03
10	01.5	G	04.5
11	02.25	K	04
12	02	L	05.25
13	06	M	06.5
14	03.5	N	05.5
15	02.5	O	07.5
16	03	P	05
17	03.25	Q	02.5
18	05	R	04.75
19	04	S	05
20	03.5	T	08
21	03	U	06

22	02.5	**V**	03.5
23	03	**W**	02.5
24	05	**X**	06
25	07.5	**Y**	05.5
Sum of Scores	*90*		*119*
Mean of Scores	*3.6*		*4.76*

The table above shows that the control group obtained a sum of scores of 90 and a mean of 3.6 while the experimental group sum of scores is 119 of scores and the mean of 4.76.

5.6.3 Comparision of the control and experimental group post test

The tables below demonstrate the scores that the control and the experimental groups obtained in the post-test.

Table 5. 12 Control group posttest scores

Informant	Post Test				
	Listening	*Reading*	*Writing*	*Speaking*	*Total Mark*
01	4.75	07	4	2	*17.75*
02	2.25	08	1	2.25	*13.5*
03	4	07	3.5	3	*17.5*
04	5	07.5	3	1	*16.5*
05	2.75	06.5	1.75	4.75	*15.75*
06	6	07	6.5	6	*25.5*
07	4.5	3.5	5.5	5	*18.5*
08	5.25	7.5	3	5.5	*21.25*
09	4	4.5	4	3	*15.5*
10	1.75	05	1.25	1.5	*9.5*
10	4	2.75	1	2.25	*10*
12	1.75	05	3.5	2	*12.25*
13	7	08	2.75	6	*23.75*
14	2.75	05	4.5	3.5	*15.75*
15	2.5	03	2	2.5	*10*
16	4.5	07	2.5	3	*17*
17	5	6.5	5	3.25	*19.75*
18	2.5	05	5.5	5	*18*
19	4.75	4.5	2	4	*15.25*
20	3	5.25	5.25	3.5	*17*
21	5	06	1	3	*15*
22	1.5	4.5	2	2.5	*10.5*
23	3.5	8.5	4.25	3	*19.25*
24	3	6.25	6	5	*20.25*
25	9	9	9	7.5	*34.5*

Sum of Scores	100	149.75	89.75	90	*429.5*
Mean of Scores	04	5.99	3.59	3.6	*17.18*
Standard Deviation	1.71	1.67	1.96	1.57	*6.91*

Table 5. 13 Experimental group posttest scores and mean

Informant	Listening	Reading	Writing	Speaking	Total Mark
A	5	5.5	4	4.5	*19*
B	3.5	7	5.5	2.25	*18.25*
C	1	4.5	2.75	2	*10.25*
D	7	9.5	4	4.75	*25.25*
E	6.75	10	7.25	6	*30*
F	5.5	7.5	3.5	4	*20.5*
G	1	6.5	2	5	*14.5*
H	4	7	6.25	5.5	*22.75*
I	2	7	4.25	3	*16.25*
J	3.5	8	3.5	4.5	*19*
K	4.25	7	3.5	4	*18.75*
L	7	5.5	7	5.25	*24.75*
M	8	7	4.5	6.5	*26*
N	6.5	8	7	5.5	*27*
O	9	10	8.75	7.5	*35*
P	4	6.75	6.5	5	*22.25*
Q	1	3	0.5	2.5	*7*
R	3	4.5	2.75	4.75	*15*
S	6.5	6.5	6	5	*24*
T	8.5	10	8.5	8	*35*
U	5	7.5	5	6	*23.5*
V	2	4	3.75	3.5	*13.25*
W	3.25	5	3	2.5	*13.75*
X	7	5.5	7.5	6	*26*
Y	4.25	8	3.75	5.5	*21.5*
Sum of scores	*118.5*	*170.75*	*121*	*119*	*529.25*
Mean of scores	*04.74*	*6.83*	*4.84*	*4.76*	*21.17*
Standard Deviation	2.33	1.84	2.06	1.52	*7.75*

Tables 5.12 and 5.13 show that the mean score of the post test of the control group is 17.18 and of the experimental group is 21.17. Moreover, the results of the standard deviation indicates that there is a significant difference between the two groups with respect to their language abilities (6.91 and 7.75 respectively).

5.6.4 Comparison of the experimental group pre- and post test scores

The table below show the scores that the experimental group had in the pre- and post tests. The results of the four test components are displayed.

Table 5. 14 Experimental group pre- and post test scores

Informant	Listening		Reading		Writing		Speaking		Total Mark	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
A	04	5	4.5	5.5	2.5	4	03	4.5	14	19
B	01	3.5	05	7	03	5.5	00	2.25	11.25	18.25
C	00	1	3.5	4.5	01	2.75	00	2	4.5	10.25
D	05	7	07	9.5	04	4	03	4.75	19	25.25
E	06	6.75	8.5	10	6.5	7.25	5.5	6	26.5	30
F	04	5.5	5.75	7.5	02	3.5	3.5	4	15.25	20.5
G	01	1	04	6.5	0.5	2	05	5	10.5	14.5
H	02	4	3.75	7	04	6.25	03	5.5	12.75	22.75
I	02	2	5.25	7	3.25	4.25	01	3	11.5	16.25
J	03	3.5	06	8	3.5	3.5	03	4.5	15.5	19
K	03	4.25	6.75	7	02	3.5	2.5	4	14.25	18.75
L	05	7	5.25	5.5	05	7	04	5.25	19.25	24.75
M	06	8	07	7	04	4.5	5.75	6.5	22.75	26
N	06	6.5	6.5	8	6.5	7	05	5.5	24	27
O	08	9	9.75	10	8.25	8.75	07	7.5	33	35
P	04	4	6.75	6.75	04	6.5	03	5	17.75	22.25
Q	00	1	3.5	3	0.5	0.5	00	2.5	4	7
R	03	3	4.5	4.5	02	2.75	04	4.75	13.5	15
S	05	6.5	6	6.5	5.75	6	4.75	5	21.5	24
T	07	8.5	8.5	10	08	8.5	08	8	34.5	35
U	05	5	05	7.5	3.25	5	05	6	18.25	23.5
V	03	2	3.5	4	03	3.75	01	3.5	10.5	13.25
W	01	3.25	03	5	1.75	3	01	2.5	6.75	13.75
X	05	7	5.5	5.5	06	7.5	4.75	6	21.25	26
Y	04	4.25	06	8	3.75	3.75	3.5	5.5	17.25	21.5
Sum of scores	93	118.5	140.75	170.75	94.5	121	83.25	119	411.5	529.25
Mean of scores	3.72	04.74	5.63	6.83	3.78	4.84	3.33	4.76	16.46	21.17
Standard Deviation	2.14	2.33	1.68	1.84	2.13	2.06	2.09	1.52	8.04	7.75

Table 5.14 show that the mean score of the pre-test of the experimental group is 16.46 and of the post test is 21.17. Moreover, the results of the standard deviation indicates that there is a significant difference between the scores of the two tests (8.04 and 7.75 respectively).

5.6.5 Course Evaluation Checklist Analysis

The course evaluation checklist revealed very important data which helps the investigator assess the learners' attitudes and satisfaction of the ESP blended course designed for first-year Master' in the Department of Manufacturing and Engineering Sciences at Tlemcen University. The results obtained from the course evaluation checklist are presented as follows:

ESP Teacher Evaluation
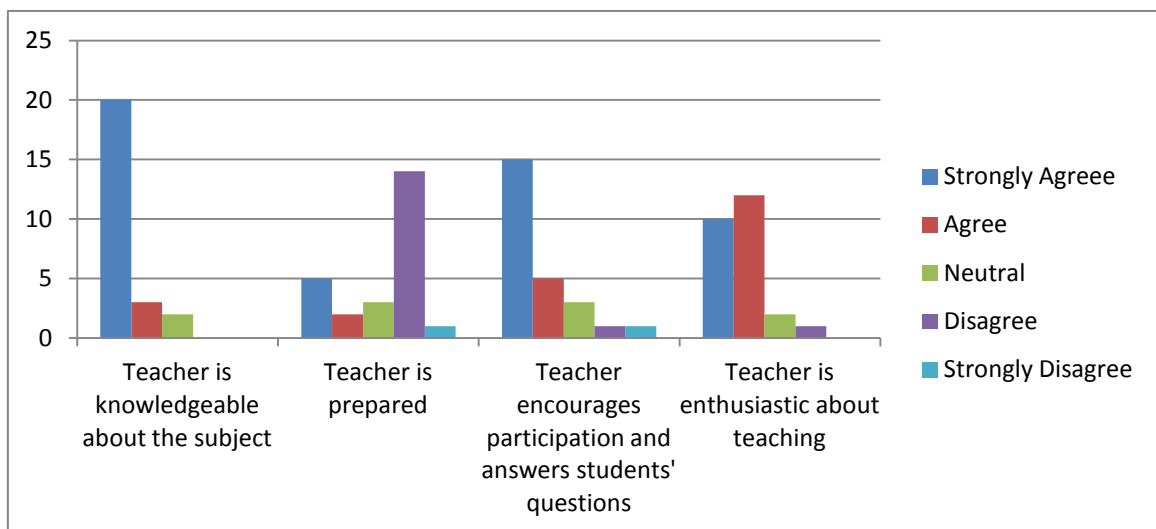
Figure 5. 2 Teacher Evaluation

The figure below demonstrates that almost all the students (20) strongly agreed on the fact that the teacher was knowledgable about the subject matter.14 asserted that she was not prepared and 12 agreed that the instructor was enthusiastic about teaching.

Assignments

Concerning the assignments, 14 students agreed that the tasks were in the right level of difficulty for the course.However, 10 learners asserted that they helped them learn the material and 12 strongly agreed that the assignments given to the class were interesting and met their learning needs. The results are shown in the figure below:
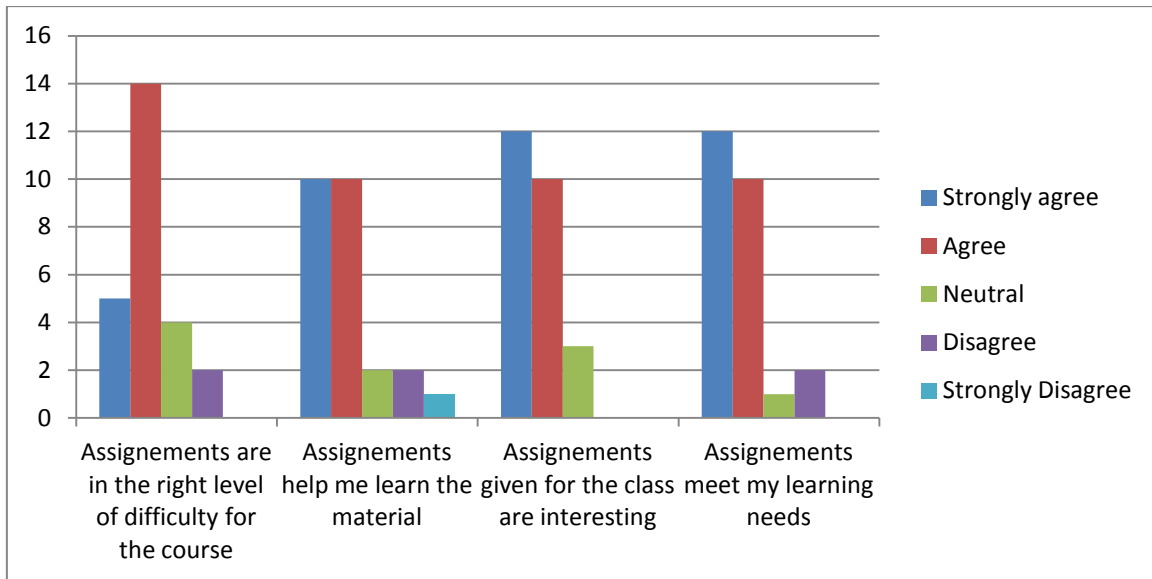
Figure 5. 3 Assignments

Learning Materials
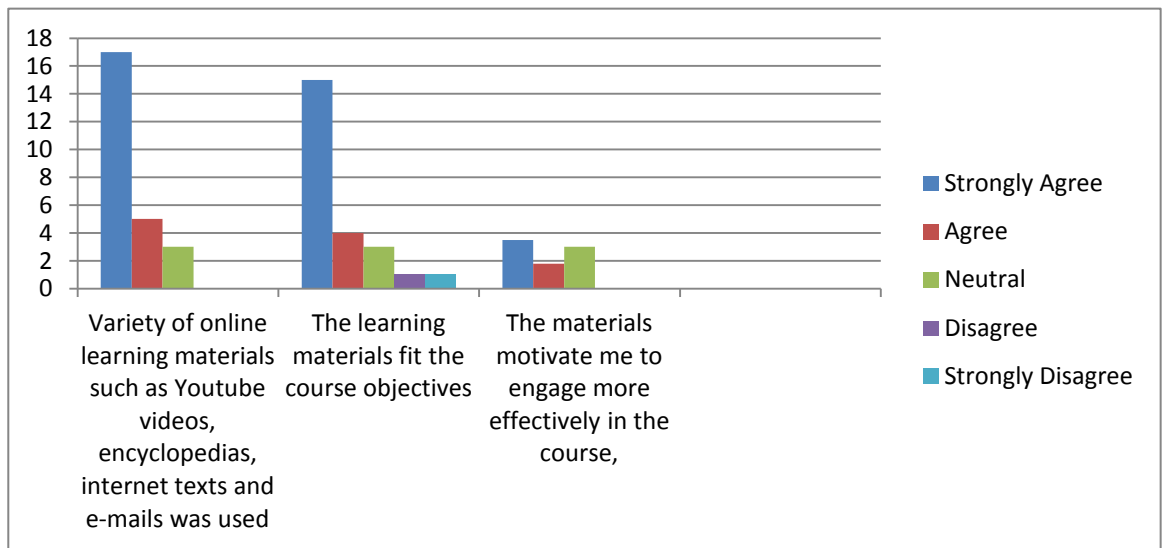
Figure5.4 Teaching materials**.**

While 17 students strongly agreed that a variety of online learning materials such as YouTube, videos, encyclopedias, e-texts and e-mails was used, 15 said that the tools fit the course objectives and only 3 confirmed that they motivated them to engage more effectively in the course .

Lessons and Tasks
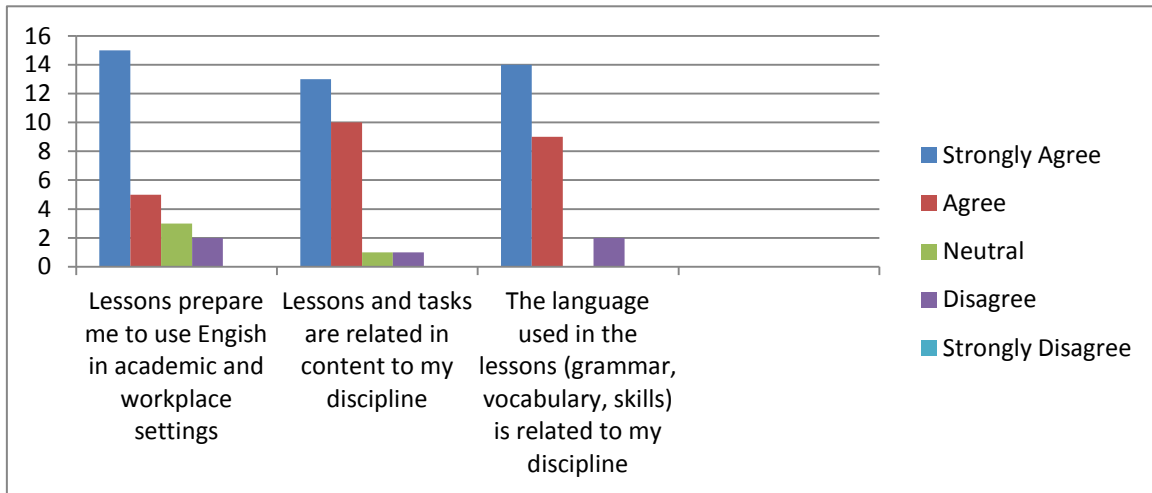
Figure5. 5 Lessons and Tasks

As far as the lessons and the tasks, 15 students strongly agreed that they prepared them to use English in academic and workplace settings. 14 said that the language used in the lessons (grammar, vocabulary, skills) were related to their specialty and 13 asserted that the lessons and the tasks were related in content to their discipline.

Course Objectives
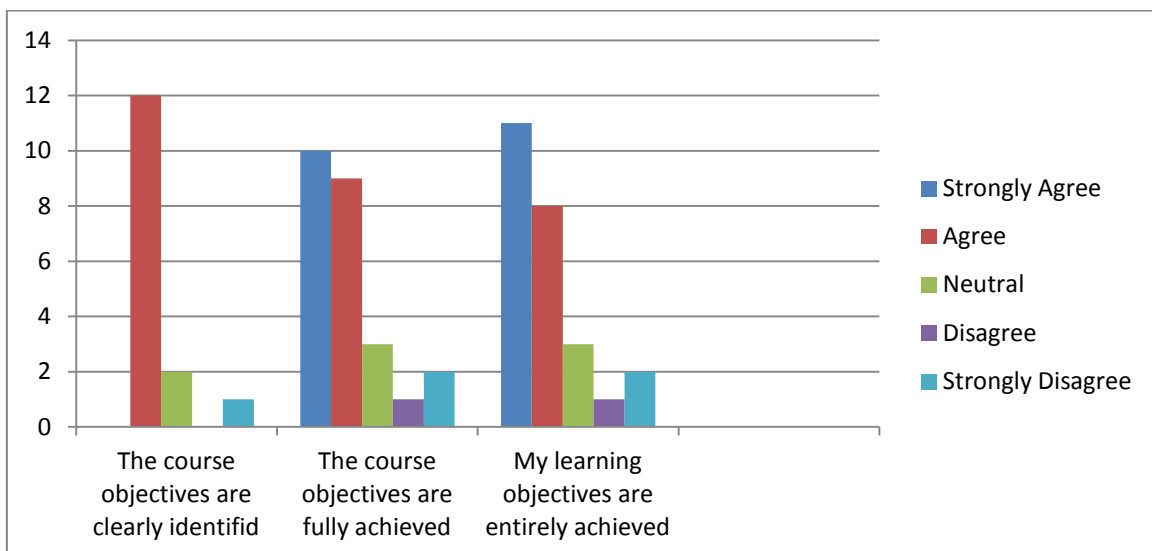
Figure5.6 Course Objectives

Regarding the course objectives, 12 students strongly agreed that the course objectives were clearly identified.11 said that their learning objectives were entirely achieved and 10 believed that the course aims were fully achieved.

Tests
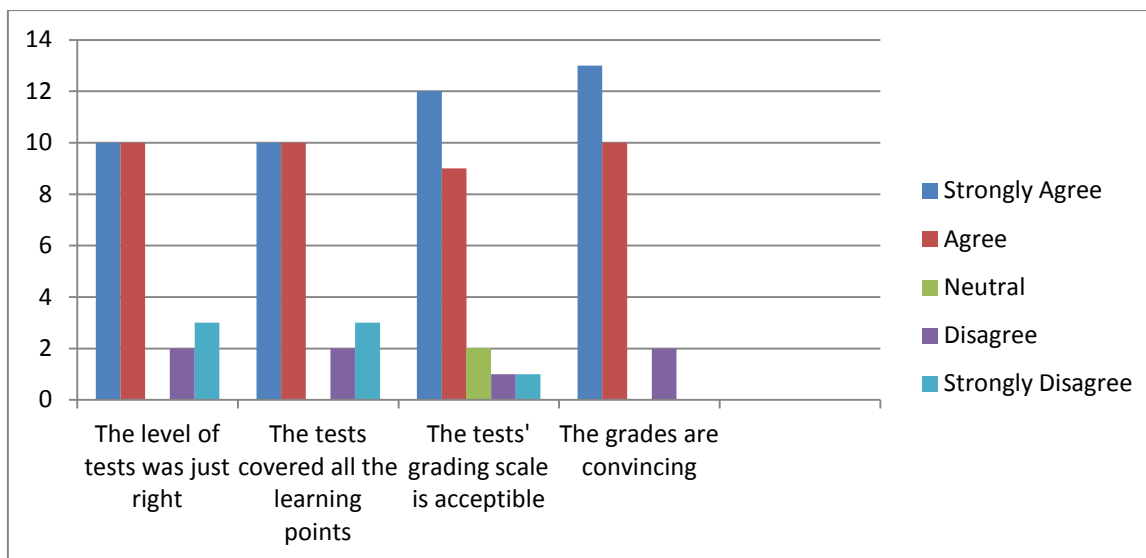
Figure5. 7 Tests

13 students strongly agreed that the grades were convincing, 12 said that the tests' grading was acceptable and 10 students confirmed that the tests were just right and covered all the learning points.

Web Assignments

Concerning the web assignments, 15 students strongly agreed that they helped them learn the material.13 said that the web assignments make learning dynamic and 10 posited that they were clearly written and properly instructed. They also confirmed that the assignments were at the right level of difficulty and served the objectives of the course. The learners asserted that they met their learning needs and had motivated them to develop the needed language skills for the course . Figure5.8 represents the results.
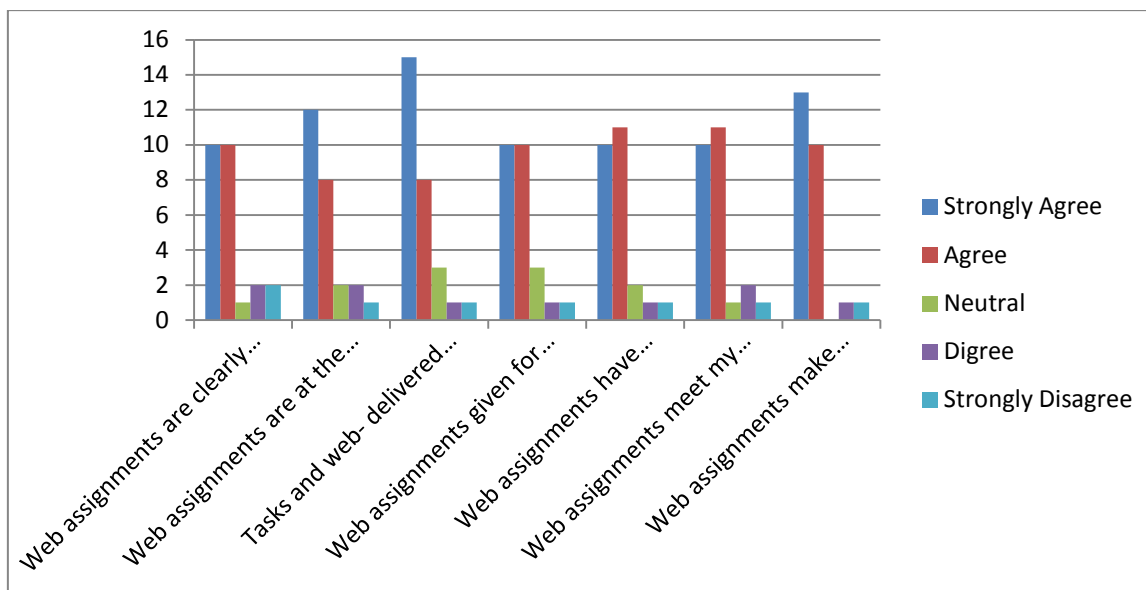
Figure5.8 Web Assignments

Students' Suggestions

The students suggested that the course had to be implemented for all the levels and during the whole year not only for a short period as it was in this case. They asserted that the use of technology in the ESP course motivated them to learn and decreased their negative attitudes towards the English session. They wished to deliver the content via their faculty platform as a way to ensure the accessibility of the course. They recommended for the integration of proficiency tests as official examination in their department.

5.7 Summary of the Main Results and Discussion

The data gathered from the pre-test and the post test revealed important results regarding the progress noticed in the students' achievement after attending the ESP blended course that the investigator designed for first-year Manufacturing and Engineering Master's students. When comparing the students' scores in the two tests, a significant difference is noticed. The figure below summarizes the variation of the students' scores in the pretest and post-test.
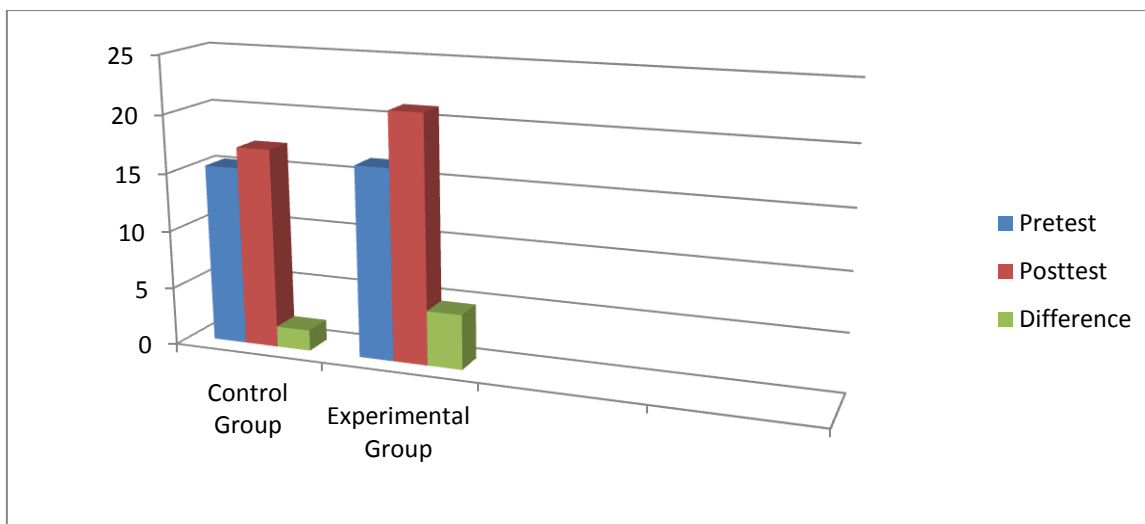
Figure 5.9 Pretest and Posttest Mean Compared

The figure 5.9 shows that both control and experimental groups were homogeneous at the beginning of the experiment. This is deduced from their scores in the pretest. A noticeable progress is highlighted in the performance two groups.

The control group showed significant evolution though they carried out the course in the traditional classroom but with the same lectures. The mean of their scores in the pretest was 15.39. It progresses gradually to reach 17.18 in the post-test. This explains that the course that the researcher designed meets to a great extent the students' needs.

Regarding the experimental group, systematic achievement was noticed. At the beginning of the experiment, the participants' scores mean was 16.46.Then, it increased to achieve 21.17. This, in fact, showed that the ESP blended course led students to a better achievement. Moreover, the progress in the participants' scores acclaimed the role of the treatment and the benefits of integrating blended learning in the ESP course. The latter gave chance to the informants to perform a wide range of tasks through online materials. It helped them to be exposed to a variety of authentic texts and topics that widen their knowledge in the subject matter. The students' listening and speaking skills are promoted thanks to the multitude of instruction they were given. Likewise, the writing and reading assignments enable the informants to promote their writing and reading abilities. They equip them with

the necessary writing techniques and reading strategies which implicitly govern and straighten their appropriate use of English in terms of grammar, pronunciation and vocabulary.

In the literature, the ESP teacher always constitutes a subject for controversy. This is because the lack of training and ignorance of the subject matter. Regarding the current study, the students were asked to express their views about the ESP teacher with whom they undertook the blended course. They showed a high degree of satisfaction regarding the teacher's knowledge of the subject. Their answers revealed that the ESP teacher prepares the lessons before meeting them. He also encouraged participation among students during the course, answering students' questions, and demonstrates enthusiasm.

The set of assignment provided during the ESP blended course is said to be feasible and achievable. The students asserted that the tasks were well designed so that they were able to manage the degree of difficulty which was regarded as an obstacle during the realization of the assignments. They also acknowledged that they were given a great chance to further practice the course materials due to the online support.

Concerning online assignments, the students posited that the tasks were clearly written and properly instructed to serve the course objectives and meet their needs. They confirmed that they were managerial in terms of difficulty. The participants agreed on the benefits gained from those assignments in helping them to learn and motivating them to develop the needed language skills. The targeted first-year Master's students showed satisfaction on the lessons and tasks the course covers. They asserted that they are related in content to their area of specialism. Having performed such tasks, the participant viewed themselves as being well prepared to use English in academic and workplace settings.

The informants strongly agreed on the fact that the different learning materials that the investigator adapted and produced were of crucial importance. They confirmed that the materials were variable mainly the online elements.They

motivate them to learn more and better. Hence, the students believed that the learning materials enabled them to engage effectively in the course.

As far as the objectives are concerned, the participants confirmed that the course objectives were very specific and clearly identified. This, therefore, responds to a high extent to their needs and expectations of the ESP blended course. Because of the short period of time in which the intervention took part, the students claimed that their objectives were not entirely achieved.

The students showed high degree of satisfaction with the TOEIC-style questions. They claimed that this is the first time to be acquainted with such type of tests. They agreed on the fact that these tests gave them the chance to evaluate their four language skills unlike the traditional way of tests they had in the course. They confirmed that the tests covered all the learning points they met in the course. The tests were praised for being a way to prepare the students for international proficiency examinations which become a requirement to obtain a job.

5.8 Conclusion

The current chapter was devoted to test if the ESP blended course helped the students to promote their language skills and communicative competencies. In this part, the researcher provided a detailed account for the experimentation of the course. She described the research method , the population and the instruments that she used. Then, the results of the tests and the course evaluation checklist were analyzed and discussed to help the investigator check the feasibility of implementing a blended learning in the ESP course. In fact, the aim was to answer the fourth research question.

Thus, in the next chapter, the investigator aims at proposing some remedial suggestions that may help and facilitate the integration of blended learning and technology materials in the ESP course in the Department of Manufacturing and Engineering Sciences at Tlemcen University. General recommendations concerning the introduction of ESP courses as compulsory module, time-load, development of

the four skills, and the need for a specific teacher training in how to produce their teaching materials will be suggested.

CHAPTER SIX   *Suggestions and Recommendations*

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      6.2.2 Development of the four skills

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6.9 Conclusion

6.1 Introduction

In the previous chapter, the researcher designed an ESP blended course based on the data obtained from the needs analysis used in the present study. The needs assessment process was conducted in order to describe the ESP current situation in the Department of Manufacturing and Engineering Sciences at Tlemcen University, to investigate the learners' target and learning needs, and to identify the stakeholders' attitudes towards the integration of blended learning in the ESP course. In the light of the results of the needs analysis and the evaluation of the ESP blended course, the investigator will present a set of suggestions and recommendations to improve the teaching of ESP in general and EST in particular.

Henceforth, in the current chapter, the investigator will suggest some general recommendations concerning English language teaching in general where she stresses the importance of English language intensive teaching, development of the four skills altogether and the time load to teach ESP. Then, criteria regarding the production of teaching materials and call for ESP teacher training, team teaching and collaboration with subject- specialists are highlighted. Moreover, the researcher recommends for fostering the use of online teaching materials in order to raise learners' autonomy and motivation, and enhance learner-centeredness approach. In accordance with the previous research and literature, some recommendations concerning redefining the ESP teachers' role, the principles of selecting online teaching materials, the integration of computer technologies in teacher training ,and promoting the learners' technology-pedagogy skills are made.

6.2 English language Teaching

Generally speaking, the results obtained from the different research instruments used in the present research call for intensive teaching of English, development of the four skills and collaboration between ESP teachers and subject specialists.

6.2.1 Intensive teaching of English

Regarding the fact that Algerian engineering students, workplace managers and engineers are urged to handle the English language in order to perform different communicative activities, the investigator recommends the implementation of the ESP course as a compulsory module from the first-year License to help manufacturing engineering students to develop their English proficiency and reach high level of spontaneous interaction, an intensive programme of English teaching has to be integrated. This process will be put into practice through the review of time which is regarded as an essential factor in ESP teaching as it is explained by Hutchinson and Waters (1987:13) **"**…the quantity of instruction must be taken into account. The quantity of instruction refers to the number of hours given to English**."**

In this respect, the investigator suggests more than one session to be devoted to the teaching of ESP in order to ensure long practice of the English language, and promote satisfaction and motivation among both the ESP teachers and manufacturing engineering students. It is noticed that less motivating timing is devoted to ESP teaching, i.e., one session of three successive hours per week, often reduced to two hours, is not helpful. It makes the students feel bored and unmotivated to learn. For this reason, the researcher recommends that the ESP session should be cut into three hours scheduled in different days of the week as a way to ensure continuous exposure to the language and enhance consistency through intensive practice of English.

It is worth pointing that though the students in the Department of Manufacturing and Engineering Science at Tlemcen University self-rate their proficiency level in English as beginners in response to their low achievement in the ESP course, they demonstrate high degree of awareness regarding the importance of learning English and the vital role that the latter plays in the world economy, science and technology. The students show positive attitudes towards the use of English in the target situation, the reason why they are motivated to spend much

time in learning English. Consequently, the researcher calls for the implementation of the ESP course from the first year License. In fact, the longer students are exposed to English, the more their command over this language is reinforced.

6.2.2 Development of the four skills

Taking into account the low proficiency level of manufacturing engineering students in the English language and their needs to enhance their speaking and listening abilities, it is recommended that the four skills together should be promoted due to their importance and integrative roles in ESP teaching. This means that ESP teachers need to assign a mixture of activities promoting the communicative use of language in parallel with presenting formal linguistic categories and grammatical rules. Such practice enables the students to produce and perceive the language.

Though much importance is given to the receptive skills, no skill is taught in isolation. In this regard, the reading skill is the first step through which the students promote English learning as Krashen (1989: 109) confirms, **"reading exposure is the primary stage of developing language skills"**. Therefore, ESP teachers have to develop their students' reading skill through intensive and continuous practice which enables the learners to:

- Understand and identify the main idea of the authentic material in the subject matter.

-enrich their lexis and technical terminology

- Scan and read in depth to find specific information.

- improve the learners' listening, speaking and writing skills

- Understand grammar and formal linguistic categories.

Concerning the writing skill whose role changed with the emergence of web 2.0 technologies such as e-mails, blogs…etc., ESP teachers may assign activities

that enable the learners to feel confident .Practically speaking, when teaching writing, the ESP teacher will make his learners:

-summarize the materials that they have read.

-Take notes on lectures and readings.

-Write coherent compositions related to their subject matter.

-Write for a variety of purposes related to the demands of their areas of specialism.

Though listening and speaking are central in the field of manufacturing and engineering, the findings revealed that the students are not competent listeners and speakers. As such, the investigator suggests that these skills should be emphasized when designing any EST course. As a matter of fact, the learners have to be exposed to practical materials since they "won't be able to speak the target language accurately unless they perceive the ability to distinguish features of the new phonetics system**"** Valette (1989:74). Therefore, the ESP teacher may assign activities such as role playing and debating in order to promote the learners to listen to authentic materials and communicate effectively with their mates or foreign students. Besides, the teaching of pronunciation has to be overstressed in the ESP course.

6.3 ESP Teaching Policy

In the ESP context, so much focus is put on the learners' needs. For this reason, the ESP course designers are called to draw a clear policy regarding the implementation of ESP courses in the Algerian universities. This implies that they are urged to reformulate the framework of the existing ESP courses.

6.3.1 Goals and Objectives

According to what is noticed in almost all the departments in the Algerian universities, there is an absence of a clear policy that governs the process of ESP

teaching. In the case of the Department of Manufacturing and Engineering Sciences at Tlemcen University, when the investigator examined the CANEVAS, she found that there is a working description of the teaching methodology of all the modules except for ESP. The document illustrates just the type of the ESP course, the time load and coefficient. It seems that the ESP course is taught randomly. This is why the researcher calls the decision makers in Algeria to provide a detailed syllabus where the goals and objectives of teaching ESP in each department must be clearly formulated. The course objectives should reflect all the language basic skills. Henceforth, it is suggested that the aims to be achieved at the end of the ESP course are set to develop the students' competency and confidence in using English before they tackle their professional life. Moreover, as a way to enhance the students' motivation, the ESP course should be renamed, that is, it should be labeled in relation to its scope. For example, instead of calling it ESP or EST course, English for Manufacturing and Engineering would be more appropriate.

6.3.2 ESP Teachers Recruitment Policy

The teacher, being a focal figure in any educational setting, needs to be qualified, competent and knowledgeable in order to control the content they transmit to their learners. In the case under investigation, it is noticed that ESP courses are assigned to teachers who are "License" holders or to instructors who hold a Master's degree in literature and civilization. In fact, in the two cases, the situation seems to be scaring. First, holding a license degree allows people to teach in the National education not at university. Second, teachers who graduated from literature and civilization specialties do not have the necessary knowledge that governs the teaching of ESP. Therefore, the government should draw a clear policy regarding the recruitment of ESP teachers in the different departments.

6.3.3 ESP Teacher Training

The problem of untrained and unqualified teachers is encountered in ESP teaching. In fact, ESP teachers are language teachers who have a limited knowledge not only in the scientific field but also lack of expertise in selecting and producing

suitable teaching materials. For this reason, the investigator recommends to devote special training to promote ESP teachers' expertise in materials production. Moreover, technology-pedagogy integration in ESP teacher training is suggested to help them acquire the needed skills to facilitate ESP teaching.

Accordingly, in a blended leaning context, in addition to the ordinary roles that the ESP teacher plays as being a source of knowledge, guide, facilitator and so forth, other roles are described. Those roles are subject to change in response to the objectives to be achieved. The ESP teacher acts as a tutor. He should advise his learners, consult their learning and instruct them. Others may cover the role of the ESP practitioner as a coach who not only teach the language but as the one who train the learners to operate the online templates.

6.3.4 Teachers' collaboration

It was noticed that ESP teachers lacked expertise in the scientific field, i.e., teachers were not subject specialists, as it is explained by Hutchinson and Waters (1987:162) **"**there is a tradition in education of separating the Humanities and the Sciences. The results have been that English teachers often receive little or no education in the sciences**."** In this respect, the investigator recommends team teaching and collaboration between ESP teachers and subject specialists which can be helpful for both sides. In the same line of thought, Hutchinson and Waters (1987:165) claim that:

> ESP teachers might, for example, find themselves having to work in close cooperation with sponsors or subject specialists who are responsible for the learner's work or study experience. The effectiveness of the relationship depends greatly on how it is handled by both parties…One of the keys to success in this area is for ESP teachers to establish clear guidelines about them and the specialist's separate and joint roles and responsibilities.

That is to say, the relation between ESP teachers and subject specialists is bidirectional. ESP teachers who generally lack knowledge about the subject matter may refer to specialty teachers in order to find more explanations and clarifications, and therefore decrease ambiguities in the subject matter. Similarly, the subject specialists can ask for the help of ESP teachers to solve the problems encountered by their students mainly when using authentic materials such as scientific documents and texts written in English.

6.4 Needs Analysis Process

Awareness of the students' needs is the cornerstone in ESP teaching. Thus, for a working needs analysis process, some guidelines should be taken into account in order to govern this operation.

Regarding the process of conducting a needs analysis, the investigator recommends that the ESP practitioner conducts it not only at the beginning of the course, but re-administer it along with the course .As it was acknowledged in the review of literature , needs analysis is an ongoing process that should be undertaken at the beginning, during and after the course. In fact, the initial needs analysis enables the ESP teachers to identify their learners' needs, strengths and weaknesses. It serves a present situation analysis as it measures the students' proficiency level before the course starts. The needs analysis which is performed during the course enables the analyst to diagnosis the course progression and gives him the chance to refine the course where necessary. Assessing the students' needs after the course helps the ESP teacher to measure the students' achievements at the end of the course and enables him to review the course. This is done in order to check if the course content addresses the objectives drawn, whether it meets the students' needs and to what extent the students' target needs are achieved. Therefore, when recognizing needs analysis as an ongoing process, continuous adjustment of the course content will be possible.

As it is perceived from the previous studies conducted in the field of ESP course design, the majority of studies based their analyses on investigating the

learners' needs and isolated the learning needs. In fact, a successful ESP course should take into account both the target and learning needs. Thus, assessing the students' target needs helps the ESP practitioner to outline the content that the course covers in terms of tasks, skills, topics and language aspects. However, the analysis of the learning needs permits to identify the administrative, psychological and methodological circumstances related to the context in which the ESP course will run.

6.5 ESP Course Design

As a way to engage the students in a more supportive ESP learning context, ESP teachers in the Department of Manufacturing and Engineering Sciences at Tlemcen University are urged to produce an innovative ESP course. This, therefore, requires revision of the roles that the ESP teachers play and the instructional methods they follow.

6.5.1 Course Content

Based on the results gathered from the needs analysis conducted in the Department of Manufacturing and Engineering Sciences at Tlemcen University, a set of remarks have been generated regarding the ESP course. First, the existing ESP course is said to be language- based as the teachers emphasize the teaching of grammar and vocabulary. In fact, this course does not address the students' needs simply because it enables them to respond to a text but not to use the language in real life or professional situations. For this reason, ESP course developers are called to review the existing course. They need to create a highly structured ESP course where both language skills and subject matter aspects are integrated, of course, this should be based on needs analysis results. Therefore, the content should enhance communicative and persuasive abilities to help the students to engage in manufacturing and engineering related activities such as conversations, presentations, talks, meetings, negotiations, and so forth. The ESP course should address other aspects including writing reports, forms, letters, and dealing with colleagues, phone calls and e-mails.

The investigator suggests that the ESP course designers need to proceed in a careful way when writing the course. Hence, the content is believed to be an upgraded. She recommends that the ESP course delivered in the first two years, i.e, license cycle, is general ESP course. This implies that the aim of the course at this level is to promote the learners' linguistic skills and reinforce their command of the English language. The general scope of these courses should be language- based. That is, grammar and vocabulary tasks are integrated with the four-language skills. Assignments like the use of tenses, parts of speech, word formation and sentence construction are stressed. Of course, these tasks will be integrated with other activities in a form of structured units. The teacher is asked to relate these tasks to the study of a text for instance. Regarding the nature of texts, it is necessary to graduate from easy to complex patterns that cover general scientific English knowledge. Gradually, the English course content overlaps to tackle common notions and discourse patterns used in technical English. In this respect, the content may incorporate the following items.

❖ Scientific language functions such as:
  - Describe
  - Disagree
  - Retell
  - Make predictions
  - Give and support opinions
  - Cause and effect
  - Draw conclusions
  - Compare
  - Contrast
  - Sequence
  - Hypothesize
  - Persuade
  - Measure
  - Construct charts, tables and graphs

- Distinguish fact from opinion

- Summarize

- Identify relationships

(Retrieved from: http://www.thesciencetoolkit.com/wp...//)

❖ Scientific discourse Patterns which include:

- The present simple tense

- The passive voice

- The conditionals

- Modals

- Logical grammatical connectors

- Adverbs

- Adjectives

- Compound nouns

- Quantity expressions

- Comparative forms

- Modifiers

❖ Scientific language notions which deal with expressing:

- Point of time

- Duration

- Frequency

- Location

- Dimension

- Motion

- Quantity

- Grammatical numbers

- Numerals

- Operations

- Commencement

• Cessation

(Adapted from Hemche, 2014:269-270)

❖ Technical vocabulary: varies depending on the theme treated

In this way, the two years' English course enables the learners to reveal a wealth of scientific vocabulary as well as basic language patterns. In fact, it will prepare them to undertake the ESP instruction in the next levels.

After building the students' basic language blocs in the first level , the ESP course has to be narrow- angled during the second cycle, i.e., Master's degree. This means that the ESP practitioner should build his course on the basis of the students' specialty. In this respect, the findings of the current study revealed that the majority of the respondents want to learn English to get a job and pass international examinations. Thus, the researcher suggests that the ESP course which the students undertake in the Master's degree should focus on occupational and professional English. It can also integrate tasks that prepare the students to undertake international tests such as the TOEIC. The aim here intends to develop the learners' communication skills. This will cover both speaking and writing activities with the integration of listening and reading skills.

The results obtained from the needs analysis revealed that the speaking skill is said to be neglected. Though the teachers are well aware of the fact that the professional life requires competent and fluent manufacturing engineers, they assigned grammar and vocabulary-based tasks. That is why the researcher recommends that much attention should be paid to interactive activities. This can be accomplished through face-to face conversations, presentations, meetings, discussions and so on. Therefore, the ESP course needs to tolerate the requirements of the target situation .The content, then, requires to be upgraded and put into question in accordance to the changes of manufacturing and engineering current situations.

6.5.2 Materials production

The informants' answers showed that they were not satisfied with the materials used in the ESP course. They asserted that the materials used in ESP teaching were self-designed. This fact may worsen the situation as no ESP teachers **"have had any training in the skills and techniques of materials writing"** (Hutchinson &Waters, 1987:106). In this regard, a need for a special training concerning the provision of teaching materials is suggested. In such a process, the ESP teachers are trained to select the most appropriate materials to be used in the classroom. Moreover, this training enables the ESP teacher to determine the type of teaching materials either self-designed or commercially prepared. It will be of greater help to both teachers and learners if the Ministry of Higher Education issues a reference book which serves as a guide to teach and learn effectively.

6.5.3 Course Evaluation

Among the requirements of today's globalization process is the foundation of well-round education. The later sought to achieve quality rather than quantity. ESP teaching, then, is not an exception. In the case under investigation, the ESP teacher instructs a large group of students with different backgrounds, as they come from various parts in Algeria, and different proficiency levels. These students possess variable perceptions and different profiles of needs. The aim is to prepare the learners to function effectively in the target situation but taking into account the facts already described, the content of the ESP course seems not to suit them. Thus, to overcome the problem, the investigator suggests a procedure that can be of a greater help namely the students' evaluation of the course.

The introduction of the students' evaluation system as an integral part of ESP instruction generates a hug bulk of benefits. The university needs to design a questionnaire whereby the students are asked to evaluate different angles of the ESP course. Aspects such as the teacher competence, the course content, method, teaching materials, timing, and assessment criteria are put into question. The data

gathered helps to gauge the effectiveness of the course. This procedure ensures to diagnosis the strengths and guarantees to make the necessary changes if any weakness is spotted.

6.6 Technology Integration

It is widely acknowledged that the integration of technology in ESP learning is of paramount important. It serves to promote students' motivation and enhance the language learning process. However, the use of technology in the classroom is not random. It is rather built upon a set of strategies that govern its implementation in educational settings.

6.6.1 Fostering the Use of Online Materials

With the wide use of technology and the facilitating role that computer technologies play in all sectors of life and all professional and educational settings, ESP teachers are recommended to reinforce the use of online teaching materials in their courses. In fact, the integration of such teaching tools will provide ESP teachers with **"**the means to offer instructional assistance and learning activities that meet the demands , pace and interest of individual students**"** (Mandernach, 2006 : 44).

Regarding the ESP learning process, when using online materials, many opportunities are given to learners to be attracted, kept stimulated and therefore motivated to learn the target language. Thus, the integration of such teaching tools will ensure a continuous contact between the learners and their ESP teachers, being online or offline; **"**while online, teachers may have a direct contact with their learners via e-mails and so forth. When offline, students can have access to tasks, materials, courses and so on**"** (Mebitil, 2011:132).

6.6.2 Integrating online materials pedagogy in teacher training

The use of technology in general and online teaching materials in particular in education is regarded to be of paramount importance. It promotes the quality of ESP

teaching and learning processes, mainly in emphasizing student-centered learning and developing ESP learners' basic language skills. Thus, the researcher calls to train ESP teachers how to use online materials in the ESP course .Thus, online materials pedagogy can be integrated either as **"core or complementary"** (Collis & Jung, 2003:175) ,i.e., as a cornerstone or a supportive means to ESP teacher training.

This approach to the integration of online materials is presented as follows:

Learning How to Use Online Teaching Materials

Core Means

Complementary Means

Online Materials as Main Content Focus

Online Materials as Part of Content or Method
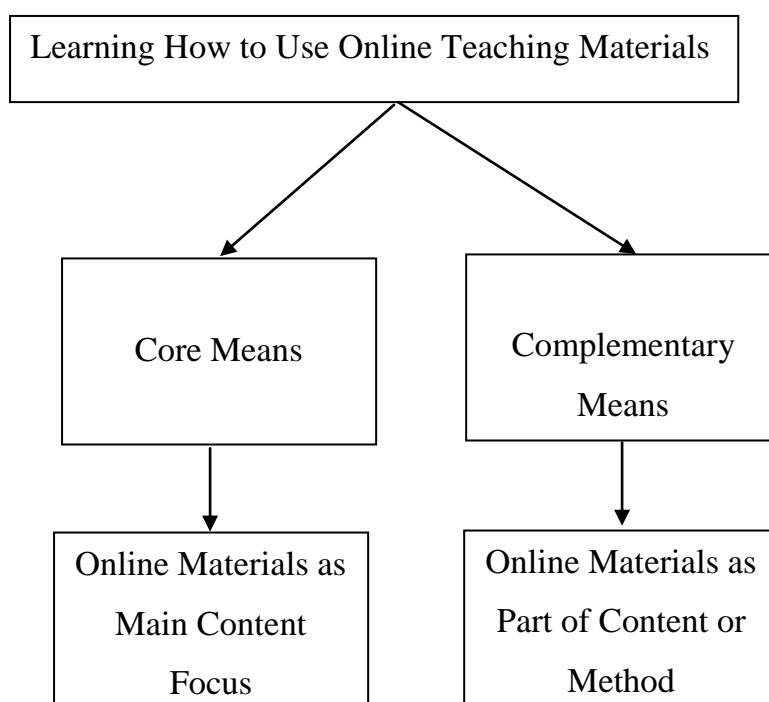
Figure 6.1 Categories for Integrating Online Materials in Teacher Training (Adapted from Collis & Jung, 2003:176).

The use of online teaching materials as main content focus in ESP teacher training helps the teachers to gain expertise in how to select and manipulate these tools. It shows them the way to use online materials to assign a variety of ESP activities. It also serves as a means to develop new ESP teaching methods and assess the students' achievements. Moreover, using online teaching materials as part of the teaching methodology will provide ESP teachers with descriptions and clarifications of how these materials are integrated in the ESP course. It creates real situations and gives concrete examples of **"real educators and learners using**

successful practices of technology to support instruction and learning in their classrooms**"** (Jung, 2005:96).

6.6.3 Principles of Selecting Online Teaching Materials

Because of the multitude and diversity of online teaching materials, ESP teachers are required to build their selection of online teaching tools on a set of principles and guidelines that the investigator adapted from Romiszowski (1974:56-58).These principles are presented as follows:

1. Learning objectives: before selecting the online teaching materials, the teacher needs to identify the educational goals that are intended to be realized. Therefore, this process will enable the educator to choose the e-materials that fit better the curriculum objectives and help in achieving the intended goals.

2. Learning Content: the teacher has to choose the online teaching materials that are aligned with, and ensure interaction about the subject content as Kalin (2004:213) asserts that the teacher should select the teaching materials that **"**will allow for a systematic treatment of the educational content**."**

3. Students' needs: the teacher has to build his selection of e-materials on the students' requirements which help in integrating the online teaching tools that motivate the learners and reflect and meet their immediate needs.

4. Teacher characteristics: broadly, teachers act as a model for their learners. The selection of online teaching materials should take into account the teacher's attitudes towards these tools, his experience and competence in manipulating these technologies. In general, teachers can fall under two types: those who are for the integration of online teaching materials in educational settings and others who have negative attitudes towards the use of new technologies when teaching.

5. E-materials' technical and educational characteristics: the integrated online teaching materials should be didactically appropriate for the teaching and learning

process. Furthermore, it should **"contain and transmit information and allow the attainment of educational goals"** (Kalin, 2004: 2014).In fact, the ESP teacher has to be ready in case of technical problems, for example, if e-mail, blog…etc. is out of service or the net connection might fail.

6. Organizational support: before integrating new technologies in the classroom, Algerian universities have to create supportive environment. They have to provide technical support, and draw clear policies and school norms to govern the use of such materials.

6.7 Blended Course Design

As a way of explanation, blended learning is considered as one of the most complex approaches in the process of ESP teaching and learning. Decision about the integration of such an online learning environment does not occur over night. Rather, a set of criteria have to be drawn.

6.7.1 Instructional Guidelines

Based on the researcher's experience when designing an ESP blended course, some suggestions regarding the design process are to be outlined. The ESP practitioner needs to:

1. *Elicit the goals:* the ESP teacher should carefully write the objectives that he wants to achieve when using blended learning. Thus, questions such as what will blended learning add to teaching? What are the students going to achieve? What benefits of using blended learning are to be gained? Have to find answers.

2. *Decide on the delivery mode:* as it was highlighted in the literature review chapter, blended learning entails the combination between face to face and online instruction. For this reason, the ESP course designer will decide what activities will be given online and what tasks to be undertaken in the classroom. Moreover, coherence between face to face and online instruction is highly recommended.

3. *Determine the time load:* among the limitations that the ESP teacher may encounter is the time constraints. This is why the designer needs to specify the time volume of each activity in order to help the learners acquire effective learning experiences.

6.7.2 Specification of the ESP Blended Course Outcomes

For a successful design of an ESP blended course, the teacher outlines clearly the reasons why he is going to implement an online learning. The integration of e-learning has to match the learners' outcomes at the end of the course.

6.7.2.1 Stimulating Learner's Motivation

Besides the fact that the use of technology is common and pervasive among teachers and learners, the integration of blended learning in the ESP course will offer **"**the capacity to better motivate students as engaged learners rather than learners who are primarily passive observers of the educational process**"** (Koper, 2004).In this regard, the investigator suggests that ESP teachers give courses and assign language tasks online in order to make their learners more attentive , promote their sense of self-worth (Gonzalez , n.d.[3]), and push them to make much effort to reach their aims. Moreover, the integration of such materials will give the chance to passive students to participate and express themselves. Therefore, two types of motivation will be enhanced when using online teaching materials. First, ESP learners will perceive the importance of using new technologies in educational settings in relation to external motives such as grading , i.e., extrinsic motivation. Second, the learners will enjoy using online teaching materials as these technologies are widely spread and commonly used by engineering students in their daily lives, i.e., intrinsic motivation.

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[3] n.d. : no date

6.7.2.2 Raising Learner Autonomy

In order to promote the ESP learners' own desire to learn and make them communicatively competent in the English language, the first step is to raise their autonomy which refers to "the ability to take charge of one's own learning … and to hold the responsibility for all decisions concerning all aspects of learning" (Holec, 1981 qtd in Benson, 2001:48).As Harmer (2001:335) claims, different options such as learners' reflection and keeping learning journals and diaries can increase learners' autonomy.

Regarding the present study, and to reach the above mentioned goal, the researcher recommends that new educational technologies should be integrated in the ESP course as the use of blended learning represents "a teaching and learning platform where students enjoy a high level of autonomy" (Wu, 2006).In fact, the use of such teaching materials creates a supportive learning environment where ESP students are aware and fully involved in their learning process. Furthermore, in such context, the ESP learners can easily access their courses at anytime and at their own space. In this way, they become responsible for their learning.

As the common core of today's educational process and ESP teaching focuses on developing learner-centeredness approach , the researcher recommends that ESP teachers may use a type of online teaching materials that "can equip students to independently organize their learning process…so students using technology become active users" (Moeller and Reitzes, 2011:6).This means that the choice of the online teaching materials to be integrated in the ESP course has to be built on adaptation, i.e., based on the learners' needs, interests and background .In this way, the students will be more engaged , responsible and flexible to govern their learning process. In fact, in a learner-centered approach, there is a transformation in the role of the ESP teacher who will act as a guide and facilitator. Furthermore, the teachers are expected to observe their learners' learning process and support them with some instructions that help them control their own learning. The use of online teaching materials such as e-mails, instant messaging gives chance to manufacturing and

engineering students to experience control over their learning as they can choose the topic and change the direction of the discussion.

6.7.2.3 Developing Learners' Technology-Pedagogy Skills

As education is intended to take responsibilities in creating new skills that "require not only knowledge of the procedures and processes, but also competence and capability in applying this knowledge" (Luca & Mc Loughlin, 2002:575), the integration of technological tools in an educational setting enables the ESP learners to promote new practical skills and capacities which help them survive in nowadays global and dynamic world. Furthermore, ESP teaching in the light of globalization has to encourage the use of new educational technologies and promote manufacturing and engineering students' technology skills.

Putting so much focus on Jung's (2005) perspective and research, online teaching materials are used to foster information and media literacy skills, learning and innovation skills, and life and career skills.
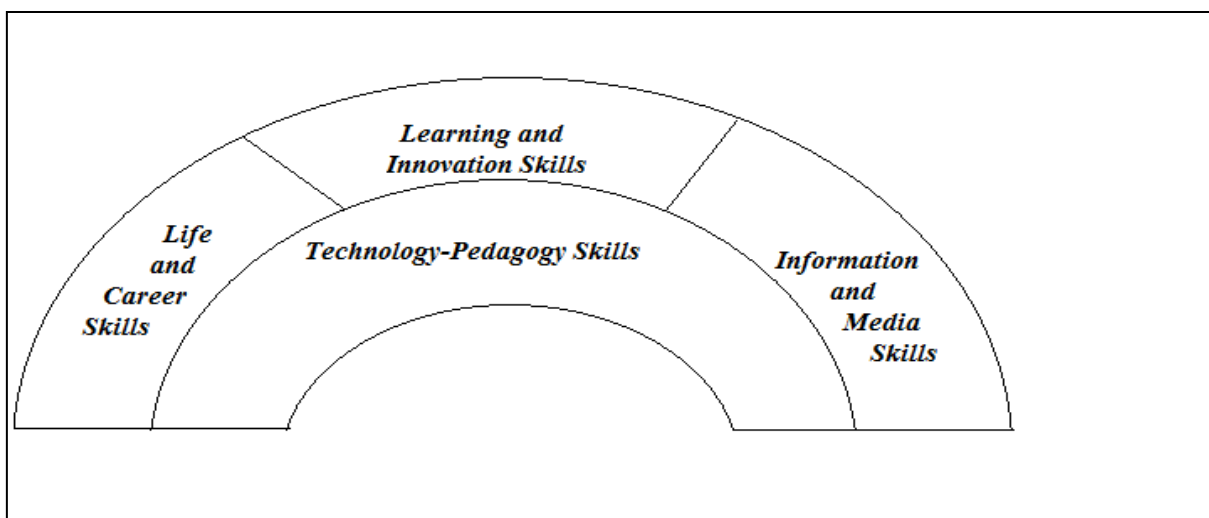
Figure 6.2 Technology-Pedagogy Skills (Adapted from the Partnership for 21st-century Skills, 2014).

➤ *Information and media literacy skills*: Sergeant (1999:76) posits that "many students rank acquisition of computing skills alongside the acquisition of

English language as essential for survival in the modern world**"**. Therefore, through the integration of online teaching materials in ESP teaching, ESP learners are expected to acquire expertise in how to use and evaluate new technologies and analyze data.

➤ *Learning and Innovation Skills:* ESP teachers are required to develop their learners' abilities and prepare them for real-life situations. This category includes:

1. Communication skills: the use of online teaching materials promotes learners' interaction and exchange of data, and enables them to express themselves through videos, e-mails, blogs, and so forth. In fact, the use of online teaching materials ensures exposure to the English language. Moreover, these teaching materials widen the ESP learners' vocabulary and put it into practice by applying them in real contexts.

2. Problem solving skills: ESP learners may confront different technical problems. Therefore, the integration of online teaching materials will enable ESP learners to learn to manipulate several online tools and functions, to identify conflicts and problems in authentic situations, and to try to find solutions to solve them.

3. Critical thinking skills: the use of online teaching materials **"**supports and challenges the students' thinking and encourages them to test their ideas against alternative views and alternative contexts**"** (Mandernach, 2006:43).

4. Subject-specific and higher-order skills: the use of online teaching materials in the ESP course will promote both the ESP teacher and students' knowledge about the scientific field in relation to language learning and enhance higher-order skills such as "reflexive thinking, learning and self-organization"(Heid et al., 2009:87).

5. Meta-cognitive skills: the learners will acquire higher-order mental skills such as managing   time,   mental   planning,   self-monitoring,   self-reinforcement...etc.

Furthermore, the learner will be able to plan, monitor and evaluate his learning process.

> ➢ *Life and Career Skills:* through the use of new technologies, manufacturing engineering students will be prepared to act as global citizens and face any difficulties in their future career. Blended learning enables ESP learners to enhance leadership, take decisive responsibilities, and promote their ability to participate in collaborative and cooperative work. Furthermore, these tools will offer **"a feeling of community between the members of the class"** (Stanley, 2005). In fact, ESP learners will listen to their mates' views, make comments, and therefore exchange ideas.

6.8 Integration of the Language Skills in Blended Learning

The development of the students' four language skills in addition to grammar and vocabulary in order to communicate effectively in the target situation is regarded as the ultimate objective of ESP teaching and learning. Unlike the traditional classroom, in the context of blended learning, these skills can be either separated or integrated depending on the students' needs. Thanks to the internet that the students and teachers are exposed to a variety of teaching and learning sources.The latter includes authentic texts, audio-visual materials, videos, websites, and so forth. In this regard, Vaičiūnienė and Užpalienė (2010: 95) assert that :

> The variety of internet-based text types means that it is easier to find something that will interest the learner and may even encourage for further reading, listening or watching. It can also promote other skills such as skimming/scanning, extensive/ intensive reading, summary, essay, email writing, outlining, mapping, sorting, adding information and may result in oral performance, such as newscasts, conversations, interviews, presentations, lectures, reports, etc.

Teaching the four language skills is of paramount importance in the ESP process. This is why the investigator recommends that the ESP blended course

designers should deliver a variety of activities that can help the learners to promote their language skills through a multitude of online materials as a way to motivate the students and enhance their autonomy.

6.8.1 Reading in Blended Learning

Dudley-Evans and St John (1998: 96) confirm that one of the revolutionary evolutions in reading is the shift from the text as being a linguistic item to the text as a vehicle of information.This implies that extracting knowledge is more important than studying the language. In the context of ESP, learners are exposed to a variety of text genres in accordance with their field of study. The materials may include manuals, reports, articles, brochures, letters, instructions, and so on. Accordingly, the choice of texts needs to be shared between the ESP teacher and the subject-specialist and valued for its relation to the students' needs.Therefore, learner-determined reading materials which are related to the integration of online sources are recommended due to the fact that they enhance learner-centeredness.

The act of reading covers both top-down and bottom-up processing. In the first, the learners are required to formulate the general idea of the reading passage while in the second, they are asked to concentrate on each item in order to construct the understanding of the whole unit. Other strategies such as silent and reading aloud are applied in a blended environment. Silent reading is advised as an online task and reading aloud is acknowledged to be performed face to face as it enables the assessment of the students' pronunciation, intonation and fluency. In blended learning, intensive reading is advised to be performed in the classroom. The teacher guides and offers instructions to the learners to enable them understand the reading material. On the contrary, extensive reading is conducted online thanks to the variety of materials that the internet provides.

Effectively, the main objective of integrating reading in blended learning is to develop the students' reading sub-skills such as :

1.Selecting what is relevant for the current purpose.

2.Identifying the topic

3.Skimming for content and meaning, for general information

4.Scanning for specific information

5.Reading for detailed information (description of scientific procedures)

6.Predicting, inferring and guessing

7.Identifying organizational patterns typical of the register

8.Interpreting texts (readers are able to understand what the writer is implying)

<div align="center">(Dudley-Evans and St John, 1998: 96; Harmer, 2005:202)</div>

To achieve the above objectives, the teacher assigns a variety of tasks that encourage interaction between teacher and students and among the learners themselves through questions and answers. Tasks related to grammar and vocabulary are also integrated. Blended ESP reading activities may include :

- True-false responses

- Multiple choice responses

- Filling in the gaps with the offer of words

- Cloze texts where every word is replaced by a blank

-Reordering jumbled paragraphs (sentences, words)

- Matching terms and their definitions

<div align="center">(Čechová, 2010: 53, Harmer, 2005: 220; Mothejzíková, 1988: 169)</div>

6.8.2 Writing in Blended Learning

Writing is regarded as one of the most challenging tasks in the field of ESP (kavalauskiene 2010, Dudley-Evans and St John, 2005).It covers a set of processes such as planning, drafting and revising. Studies prove that ESP learners face many difficulties when performing writing activities. The causes are attributed to lack of self-confidence, anxiety and absence of a motivating environment due to traditional teaching mode.As a solution to overcome the situation, blended learning ensures a context for writing practice in terms of online sources, authentic texts, and manufacturing engineering related documents.

In fact, the integration of blended learning in writing practice enables the ESP learners :

1. to enhance their writing skills,
2. to express themselves and have control of what they write, i.e., promote their grammatical accuracy in a writing space,
3. to promote their subjectivity and creativity,
4. to enlarge their exposure to several facts ,
5. to synthesize their own perspective
6. to write a variety of text genres,
7. to perform simulation-based tasks ,
8. to be exposed to different writing mediums,
9. to write, revise, publish and edit,
10. to have a readership,
11. to develop rhetorical awareness by looking at model texts (Dudley-Evans and St John, 2005: 118)
12. to drafting a piece of writing ,
13. to order information,
14. to review and assess impact ,
15. to generate more ideas ,
16. to evaluate.

Accordingly, ESP teachers may assign a set of activities to achieve the above objectives. These may include :

- writing reviews, reports, letters,
- writing university scholarship online applications, online application letters and CVs for jobs, and product description,
- filling in the blanks,
- punctuating a text ,

Regarding the way in which these activities are performed, internet provides a wide range of interactive online materials such as wikis, blogs, and web quests. They serve as **"valuable tools for improving writing skills in a foreign language"** (Kavaliauskiene, 2010:1). In the ESP course, this type of teaching materials creates immediate online publishing, readership, and a context for students' written performances. They promote the learners' literacy skills,i.e., writing and reading, and offer them **"many opportunities to read, to write, to listen to, and to discuss oral and written English texts"** (Erben, 2009: 132).

6.8.3 Speaking in Blended Learning

In today's job market, speaking is considered as one of the most important requirements for work opportunities. In the context of ESP, speaking refers to the "spoken language in various academic [and professional] settings" (Jordan 1997: 193) where both listening and speaking are employed (Dudley-Evans and St John,2005: 105). Thus, teaching the speaking skill aims to enable the ESP learners :

1. develop active listening abilities ,
2. build relationships such as discussing discipline related matters (Dudley-Evans and St Johns,2005),
3. reflect their ideas, emotions, attitudes and impressions,
4. engage in communicative events,

speaking skills can be performed in blended learning. ESP teachers may deliver tasks such as :

-asking and answering questions in lectures, seminars and meetings,

-making oral presentations

-one-on-one spoken communication in workplace settings

-turn-taking and role playing

-preparing talks

-simulation and online discussions.

In a blended environment, the speaking tasks are performed via a variety of online tools. The latter covers chat rooms, Facebook, messenger, Skype, forums, video conferencing. These online materials enable the ESP students to practise **"a goal oriented communicative activity where the focus is on developing the learner's ability to use the language fluently and meaningfully"** (Willis, 1996:36).They also serve as a means to make the learners produce the language, and promote communication and interaction either intermittently i.e. synchronous communication , or with a time delay i.e. asynchronous communication, and "provides English language learners with an opportunity to interact in English and in turn develop oral proficiency and give them time to use their English productively"(Erben,2009:128).

6.8.4 Listening in Blended Learning

Kavaliauskiene (2011 :1) confirms that in language teaching, listening has not generated much importance though students spend more than forty percent of daily classroom communication in listening. The latter involves both top-down strategies and bottom-up strategies (The National Capital Language Resource Center, 2004; Ždímalová, 2011). The listener is the cornerstone in the top-down listening as he invests his background knowledge of the subject matter to understand and interpret what he hears and predict what will come next using strategies such as listening for the main idea, predicting and making inferences. However, the bottom-up listening is based on a text. Harmer (2005: 201) asserts that the focus is on separate words and phrases which the listener strings together to form a whole unit and achieve understanding.Thus, listening for specific details and recognizing words and word-order patterns are employed.

In an ESP blended environment, while intensive listening is practised in the classroom where the learners listen for general understanding of language patterns,

extensive listening is done online as it is performed for pleasure and the learners choose what to listen . Thanks to the internet which becomes **"**the goldmine of listening materials**"** (Peterson 2010) that listening activities such as :

2. putting words and sentences in the right order,

3. true-false responses ,

4. Multiple choice responses ,

5. filling in the gaps,

6. completing sentences and texts,

7. listening to lectures, seminars, oral presentations, and one-on-one dialogues and discussions in academic or professional settings.

(Harmer, 2005; Kučírková, Vogeltanzová and Jarkovská, 2011, Jordan 1997)

may be assigned to enable the ESP learners :

- identify the purpose of a listening script,

- identify the topic,

- recognize key lexical items related to the subject/topic ,

- guess the meanings of unknown words from context,

- understand the role of logical connectors,

- listen for gist (for general understanding) ,

- listen for specific information.   (Dudley-Evans and St John, 1998: 96)

Online materials such as podcasts, vodcasts , audio blogs, moodle recordings and YouTube enable the learners to be exposed to the target language and therefore to the target culture. In fact, they give the learners the opportunity to **"**comprehend and listen to extensive English input more than they can produce the language**"** (Erben, 2009:141). The students can perform listening tasks directly and at their own pace, listen to native speakers and enrich their English vocabulary.   They also retain the information and promote their listening skills and visualization, i.e., they can listen and see the person who produces this file.

6.9 Assessment in Blended Learning

Assessment is of paramount importance in ESP. Similar to the traditional way, assessment in blended learning gives the learners the opportunity to demonstrate what they learnt. Thus, the bulk of online materials provided by the internet **"sustain equitable ways to evaluate the learning progress, and give English Language Learners opportunities to notice their errors and to correct their English"** (Erben, 2009:150). E-assessments allow the teachers to evaluate the learners continuing progress and performances in classroom assignments. This type of e-tools comprises three components: e-portfolios, e-quizzes and e-rubrics. They are used to measure the learners' gained competencies, promote their critical thinking, and develop their writing and media communication skills.They serve as the guidelines that ESP teachers use to evaluate their students' performances .This type of online materials helps the learners to do assignments and enables the instructors to ensure objectivity in their grading.They are also used for assessing and evaluating the learners' progress. These e-materials are regarded as **"an incentive for students to keep up with the materials between exams and can provide learners with valuable formative feedback on what concepts they need to review"** (Cooper et al., 2007:1).

6.10 Conclusion

In this concluding chapter, the investigator aimed at proposing some remedial suggestions that may help and facilitate the integration of blended learning and technology materials in the ESP course in the Department of Manufacturing and Engineering Sciences at Tlemcen University. General recommendations concerning the introduction of ESP courses as compulsory module, time-load, development of the four skills, and the need for a specific teacher training in how to produce their teaching materials were suggested.

The researcher devoted a part to recommend for the encouragement of integrating educational technologies in the ESP course and ESP teacher training, and the need for redefining the role of the ESP teacher. Then, some principles of

how to select the most appropriate online materials, and the practical skills that should be promoted throughout the use of blended learning were proposed.

GENERAL CONCLUSION

GENERAL CONCLUSION

The present research work revealed that the ESP teaching and learning situation in the Algerian universities in general and the Department of Manufacturing and Engineering Sciences at Tlemcen University in particular deserves more attention. The approach to ESP instruction is not adequate and seems not to cater for the students' needs. The ESP course occupies the less privileged position compared to the other modules. This fact is noticed from the rate of absences and the coefficient of the module. In the light of the absence of an elaborated syllabus, ESP instruction is assigned to untrained and unqualified teachers who find themselves delivering General English content to students' whose learning objectives are not clearly identified. That is why immediate actions and effective remedies must be provided to overcome the problems of ESP teaching situation in terms of theory, practice and methodology.

Consequently, the current study aimed to portray the present situation of ESP teaching in the Department of Manufacturing and Engineering Sciences at Tlemcen University. It tended to describe the methodologies, techniques and teaching materials used by EST teachers to conduct their courses. Moreover, the purpose of this research work was to identify and analyze first year Master's students' needs for learning English.. This investigation also aimed to determine the stakeholders' attitudes towards the integration of blended learning in ESP instruction as it plays a vital role in facilitating the teaching process, overcoming the ESP learners' low achievement by promoting their linguistic and communicative competencies, and meeting their needs to access authentic information intended for technological and scientific fields.Thereafter, an ESP blended course was designed to satisfy the needs of Manufacturing and Engineering Sciences students.

Therefore, the study was organized into six chapters. The first chapter represented a review of literature of the field of ESP covering its appearance, development, types, characteristics and the different criteria related to the ESP/EST teaching operation putting much stress on needs analysis process. The formulation of the ESP course goals and objectives , and the construction of content were also highlighted. The second chapter was a theoretical description and clarification of the process of ESP course design where the investigator proceeded to shed light on the approaches and parameters of this process. A section was devoted to describe the process of ESP materials design. The characteristics and advantages of blended learning were also tackled. Then,the researcher described the teaching situation in the department under investigation and portrayed the research design and the methodology followed to collect data.

While the third chapter was set for Needs Identification and Analysis where the investigator described the research methodology and explained how the data was analyzed and interpreted both quantitatively and qualitatively, the fourth chapter explored the findings to design an ESP blended course, outlined its objectives and illustrated a sample lesson plan. The fifth chapter provided a detailed account for the experimentation of the course. The research method , the population and the instruments were described. Then, the results of the tests and the course evaluation checklist were analyzed and discussed to help the investigator check the feasibility of implementing a blended learning in the ESP course. The last chapter was devoted to make recommendations and suggestions regarding ESP instruction and the integration of blended learning in the ESP course.

Based on Basturkmen's (2013) model of needs analysis, the investigator opted for a case study research to analyze the present, target, learner-factor and teaching situations and identify the stakeholders' attitudes towards the integration of blended learning in the Department of Manufacturing and Engineering Sciences at Tlemcen University. Accordingly, two questionnaires, one and two semi-structured, structured interviews were conducted with students, ESP teachers, subject-specialists, administrators and workplace managers. The findings were used to

design an ESP course. The latter was implemented and tested using a pretest, a post-test and an evaluation checklist . The results obtained from the aforementioned research instruments were used to confirm or disconfirm the four hypotheses formulated in the current study.

Regarding the first hypothesis, language teachers' and students' questionnaires, in addition to subject-specialists', administrators' and the workplace managers' interviews revealed interesting results . It was shown that students were aware of the importance that English plays in their academic and professional careers. The findings highlighted that the students perceived speaking and listening as important skills to be enhanced as they need English to speak and communicate effectively with foreign colleagues. Moreover, they need to write technical reports, read Manufacturing and Engineering related books and articles and exploit study and job-related literature. In fact, these results confirm the first hypothesis which assumes that Manufacturing and Engineering students need to learn English in order to develop the four language skills to be able to exploit the literature related to their area of specialism and to be active participants in international manifestations.

Concerning the second hypothesis , it suggests a blended course within needs-based approach would help improve the students' English proficiency as it would extend teaching and learning time . It was noticed that the students demonstrated a low proficiency level in English. They needed to develop the four language skills with more focus on speaking and listening. Thus, they required an ESP course that would enable them to gain command on the language. It should permit them to understand, produce and manipulate their jobs correctly both in spoken and written English. The teacher has to assign a set of activities related to grammar, vocabulary, reading, writing and listening by using new educational technologies. In this regard, they showed positive attitudes towards the integration of blended learning in the ESP course which responds to their needs. Then, the second hypothesis is validated.

As far as the third hypothesis is concerned, the obtained results showed that the stakeholders were aware of the importance of integrating blended learning when

teaching and learning ESPas a way to create a context for English language teaching and to enhance the student-centered approach. It also helps to compensate for the limited outside exposure to the target language. Therefore, the third hypothesis which stipulates that the stakeholders are aware of the importance of integrating blended learning in the English language course as a way to ensure outside practice of the language and as an effective instrument to build a learner's autonomy is corroborated.

Regarding the last hypothesis which holds that such a course can help the students improve their language competencies, develop their content knowledge and overcome the problem of time load, the students' scores in the test and their responses to the evaluation checklist demonstrated that the integration of blended learning helped them in many aspects. It gave chance to perform a wide range of tasks through online materials. It helped them to be exposed to a variety of authentic texts and topics that widened their knowledge in the subject matter. Moreover, the students' listening and speaking skills were promoted thanks to the multitude of instruction they were given. Likewise, the writing and reading assignments enabled the informants to promote their writing and reading abilities. They equipped them with the necessary writing techniques and reading strategies which implicitly govern and straighten their appropriate use of English in terms of grammar, pronunciation and vocabulary. These results confirm the fourth hypothesis.

It is worth mentioning that the researcher had basically faced some limitations: the small number of informants which cannot ensure generalizations and representativeness as the questionnaire was administered to 120 students and the experiment was conducted with only 25 learners. This makes the results not generalizable and subject to verification. The study, therefore, has to involve more participants from the three cycles. Furthermore, lack of control over the course instruction was also a problem that the investigator faced. This was because the researcher did not teach the content . The learners were instructed by their ESP teacher during the experiment. In addition to the limited range of online supports from the part of the students and the teacher's lack of expertise in information

sciences, the course was implemented only for one semester, the fact that affects the evaluation of the effectiveness of the program. Another problem that should be highlighted is the lack of literature on postulating the integration of blended learning in ESP teaching. All what was published consists of detailed accounts of the importance and advantages of blended learning in the field of language teaching. However, no practical explanation about how this mode of instruction and parameters underlying its use in an ESP course was provided.

The researcher recommends that further research based on more qualitative methods such as observations can be conducted. Suggestions on the design of a blended learning framework, models for online assessment, and possibilities for the integration of web-based instruction in teaching each skill separately can be explored. Comprehensive study of the integration of blended learning in the ESP course in other departments is recommended in order to have an overview of the opportunities available through the use of these materials. Another phase of investigation would be the analysis of team teaching and collaboration between language teachers and subject specialists.

To sum up, the researcher sheds light on the urgent need for an intensive teaching of ESP in Algerian faculties in order to answer the demands of the globalization process. Moreover, the researcher insists on the need for teacher training and financial support in order to equip the learners with suitable materials that will cater for their needs and promote their English proficiency level. In today's digital era, the use of technology in the context of ELT in general and ESP in particular is highly recommended. When new educational technologies are included in the ESP course, learners will reinforce their ability to use English rather than enhancing their memorization of grammar rules and vocabulary lists. These tools are regarded as a source for authentic materials which enables the students to use the language and allows the ESP teachers to check and enrich their content knowledge in the learners' area of specialism.

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APPENDICES

APPENDIX A
ELT Tree
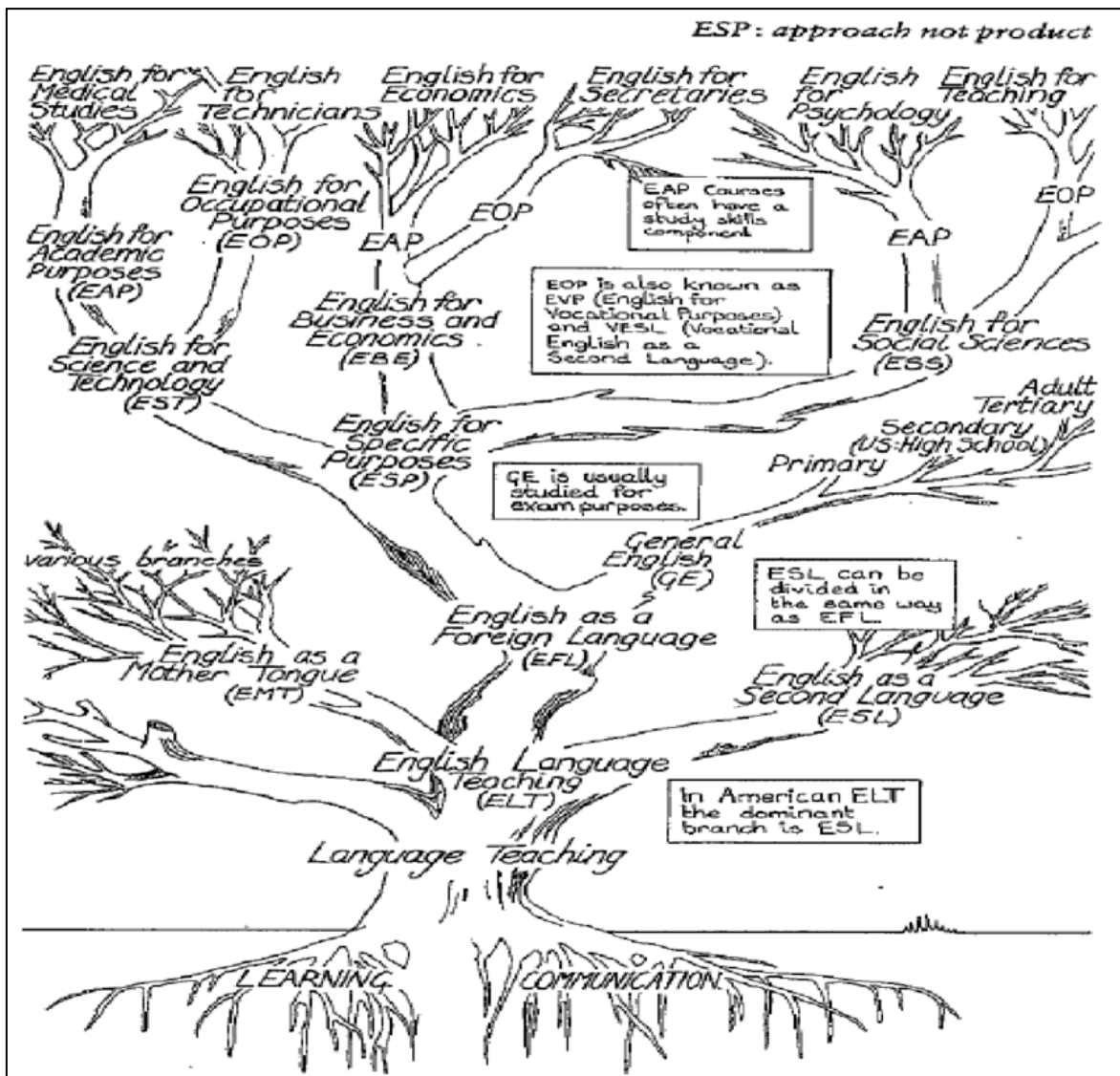
Figure Tree of ELT (Hutchinson and Water,1987 :17)

APPENDIX *B*

Students' Questionnaire

STUDENTS' QUESTIONNAIRE

This questionnaire is part of a project (doctorate thesis) being carried out to analyze the students' both English language target and learning needs at the Department of Engineering and Manufacturing Sciences at Tlemcen University and to identify their attitudes towards the integration of blended learning in the English course. I would be very grateful if you could answer the following questions (you can tick more than one answer):

Part one: Students' Profile

1. Gender: male ☐   female ☐

2. Age: …….years

3. How long have you been learning English at university?   Years

4. Do you think that learning English is important to your studies and future career?

   Yes ☐   No ☐

Why?

………………………………………………………………………………
………………………………………………………………………………
………………………………………………………………………………

5. How useful is the English language course in regard to your English language needs?

   Very useful ☐   Useful ☐   Of little use ☐   Not useful ☐

6. According to you, what is your proficiency level in English?

   a) Beginner ☐   b) Intermediate ☐   c) Advanced ☐

Part Two: Present Situation Analysis

7. Why do you need to learn English? Give examples of situations where you will use English.

………………………………………………………………………………
………………………………………………………………………………
………………………………………………………………………………
………………………………………………………………………………

8. What specific areas of English do you need to improve before you leave university?

…………………………………………………………………………………
…………………………………………………………………………………
……………………………………………………………………………….

9. How do you evaluate your level in the following skills?

Language Skills	Very weak	Weak	Average	Good	Very good
Speaking					
Listening					
Writing					
Reading					
Pronunciation					
Vocabulary					
Grammar					
Communication					

10. In which of the following tasks do you think you need more training?

a) Speak about Engineering and Manufacturing related topics in English
b) Write about Engineering and Manufacturing related topics in English
c) Read Engineering and Manufacturing related books and articles
d) Translate Engineering and Manufacturing related materials
e) Pass English examinations

Part Three: Target Situation Analysis

11. Do you make any efforts to improve your English?

Yes [ ]   No [ ]

If yes , how?
…………………………………………………………………………………
…………………………………………………………………………………
…………………………………………………………………………………

12. Do you practice English outside the school?

Yes [ ]   No [ ]

13. Which of the following skills will be used more in your future career?

a) Speaking ☐   b) listening ☐   c) Writing ☐   d) Reading ☐

14. What English language sub-skills do you think are important to know in order to function effectively in the target situation?

	English language skills	Very important	Important	Not important
Reading sub-skills	Reading textbooks			
	Reading technical articles in journals			
	Reading technical manuals			
	Reading course handouts			
	Reading texts on the computer			
	Reading instructions for assignments / projects			
	Reading instructions for labs			
	Reading study notes			
Writing sub-skills	Writing lab reports			
	Taking notes in lectures			
	Writing assignments			
	Writing field-trip reports			
	Writing short projects			
	Writing test/exam answers			
Listening sub-skills	Listening to instructions for assignments			
	Following lectures			
	Following question/answer sessions in class			
	Listening to spoken presentations			
	Listening to instructions and explanations in labs			
Speaking	Participation in discussions			

sub-skills	Asking questions in class			
	Giving spoken presentations			
Others specify	…… ……			

Part Four: Learner factor Analysis

15. How would you describe your attitudes towards learning English at the beginning of your studies?

Favorable   ☐   Unfavorable   ☐

16. Would you please indicate your opinion concerning the following statements?

Items	Strongly agree	Agree	Disagree
I learn English because it is a compulsory module			
I enjoy learning English very much			
I don't enjoy learning English, but I know that learning English is important for me			
I need English to obtain my degree			
I am learning English to become more educated			
English is important to me because it will broaden my view.			
The main reason I am taking this class is that I want to improve my English			
Being able to speak English will add to my social status			
I need English in my target career			
I learn English because it helps me in my studies			
I need to be able to read textbooks in English			

The main reason I need to learn English is to pass examination			
I need to learn English to be able to pass international tests such as TOEIC			
If I learn English better, I will be able to get a better job			
Increasing my English proficiency will have financial benefits for me			

17. Which aspects of the English language course would you suggest that you should have teaching in? (You can choose more than one)

a) Grammar ☐ b) Technical vocabulary ☐ c) General vocabulary ☐

d) Speaking skills ☐ e) Writing skills ☐ f) Communication skills ☐

g) Listening comprehension ☐ h) Reading comprehension ☐

Others (please specify)

……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

18. Which type of English language course would you like to learn?

a) English for academic purpose (research and studies) ☐

b) General purpose English ☐

c) English for occupational purposes (work) ☐

e) Mixture of them ☐

19. Which of the following ways will suit you to learn English?

a) Pair work ☐ b) Whole class ☐ c) Group work ☐ e) Individual work ☐

Part Five: Teaching Situation Analysis

20. At what years of study do you have the English course? ....year

21. What is the nature of the English course in your department?

   Compulsory ☐   Optional ☐

22. How many hours are devoted to the English course per week? ……….. Hour

23. Do you find the number of hours provided for English learning?

 a) Sufficient ☐   b) Just reasonable? ☐   c) Not sufficient? ☐

24. Do you use any books or documentation in the English course?

Yes ☐   No ☐

25. Does your teacher use technology when teaching English?

Yes ☐   No ☐

If yes, would explain which type of technology does he use?

……………………………………………………………………………………
……………………………………………………………………………………
………………………………………………………………………………….…

Part Six: Students' Attitudes Towards the use of a Blended Course

26. Do you think that learning English through a blended course is helpful?

Very helpful ☐   helpful ☐   Not helpful ☐

27. Do you see advantages in using blended courses to learn English?

Yes ☐   No ☐

Please justify

……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

28. Please, add any comments about using blended courses in learning English?

……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

Thank you very much!

APPENDIX C
ESP Teachers' Questionnaire

Language Teachers' Questionnaire

This questionnaire is part of a project (doctorate thesis) being carried out to have an overview of the teaching of the English language at the Department of Engineering and Manufacturing Sciences at Tlemcen University and to identify the language teachers' attitudes towards the integration of blended learning in the English course. I would be very grateful if you could answer the following questions (you can tick more than one answer):

Part one: **Teachers' Profile**

1. Gender: male ☐   female ☐

2. Academic Degree

License ☐   Magister ☐   Doctorate ☐

3. Field of study:………………………………..

4. Your status in the faculty

    Full-time teacher ☐   Part-time teacher ☐

5. For how many years have you been teaching English at university? ☐ Years

6. For how many years have you taught EST? ☐ Years

7. How long have you been teaching in the Department of Manufacturing and Engineering Sciences? ☐ Years

8. Have you taught in other departments?

  Yes ☐   No ☐

If yes, which one(s)

……………………………………………………………………………………
……………………………………………………………………………………
…………………………………………………………………………………….

9. Did you have any specialized training in teaching ESP?

  Yes ☐   No ☐

 If yes, would you describe it?

…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………..
…………………………………………………………………………………………
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If no, do you think that you need it?

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…………………………………………………………………………………………
…………………………………………………………………………………………..
…………………………………………………………………………………………
…………………………………………………………………………………………..

Part Two: Present Situation Analysis

10. Do you teach more often?

    a) General English ☐

    b) English for Engineering and Manufacturing ☐

    c) Both of them ☐

11. Do you tend to concentrate more specifically on?

    a) General grammatical notions ☐   b) Grammatical structure related to ☐ science

    c) Lexical items related to GE ☐   d) Lexical items related to science ☐

12. Which of the following skills do you tend emphasize? Please classify in order of importance from 1 for the most important to 4 for the least important.

Listening ☐   Speaking ☐   Writing ☐   Reading ☐

13. In your course, do you use translation?

    Yes ☐   No ☐

14. What aspects do you tend to focus on when translating?

    Grammatical structures ☐   Lexical items ☐

Others please specify

…………………………………………………………………………………………
…………………………………………………………………………………………

....

....

Part Three: Learner Factor Analysis

15. How many students are there in your class? ....

16. Is attendance to the English course compulsory?

Yes [ ]   No [ ]

17. How motivated are your students?

Very motivated [ ]   moderately motivated [ ]   Not motivated [ ]

18. Do you know why?

Yes [ ]   No [ ]

Please justify:

....

....

....

....

Part Four: Teaching Situation Analysis

19. What teaching method do you use?

....

....

....

....

....

20. What teaching materials do you use?

....

....

....

....

22. Do you follow an official programme?

Yes ☐   No ☐

If yes, what is its source?

……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………

23. Do the English course take place in the form of:

Cours ☐   TD ☐   Cours &TD ☐

24. in the course, do you use?

a) Textbooks related to GE ☐   b) Textbooks related to science ☐

c) Self-designed materials ☐   d) Materials brought by students ☐

25. Do you meet teachers of Manufacturing and Engineering to discuss and comment your courses content according to the whole program of speciality?

Yes ☐   No ☐

26. Would you say that the department you teach in encourages English teaching and learning?

Yes ☐   No ☐

27. How far do you agree with these ideas?

Ideas	Strongly agree	Agree	Disagree
More time should be allotted to English instruction			
Teaching should focus on the English needed			
Teaching should focus on General English			

Part Five: Teachers' attitudes towards using blended courses

28. Do you think that the use of a blended English course is helpful?

Yes ☐   No ☐

Why?

……………………………………………………………………………………
……………………………………………………………………………………
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……………………………………………………………………………………
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29. What do you expect your students to achieve when using blended courses?

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30. Please add any comments concerning the integration of blended learning in the English course.

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Thank you very much!

APPENDIX *D*

Subject-Specialists' Semi-Structured Interview

Subject-specialists' Interview

This research is carried out to have an overview of the teaching of the English language at the Department of Engineering and Manufacturing Sciences at Tlemcen University and to identify the language teachers' attitudes towards the integration of blended learning in the English course. I would be very grateful if you could answer the following questions:

1. Gender (Sexe):……………………………………………………………………
2. Age (Age): ……………………………………………………………………

3. Qualification (diplôme): ……………………………………………………………

4. Speciality (Spécialité): ………………………………………………………..

5. Module(s) taught (Module (s) enseigné): ………………………………...............
6. What does English present to you?
……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………......................................

7. Do you think that English is important for good academic performance in your discipline?
……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………
…………………………………………..……………………………………….....

8. In your teaching, have you ever been faced to situations in which English is used?
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……………………………………………………………………………………
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9. In your courses, do you refrain from recommending sources in English because of the difficulties students would have in understanding?
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……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

10. Do you think that the lack of English competence constitutes a handicap for your professional career?

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11. In your opinion, is knowledge of English a favourable factor in the competition in the labour market in your field?

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12. Do you think that your students are well prepared to use English to meet their work requirements?

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……………………………………………………………………………………………………
……………………………………………………………………………………………………
……………………………………………………………………………………………………
………………………………………………………………………………………………………

13. According to your experience, what do you suggest to improve English language teaching?

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……………………………………………………………………………………………………
……………………………………………………………………………………………………

Thank you very much!

APPENDIX *E*

Administrators'

Semi-Structured

Interview

Administrators' Interview

This research is carried out to have an overview of the teaching of the English language at the Department of Engineering and Manufacturing Sciences at Tlemcen University and to identify the language teachers' attitudes towards the integration of blended learning in the English course. I would be very grateful if you could answer the following questions:

1. Gender: ……………………………………………………………………….

2. Age: …………………………………………………………………………

3. Qualification: …………………………………………………………………

4. Have you taught in the Department of Manufacturing and Engineering Sciences? If yes, for how many years?

5. Have you learned English previously?

6. Do you make any effort to improve your English proficiency level?

7. What percentage of your work is conducted in English?

8. Is it important to have a high level of English proficiency to perform your job effectively?

9. What does the government want these students to be able to do when they learning English at university and when they graduate?

10. According to you, what are the main objectives of the English course?

11. Do you think that students encounter any problems while learning English at your department?

13. How much are you satisfied with your ESP teachers?

14. What are the criteria through which their work is evaluated?

15. What suggestions would you like to make for the improvement of the ESP course at your department in order to make it more effective and relevant to your students' needs?

Thank you very much!

APPENDIX *F*

Workplace Managers' Structured Interview

Workplace Managers' Interview

The primary purpose of the present structured interview is to identify the importance of the English language in professional settings. It seeks to analyze the managers' needs and draw clear conclusions about the requirements of the target situation in terms of English language use. I would appreciate it if you could take time to answer a few short questions. Your comments will be of great help.

1. Gender: Male   Female

2. Age: ………………years old

3. Degree: License [ ]   Master's [ ]   Magister [ ]   Doctorate [ ]

4. License Specialty:………………………..

5. Master's Specialty:………………………..

6. Graduation Department:………………………..

7. Place of Work:……………………………

8. Position:……………………………………….

9. Status: Part-time [ ]   Full-time [ ]

10. What does English present to you?

…………………………………………………………………………………
…………………………………………………………………………………
…………………………………………………………………………………
…………………………………………………………………………………

11. How do you rate your proficiency level in the English language?

…………………………………………………………………………………
…………………………………………………………………………………

12. Do you think that English is important for good performance in your job?

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…………………………………………………………………………………
…………………………………………………………………………………
…………………………………………………………………………………
…………………………………..…………………………………………………...

13. In your profession, have you ever been faced to situations in which English is used?

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

14. Do you think that the lack of English competence constitutes a handicap for better performance in your profession?

…………………………………………………………………………………………

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…………………………………………………………………………………………

…………………………………………………………………………………………

15. In your opinion, is knowledge of English a favourable factor in the competition in the labour market in your field?

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

16. Do you think that you are well prepared to use English to meet the work requirements?

…………………………………………………………………………………………

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…………………………………………………………………………………………

17. According to your experience, what do you suggest to improve English language teaching?

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Thank you very much!

APPENDIX G
Pretest

LISTENING TEST

Part One: *Photographs*

Instruction: Listen to the four statements and select the one that best describes each picture.

(A) They're leaving the room.

(B) They're turning on the machine.

(C) They're standing near the table.

(D) They're reading the newspaper.

(A) She's speaking into a microphone.

(B) She's putting on her glasses.

(C) She's studying from a book.

(D) She's using a microscope.

Part Two: *Question Response*

Instruction: You will hear two questions or statements and three responses spoken in English. Select the best response to each question or statement.

1. Is anyone sitting here?

   (A) No, it's not here.

   (B) Sorry, I'm waiting for a friend.

   (C) She's sitting over there.

2. Where is the meeting room?

   (A) To meet the new director.

   (B) It's the first room on the right.

   (C) Yes, at two o'clock.

Instruction: Listen to the conversation between two people and answer the three questions below.

Woman: I think I'll have to take the train to the regional sales meeting up in the city next week.

Man: Don't you usually drive when you go to those meetings? I thought you didn't like to take the train.

Woman: I don't, but the highways being repaired, and I'm afraid I might be late if I have to make a detour through an area I don't know very well.

Man: You're right. And it'll be expensive to park up there, too.

---

1. Why is the woman going to the city?

    (A) To attend a sale

    (B) To go to a meeting

    (C) To get her car repaired

    (D) To go on a tour

2. How will she get there?

    (A) By car

    (B) By bus

    (C) By train

    (D) By airplane

3. What is the problem?

    (A) The trains are often late.

    (B) The meeting may be canceled.

    (C) The tour is expensive.

    (D) The roads are being fixed.

Instruction: Listen to the short talk given by a single speaker and answer the three questions below:

> Welcome to the telephone customer services of Western Inter-Bank. For English, press 1. For Spanish press 2. For French, press 3. For Japanese, press 4. [pause tone] WIB is here to serve your banking needs. If you need information about an existing account, please press 1. To open a new account, please press 2. For general bank information, press 3. [pause- tone] you are one of WIB's valued customers. For the balance in your account, press 1. To change the way you receive bank statements, press 2. To order new checks, press 3. To speak to one of our bank advisors, please press 4. To return to the menuing system, press 5. Thank you for calling Western Inter-Bank.

1. Where does Western Inter-Bank operate?

            (A) In the USA

            (B) In Japan

            (C) In Europe

            (D) In all three areas

2. Who is the caller using the telephone menu system?

            (A) A new, English-speaking customer.

            (B) A Spanish speaker interested in a new account.

            (C) An English-speaking owner of an old account.

            (D) An existing Japanese customer.

3. What must the caller do to return to the main menu system?

            (A) Choose the language he/she best understands.

            (B) Go through the entire list of menu choices.

            (C) Opt for general bank information.

            (D) Press any number except 5.

(Adapted from *TOEIC Test of English for International Communication, 2005*)

READING TEST

PART 1: *Incomplete Sentences*

Instruction: A word or phrase is missing in each of the sentences below. Four answer choices are given below each sentence. Select the best answer to complete the sentence.

1. Register early if you would like to attend next Tuesday's ------- on project management.

   (A) seminar   (B) reason   (C) policy   (D) scene

2. Paul Brown resigned last Monday from his position as ------- executive of the company.

   (A) fine   (B) chief   (C) front   (D) large

3. The organizers of the trip reminded participants to ------- at the steps of the city hall at 2:00 P.M.

   (A) see   (B) combine   (C) meet   (D) go

Part Two: *Text Completion*

Instruction : Read the text on the following page. A word or phrase is missing in some of the sentences. Select the best answer from the four choices given to complete the text .

Ms. Monica Eisenman
555 King Street
Auckland, New Zealand
Dear Ms. Eisenman,

  I am ------- **1.** (A) pleased   (B) pleasing   (C) pleasant   (D) pleasure to confirm our offer of part-time employment at Western Enterprises. In your role as research assistant, you will report to Dr. Emma Walton, who will keep you informed of your specific duties and projects. Because you will be working with confidential information, you will be expected to ------- **2.** (A) follow   (B) advise   (C) imagine (D) require the enclosed employee code-of-ethics agreement.

  As we discussed, you will be paid twice a month ------- **3.** (A) accords (B) according   (C) according to (D) accordance with the company's normal payroll schedule. As an hourly employee working fewer than twenty hours per week, you will not be ------- **4.** (A) tolerable   (B) liberal (C) eligible   (D) expressed to receive paid holidays, paid time off for illness or vacation, or other employee benefits. Your employment status will be reviewed in six months.

  If you have any questions, please feel free to contact me. Otherwise, please sign and return one copy of this letter. You may keep the second copy for your files. We look forward to working with you.
Sincerely,
Christopher Webster

Directions: Read the text below then select the best answer to each question.

The new economy has created great business opportunities as well as great turmoil. Not since the Industrial Revolution has the stakes of dealing with change been so high. Most traditional organizations have accepted, in theory at least, that they must make major changes. Even large new companies recognize that they need to manage the changes associated with rapid entrepreneurial growth. Despite some individual successes, however, this remains difficult, and few companies manage the process as well as they would like. Most companies have begun by installing new technology, downsizing, restructuring, or trying to change corporate culture, and most have had low success rates. About 70 percent of all change initiatives fail. The reason for most of these failures is that in their rush to change their organizations, managers become mesmerized by all the different, and sometimes conflicting, advice they receive about why companies should change, what they should try to accomplish, and how they should do it. The result is that they lose focus and fail to consider what would work best for their own company. To improve the odds of success, it is imperative that executives understand the nature and process of corporate change much better.
Most companies use a mix of both hard and soft change strategies. Hard change results in drastic layoffs, downsizing, and restructuring. Soft change is based on internal organizational changes and the gradual development of a new corporate culture through individual and organization learning. Both strategies may be successful, but it is difficult to combine them effectively. Companies that are able to do this can reap significant payoffs in productivity and profitability.

1. What is the article mainly about?

(A) Corporate marketing plans
(B) New developments in technology
(C) Ways for companies to increase profits
(D) How companies try to adapt to new conditions

2. The word "manage" in paragraph 1, line 6, is closest in meaning to

(A) correct   (B) attract   (C) handle   (D) regulate

3. According to the article, why do so many attempts to change fail?

(A) Soft change and hard change are different.
(B) Executives are interested only in profits.
(C) The best methods are often not clear.
(D) Employees usually resist change.

4. What is soft change based on?

(A) Changes in the corporate culture
(B) Reductions in company size
(C) Relocating businesses
(D) Financial markets

(Adapted from *TOEIC Test of English for International Communication,* 2005)

SPEAKING TEST

Part One: *Read a text aloud*

Instruction: Read the text aloud.

If you're shopping, sightseeing and running around every minute, your vacation can seem like hard work. To avoid vacation stress, come to the Blue Valley Inn on beautiful Lake Mead. While staying at our inn, you breathe clean country air as you view spectacular sights. With its spacious rooms, swimming pool and many outdoor activities, the inn is the perfect place for a vacation you won't forget. The Blue Valley Inn prides itself on the personal attention it provides to every guest. The Blue Valley motto has always been "A happy guest is our greatest treasure."

Part Two: *Describe a picture*

Instruction: Describe the following picture.

Part Three: *Respond to questions*

Instruction: Answer the following questions

Imagine that a Canadian marketing firm is doing research in your country. You have agreed to participate in a telephone interview about television viewing.

Question4: How   often   do   you   watch   television?

Question5: What   kinds   of   programs   do   you   usually   watch?

Question 6: Describe your favourite television program.

Part Four: *Respond to questions using information provided*

Instruction: Answer the following questions based on the information provided.

(Narrator): Hello, I'm calling about a conference on May 27 I saw advertised in the newspaper. It's about starting your own business. I was hoping you could give me some information.

STARTING AND MANAGING YOUR OWN BUSINESS

Date:	May 27
Location:	Bristol Office Building
Seminars:	9:00 A.M. Financing Your Business, Room 210—*Martha Ross, Certified Public Accountant*
	11:00 A.M. How to Promote Your Own Business, Room 312—*Howard Brown, Brown Publishers*
	OR
	11:00 A.M. Planning for Profit, Room 318—*John Phillips, Phillips Associates*
	1:00 P.M. Lunch*
	2:00 P.M. Sales Techniques Workshop, Room 246—*Helen King, West Side Consultants*
	4:00 P.M. General Discussion
Registration Fee:	Individuals, $95.00
	Members of the Business Information Center, $75.00

*Not included in registration fee.

Question 7: Could you tell me what time the conference starts and how long it will last?

Question 8: How much does conference attendance cost?

Question 9: I may not be available for the full day. Could you give me information about the activities in the morning, before lunchtime?

Part Five: *Propose a solution*

Instruction: Propose a solution to a problem presented to you.

Hi, this is Marsha Syms. Um, I'm calling about my bank card. I went to the bank machine early this morning, you know — the ATM (up speak) ... because the bank was closed so only the machine was open. Anyway, I put my card in the machine and got my money out....but then my card didn't come out of the machine. I got my receipt and my money but then my bank card just didn't come out. And I'm leaving for my vacation tonight so I'm really going to need it....I had to get to work early this morning, and couldn't wait around for the bank to open....Could you call me here at work, and let me know how to get my bank card back? I'm really busy today, and really need you to call me soon. I can't go on vacation without my bank card. This is Marsha Syms at 555-1234. Thanks.

Part Six: Express an opinion

Instruction: Give your opinion about a specific topic.

Question:

Some people prefer to take a job that does not pay well but does provide a lot of time off from work. What is your opinion about taking a job with a low salary that has a lot of vacation time? Give reasons for your opinion.

(Adapted from *TOEIC Speaking and Writing Sample Tests, 2008*)

WRITING TEST

Part One: *Write a sentence based on a picture*

Instruction: Write ONE sentence that is based on a picture.

Part Two: *Respond to a written request*

Instruction: Read then respond to the e-mail. Respond as if you have recently moved to a new city. In your e-mail to the committee, make at least TWO requests for information.

From: Dale City Welcome Committee

To: New Dale City Resident

Subject: Welcome to your new home!

Sent: July 23, 4:32 P.M.

Welcome! We would like to be the first to welcome you to Dale City. We know that there are many things to do when you move, from finding your way around town to setting up your utilities. Please contact us if you need any help at all.

Part Three: *Write an opinion essay*

Instruction: Write an essay in response to the question below:

There are many ways to find a job: newspaper advertisements, internet job search websites, and personal recommendations. What do you think is the best way to find a job? Give reasons or examples to support your opinion.

APPENDIX *H*

Sample   Units

UNIT ONE
Job and Application

UNIT ONE/ Job and Application

Listening

Task one (F2F): You will be given short notes about people looking for a job for a short period of time. Read about them, and then listen to some advertisements from companies who would like to employ people for some time – then match the people with the jobs.

Notes about people looking for a job:

1. Peter has just finished school and is taking a year off before he starts a food technology course. He would like to gain some experience in this area.

2. Nancy is considering a career in nursing the elderly but wants to know what the job involves before she starts training. She doesn't mind helping someone for free. She just wants to get some valuable experience.

3. Jacky has just dropped out of studying languages at the university in Germany but is still planning to do a teaching qualification next year. She really enjoyed living abroad and would like to do it again.

4. Stuart gave up his job as an engineer because of low payment and is now doing a full-time computer course. He would like to earn some money but can only work before 9 a.m. or after 5 p.m.

5. Alison has just returned from the States where she was working with teenagers in a summer camp. She's going back shortly (probably in 6-7 months) but she needs money for the plane so she would like to work in the meantime.

Script1   *Advertisements:*

A. Mick's Supermarket: *We are looking for additional staff in checkout sales and customer services. Daytime only (part-time hours possible) . No experience essential. Staff benefits include free food in the restaurant, food discounts and travel allowance.*

B. Oasis: *Volunteers needed in our friendly old people's home. Suitable for anyone wanting unpaid experience in care work. Light duties only, such as serving drinks*

and meals, helping our old residents getting out on the lawn and playing games with them. Temporary assistance is also welcome.

*C .**Cheerful Hours – after-school care**: Play leaders are needed for the after-school club. We run a number of play schemes in the area. Ages range from 5-15. Candidates must have previous experience of working with children and plenty ideas for entertainment.*

*D. **Clothes for Little Ones:** Children's clothes shop is looking for a part-time shop assistant. The hours are 9 a.m. – 6 p.m. on Tuesdays, Wednesdays, Thursdays and Fridays. Benefits include discounts. Experience is desired. If you are interested, phone Sally on 894675.*

*E. **Helping Hands:** Part-time minibus drivers wanted for a small local service providing transport for the disabled and elderly people. Hours can be arranged by agreement and there's reasonable payment. Evening work is also available. Sometimes help is required at weekends – for day trips.*

*F. **Let's Make Our City Cleaner:** Part-time cleaners are required in busy offices around the city. Monday to Friday from 6 a.m. to 10 a.m. We pay €75 per week and provide uniforms and all equipment. We also have a minibus that will pick you up. But we expect good quality work.*

*G. **Six-Month au pair Position in Germany:** Are you friendly, patient and cheerful? We need someone to look after three children (9, 6 and 3 years old) in return for food, accommodation and €45 pocket money a week. Evenings and weekends are free. The children already speak a little English but would like to learn more.*

*H. **Telco's Hypermarket:** A fresh food assistant is wanted for the fish counter to prepare and display quality fish and to provide friendly and efficient service to our valued customers. Some basic training will be provided. Morning hours only, good pay, friendly and helpful staff.*

(Adapted from English for Mechanical Engineering, 2009:32)

Task two (F2F): Listen again to the advertisements then summarise the requirements of each job.

Task three (Online): Listen again and decide whether the applicants have the chance to be hired in one of the jobs.

 Reading

Task four (Online): Read the text and do the following task.

> Celjska cesta 12
>
> 1420 Trbovlje
>
> Termoelektrarna Trbovlje   22 October 2009
>
> Ob Železnici 27
>
> 1420 Trbovlje
>
> Dear Sir or Madam,
>
> With reference to your advertisement in the Zasavec of the 19th of this month, I am writing to apply for the position of an engineer.
>
> I have all the right qualifications as I finished the college programme for mechanical engineers in Celje two years ago. In the meantime, I have been working in Pivovarna Laško as the head of maintenance department. My mentor during my traineeship, Mr. Zmazek, can be approached at any time to provide references for me. But as I would like to work closer to home and as I believe that the job you are offering will be more suitable for me I am applying for this position. I am polite and friendly and used to working with people. I am able to use the computer, especially Microsoft programmes and I am excellent with CAD. I can speak English fluently as I have passed the first certificate exam and also some German which will be useful when dealing with customers and suppliers from abroad.
>
> I hope you will find me a suitable candidate and grant me an interview.
>
> I look forward to hearing from you soon.
>
> Yours faithfully,
>
> Tomaž Štraser
>
> Enclosures: CV, photocopies of my diploma, reference from Mr. Zmazek
>
> *(*English for Mechanical Engineering, 2009:19)

The text is:

- o a letter of invitation
- o   a letter of application
- o a letter of enquiry

2. Complete the following CV according to the letter

Curriculum Vitae
Name: …………………………………………………………………………..
Address: ……………………………………………………………………
Place of birth: …………………………………………………………..
Age: ……………………………………………………………………………
Education: ………………………………………………………………….
Languages: …………………………………………………………………
Previous work experiences: ……………………………………………
Interests: ………………………………………………………………….
References: …………………………………………………………………

Vocabulary

<u>**Task four**</u> **(Online):** Match these jobs with their descriptions:

a development engineer -a product planner -a chemical engineer -a geologist -a quality controller - a field engineer   -a mechanic -a software programmer -an architect - a civil engineer

1. Works for an IT company, writes codes, updates and debugs programmes

▼

2. Repairs and service machines and equipment, works for a steel producer

----	▼

3. Works with pharmaceuticals, food, mineral processing and chemicals
[---- ▼].

4. Works for an oil company, analysis rocks and minerals from the sea bed
[---- ▼]

5. Works for a car producer, checks and inspects the finished cars and writes reports
[---- ▼]

6. Builds roads, bridges and viaducts   [---- ▼]

7. Designs new parts and products, works with CAD technology, and works for an aerospace company   [---- ▼]

8. Works

for a construction company and is responsible for planning and designing new factories and buildings   [---- ▼].

9. Works for an engineering company and organizes and checks production schedules [---- ▼]

10. Works for a telecommunications company, spends a lot of time traveling to companies to repair and replace or install telephone systems [---- ▼]

Task five (F2F): Match the abbreviation from the list on the right, with its definition on the left

1. per week	A. (ref. no)
2. thousand	B. (Inc.)
3. negotiable	C. (k)
4. reference number	D. (p/w)
5. per annum, yearly	E. (pro rata)
6. stamped addressed envelope	F. (neg)
7. as soon as possible	G. (c.)
8. approximately	H. (asap)

| 9. inclusive | I. (s.a.e.) |
| 10. according to time worked | J. (p.a) |

✍ *Writing*

Task six(Online): Write an email to apply for the job advertised as follows:

Wanted: Manufacturing engineer for a computer company. Applicant must be a Master's degree holder .Good work habits and ability to work in a team necessary. Send your application via email to the Senior Clerk, Mr Muscat, on jmusc@officeworks.com . You should write between 180 and 200 words.

🗣 *Speaking*

Task seven (F2F): You read a job advert in a newspaper and you sent your CV and letter of application. They asked you to attend a job interview. In pairs, take roles to prepare a job interview: student A is the manager and student B is the applicant.

Task eight (F2F): Imagine that you are a company secretary and your friend is ringing about the job you advertised in a newspaper. Prepare a phone conversation.

Grammar

Task nine (Online): Here are some common phrases you might use when applying for a job. However, the prepositions are missing - type out the correct ones choosing words from the table below.

To	of	under	in	For

a. I would like to apply ☐

b. the position ☐

c. If you would like to discuss this ☐ more detail

d. I enjoy working ☐ pressure

e. I was [ ]

f. charge [ ]

g. I was responsible [ ]

h. With reference [ ]

UNIT TWO

Engineering

UNIT TWO: Engineering

Listening

Task one (Online): Look at the pictures and listen carefully to the statements from which you choose two that best describe each picture:
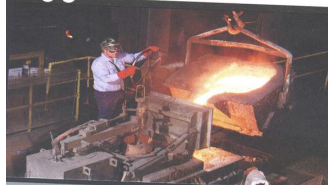
Picture1

Picture 2

 Script 1   *The statements*

- *The inspector is checking the equipment.*
- *They are working on an assembly.*
- *The hot melting steel is being poured into the mold.*
- *The holding tank is being tested.*
- *The steel worker is wearing protective eyewear.*
- *The structure is being built out of food.*

Task two (F2F): Here is an extract from a lecture about engineering. Listen to the second script and say whether the following statements are "*true*" or "*false*"

f. Non-metals are used by engineers.

g. Cast iron contains more carbon than steel.

h. Chromium improves the properties of steel.

i. Copper contains iron.

j. Bronze is an alloy.

Engineers have to know the best and most economical materials to use. They must also understand the properties of these materials and how the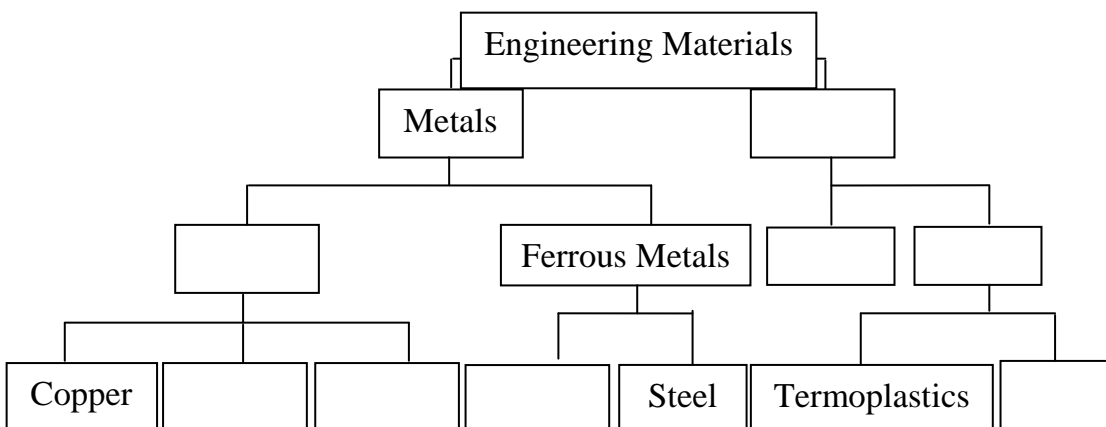y can be worked. There are two kinds of materials used in engineering: metals and non-metals. We can divide metals into ferrous and non-ferrous metals. The former contain iron and the latter do not contain iron. Cast iron and steel, which are both alloys, and mixture of iron and carbon, are the two most important ferrous metals. Steel contains a smaller proportion of carbon than cast iron contains. Certain elements can improve the properties of steel and are therefore added to it. For example, chromium may be included to resist corrosion and tungsten to increase hardness. Aluminum, copper, and alloys, bronze and brass, are common non-ferrous metals. Plastics and ceramics are non-metals; however, plastics may be machined like metals. Plastics are classified into two types: thermoplastics and thermosets .Thermoplastics can be shaped and reshaped by heat and pressure but thermosets cannot be reshaped because they undergo chemical changes as they harden. Ceramics are often employed by engineers when materials which can withstand high temperatures are needed.

(Adapted from *English for Mechanical Engineering, 2008 :28)*

Task three (F2F): Listen again to the second script and complete the diagram**.**

```
                    Engineering Materials
            ┌───────────┴────────────────────┐
          Metals
      ┌──────┴────────┐              ┌────────┴────────┐
    ┌──┐          Ferrous Metals   ┌──┐           ┌──┐
  ┌──┴──┐       ┌────┴────┐     ┌───┴───┐      ┌───┴───┐
Copper │  │  │  │  │  │  Steel │ Termoplastics │  │
```

.

Reading

Text

Engineering is based on many other sciences, such as physics, chemistry, mathematics but also mechanics, thermodynamics and analysis.

It is a science, discipline, art and profession of acquiring and applying technical, scientific and mathematical knowledge to design and implement materials, structures, machines, devices, systems, and processes that safely realize a desired objective or inventions. Its main focus is to design or develop structures, machines, apparatus, or manufacturing processes, or works utilizing them singly or in combination; or to construct or operate the same with full cognizance of their design; or to forecast their behavior under specific operating conditions; all as respects an intended function, economics of operations and safety to life and property.

This broad discipline can be further divided into sub disciplines, each with a more specific emphasis on certain fields and particular areas, for example: civil, mechanical, electrical, electronic, marine, automotive, aeronautical, heating and ventilation, mining and medical engineering.

(Adapted from *English for Mechanical Engineering, 2008:26)*

Task four (Online): Read the following text and answer the following questions:

6 What is the text about?

7 What are the disciplines that engineering encompasses?

8 How does the author define engineering?

9 What are the subcategories of engineering?

10 Give a title to the text.

Grammar

Task five(Online): Fill in the gaps correct present form:

It's 10 o'clock on Monday morning in Atomic Ltd. In the Research and development department they [----] (have) a meeting at the moment. Everybody who is involved in the new project [----] (attend) it . At the moment Bob [----] (present) his ideas. He has prepared an interesting PowerPoint presentation and while showing it, he [----] (explain) several features.

They [----] (organize) such meetings every Monday morning. After these meetings, they all [----] (return) to their desks where they continue with the tasks.

In the production department the foreman [ ] (walk) around the production plant and [----] (control) the process. He always [ ] (make) sure that things [----] (not go) wrong as that [----] (be) usually very costly.

Outside, at the loading ramp a van is parked. Some workers [----] (load) the truck with the faulty components they received yesterday. They [----] (send) them back to the manufacturer.

Writing

Task six: Your department asked you to prepare brochures to distribute in the university open day. Write a composition of about ten lines in which you describe your field of study. Try to attract new high school graduates to enroll in your specialty.

**))) *Speaking*

Task seven (Online) Listen to the technical words and mark the stressed part of each word.

machine   mechanic   mechanical   machinery   mechanics
technical   technician   technology

Task eight (F2F): Use information from the previous task to prepare an oral presentation about engineering, its branches, and its scope of study.

Task nine (Online): The following pictures represent two different branches of engineering.

> ➢ Describe each branch.
> ➢ Compare between the scope of each branch.

Task ten (F2F): Watch the video **"***Meet a Manufacturing Engineer***"** where Rebecca Miller, a quality control engineer with GE Aviation, describes the work of manufacturing engineering and the reasons why she finds her field rewarding. Do the same thing and prepare a talk of ten minutes about which manufacturing engineering career you want to pursue in the future.

Vocabulary

Task eleven (Online): Complete the following sentences with a form of the word in brackets.

1. In the ⬚ industry, ⬚ develop processes for producing plastics, fibers, medicines, etc. from simple chemicals. (chemistry)

2. Producing steel using the Bessemer process is one of the best-known [   ] processes. (industry)

3. Most [   ] devices need oil as a lubricant. (mechanics)

4. Following the earthquake, every building had to be inspected to see whether it had suffered any [   ] damage. (structure)

5. Certain chemicals are added to glue to [   ] it. (hard)

6. Excavators and power shovels are two types of [   ] equipment used by [   ] they are removing rocks from the ground. (mine)

UNIT THREE:
Technical Functions
and Applications

UNIT THREE: Technical Functions and Applications

Listening

Script

Paula, a design engineer for a CPS manufacturer, is discussing product development with José, a senior manager new to the company.

> **Paula:** *Obviously navigation is the primary application of most GPS devices.*
> **José:** *Sure.*
>
> **Paula:** *Then you've got associated applications, uses that are related to navigating, such as tracking systems you can use for monitoring delivery vehicles and finding stolen cars, that kind of thing.*
>
> **José:** *Mm.*
>
> **Paula:** *And then there are more creative features. A good example would be on a boat CPS, you get drift alarms. So if the anchor starts to drag and the boat starts moving, there's a setting on the CPS that allows it to detect the movement and an alarm sounds to warn you, and prevents the boat from drifting unnoticed.*
>
> **José:** *I see.*
>
> **Paula:** *Or another example on boat systems is man overboard buttons. So if you're sailing along and someone falls into the sea, you hit a button, which logs the position and ensures that you don't lose track of where you were, which then enables you to turn round and come back to the same point and find the person.*
>
> **José:** *Right.*
>
> **Paula:** *So, these are the kinds of applications we want to develop, more specialized, and more creative.*
>
> **José:** *So, effectively you're not talking about technical innovations .What you're really looking for is innovative ways of actually using the technology.*
>
> **Paula:** *Precisely. Because these days, from the end-user point of view, accuracy is no longer the main selling point. Most devices are accurate enough. The key is to make them more useful. So in terms of development that's the kind of...*
>
> *(Adapted from Cambridge English for Engineering p. 86)*

Task **one** (F2F): Listen to the conversation and complete the following notes.

The primary application   (l) ……………………………

of GPS

Associated applications   Tracking systems for (2)……

Tracking systems for (3)……

More creative features   (4) … alarms   (5)…………………buttons

Not technical innovations   (6)………technology

Task two (F2F): Listen to the conversation again and underline the correct words.

1. ... there's a setting on the CPS that ***allows/prevents*** it to detect the movement...

2. ... an alarm sounds to warn you, and ***allows/prevents*** the boat from drifting unnoticed.

3. ... and **enables/ensures** that you don't lose track of where you were, which then ***enables /ensures*** you to turn round and come back to the same point . . .

Task three (Online): Listen to the conversation and match the GPS applications (1-6) to the descriptions (a-f).

1. Topographical surveying	**a.** navigation and safety in the sea
2.Geological exploration	**b.** setting out positions and levels of new structures
3.Civil engineering	**c.** mapping surface features
4.Avionics equipment	**d.** applications in mining and oil industry
5.Maritime application	**e.** highway navigation and vehicle trucking

Reading

Task four (Online): read the following text and name the components of the device in the picture.

THE DC MOTOR
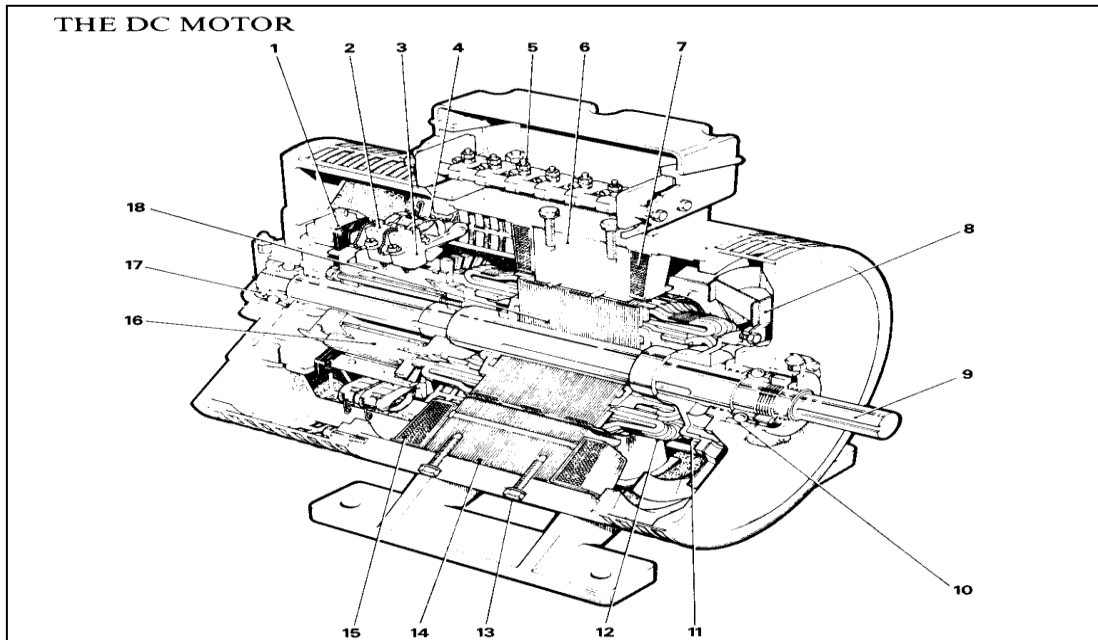
Task five (F2F): Read the text and say whether the following statements are "*true*" or "*false*"

   a. The motor described in the text is an (ac) motor.
   b. The stator is static.
   c. The motor transforms mechanical energy into electrical one.
   d. The stator is composed of copper segments.

An electric motor is a machine or converting electrical energy into mechanical energy. Motors can be designed to run on direct (dc) or alternating current (ac).The motor shown in Figure 1 is a dc motor. Its most important parts are the rotor, the stator and the brush gear.

The rotor is the moving part. It contains an armature, which is a set of wire loops wound on a steel core. When current is fed to the armature, these windings produce a magnetic field. The armature and core are mounted on a shaft which runs on bearings. It provides a means of transmitting power from the motor.

The rotor also contains a commutator. This consists of a number of copper segments insulted from one another. The armature windings are connected to these segments. Carbon brushes are held in contact with the commutator by springs. These brushes allow current to pass to the armature windings. As the rotor turns, the commuter acts as a switch making the current in the armature alternate.

The stator does not move. It consists of magnetic and electrical conductors. The magnetic circuit is made up of the frame and the poles. Wound round the poles are the field coils. These form the stator's electrical circuit. When current is fed to them, a magnetic field is set up in the stator.

The motor operates on the principle that when a current-carrying conductor is placed in a magnetic field, a force is produced on the conductor. The interaction of the forces produced by the magnetic field of the rotor and the stator makes the rotor spin.

Adapted from *English in Electrical Engineering and Electronics (2001:28)*

✍ *Writing*

Task six (Online) You were among a group of engineers attended training environmentally friendly design. Write a summary of the course in which you discuss the following questions:

1. How do you think an environmentally friendly design would be?
2. What could it be used for?
3. What technical, financial and social challenges would it face?
4. How seriously do you think the concept of environmentally friendly designs is being taken at present?

 Grammar

Task seven (Online): Fill in the missing relative pronouns (who, whose, what, which, where):

A quality controller is a person *who* checks the production systems.

Does anyone really know _____ responsibility this is?

I don't know _____ happened! Suddenly the fire started!

Do you know the name of the woman _____ is organising the conference?

This is the company _____ offers the most favourable prices for these items.

I don't know _____ company to contact first. They all seem to have a wide range of products on offer.

The computers _____ you ordered last week have just arrived.

Yesterday I was talking to someone _____ brother went to school with you.

Task two (F2F): Read the following sentences and ask for the underlined part – you need either a subject or an object question or both.

1. The machine is being serviced at the moment.

2. The mechanic wrote a report concerning the failure.

3. The apprentices are taught the safety rules that are important in the workshop.

4. The vernier caliper is a very useful instrument for measuring

 Speaking

Task eight (F2F): In pairs, discuss the key properties and different types and grades of the following materials. Give examples of the properties that make each material good or bad for watch-making from a quality perspective.

❖ *Materials:* steel - glass – aluminum - titanium - gold –plastic- copper- rubber

❖ *Properties:* water-resistant, abrasion-resistant, corrosion-resistant, shock-resistant, tough, brittle, elastic, durable, heavy, lightweight, thermally stable.

Task nine (Online): explain the main features, functions and applications of a product made by your company or a product you know about. Student A, you are an engineering manager; Student B, you are a new employee. Swap roles and practise again.

Task ten (F2F): you are a company manager. You have produced a consumer product or appliance. Prepare a talk where you discuss it from a quality perspective, how suitable are the materials used? How good is the product, compared with others sold by competitors?.

Vocabulary

Task eleven (Online): Match materials with their properties**.**

Materials
Steel   glass   aluminum   titanium   gold   plastic   copper rubber

Properties
Water- resistant   abrasion-resistant   corrosion-resistant   shock-resistant tough   brittle   elastic   durable   heavy Lightweight   Thermally stable

Task twelve (F2F): Match these adjectives to their meaning:

1 transparent   A) able to last a long time

2 porous   B) hard, but easily broken

3 durable   C) easy to bend without breaking, flexible

4 brittle   D) light can pass through

5 dense   E) has many small holes that allow water
and air to pass through

6 pliable   F) has a high mass to volume ratio

7 translucent   G) clear, allows to see through it

UNIT FOUR:

Designs and Systems

UNIT FOUR: Designs and Systems

Listening

Script1

> *Leo: I've worked on projects in the past where every single working drawing is circulated to every team- structural mechanical and electrical and lt.iustg ets completely out of control. So we want to avoid that situation.*
>
> *Engineer l: Sure. But after saying that, if someone has to analyze every single revision to determine exactly which team needs it, then that takes a lot of time as well.*
>
> *Leo: Not if there's a proper procedure in place. As long as we make sure there's ...*
>
> *Leo: This project strikes one as pretty complex, in terms of the amount o f integration and overlap between the different design packages.*
>
> *Engineer l: Yeah.*
>
> *Leo: Particularly between mechanical and electrical teams so we have to coordinate that. And it's obviously a specialist job. lt' s beyond my expertise as the overall project manager .So, in order to make sure that we ...*
>
> *Engineer l: Yeah, you still need meetings.*
>
> *Engineer2: Especially as there' s so much integration between the different packages, the point we were talking about before.*
>
> *Leo: Well, there is a solution to the problem.*
>
> *Leo: So, to sum up. As regards design information flow, all preliminary drawings are going to be shown to the senior engineer in charge of each design team. The senior engineers then say whether or not their teams need to receive copies of later revisions. lf they don't, they w on' t receive any further revisions . lf they do, they'll be issued with every subsequent revision and, later, revisions of working drawings.*
>
> *To coordinate the interface between mechanical and electrical design, I'm going to appoint a mechanical and electrical coordinator responsible for liaising between the senior engineers in the teams, reporting to me. We're locating all three design teams in a single, open-plan offices.*

Task one (F2F): Listen to the meeting and complete the following agenda

MEETING AGENDA

1. Meeting Objective		
2. Attendees		
Name		
Topic		

Task two (Online): Listen again and make notes about the problem discussed in the script.

Task three (F2F): Listen to Leo summarising the solutions that have been agreed in the meeting. What has been decided regarding the following Points?

1. The decision that the senior engineer in each team must make, regarding drawings

2. The circulation procedure that will be used for each drawing

3 .The role of the M&E coordinator in relation to the senior engineers and the project manager

4 .The arrangement that will make informal communication easier

Reading

Task one (Online): An international team of researchers are collaborating to design an experimental energy-efficient vehicle. They are discussing the tools available for developing the vehicle's aerodynamic design. Read the conversation and answer the following questions.

Tony: With the aerodynamics there are three development tools available to us. The first is CFD software- Computational Fluid Dynamics. With that the tests would obviously be virtual, based on a computer model. The second option is to go into a wind tunnel, with a scale model, or full-size mock-up .In either case, we'd probably need to use a tunnel with a rolling road.

Lisa: Would that be necessary?

Tony: Well, the thing is, the wheels generate a lot of turbulence when they' re spinning . So to simulate that, you need a rolling road.

Lisa: Yes, I know, but if we go for a bodywork design where the wheels are mostly enclosed, which is likely, would that be an issue?

Tony: Possibly not. lt depends how fully enclosed they are.

Lisa: OK. l' m just raising the question.

Tony: Sure. lt's something we can look at. The third option, then, is field testing, actually running the prototype outside on a runway, or somewhere .So we can use these tools in isolation or as a combination. The question is, how can we gather as much data as possible with the limited budget we have?

Guy: Well, we need to bear in mind that the problem with aero is that it's not just about data gathering. You also have to validate the data. CFD and wind tunnels are not a hundred percent reliable. The acid test only comes when you try out a full-scale prototype in real conditions. We need to make sure that everything is tried-and tested outside, with a full-scale trial run.

Lisa: Yeah, but let's not forget we're designing a car that does a hundred kilometers an hour, it's not a supersonic aircraft! The aero 's not going to be that critical.

Tony: Plus, with changeable weather it's not easy to do back-to-back testing out in the field.

Guy: No, of course not. I' m. just saying we need to be careful ...

Questions

1. What options are available for wind tunnel testing in terms of scale?

2. Why are rolling roads useful in wind tunnels when testing vehicles?

3. What issues will determine whether or not a rolling road is necessary?

4. What point is made about the reliability of CFD and wind tunnel data?

Vocabulary

Task (F2F): Put a cross near the synonym and a tick next to the opposite

1	2	3	4
Mended	maintained	modernized	stored
Repaired	neglected	outdated	gotten rid of
damaged	serviced	renovated	thrown away
………...	……….	………….	……………

Writing

Task (Online): You are members of a technological research team similar to the one described in the text. You have been asked to design a test programme for an experimental system for air-dropping cargo. Read the brief and, write a short paragraph in which you discuss the types of test required and their sequence.

Design Brief

The system allows relatively fragile cargo to be air-dropped from planes into remote locations on the ground. lt comprises a parachute, attached to a cylindrical container two metres long with a diameter of 1.5 metres. The container is surrounded by a deformable protective structure. The aims of testing are to develop the designs of:

a) the parachute

b) the protective structure, in order to minimise the impact to the car to

inside the container.

The number of tests must be maximised within a limited budget. As tests involving real drops from aircraft are costly, these must be kept to a minimum.

🗣️ *Speaking*

Task one (F2F): After designing the test programme for an experimental system for air-dropping cargo, you are asked to conduct a meeting where you describe your programme. Decide which role you would like to play in the meeting , then in group conduct the meeting.

Task two(Online): After the meeting, prepare a talk and a presentation in which you are going to report the main points discussed it the meeting to your colleagues.

Grammar

Task (Online): Transform the following sentences from active into passive.

1. The maintenance department regularly services the machine.
2. We checked the production unit last week.
3. The apprentice is cleaning the tools at the moment.
4. We will make the plans ready by the end of next week.
5. Before the test we had already worked with the new material.
6. We are going to schedule the meeting for next week.
7. The factory has been producing the new tissues for a couple of months.
8. The accident happened while we were cleaning the machine

APPENDIX *I*
Posttest

LISTENING TEST

Part One: *Photographs*

Instruction: Listen to the four statements and select the one that best describes each picture.

(A) generating and supplying power

(B)designing and making machines

(C) designing, building, and looking after structures.

.

(A) designing and making all the parts of machines that move.

(B) using computers for collecting, storing, and sending information

(C) using the processes which change materials in a chemical or physical way.

Part Two: *Question Response*

Instruction: You will hear two questions or statements and three responses spoken in English. Select the best response to each question or statement.

1. This software is difficult to use, isn't it?

   (A) Yes, it's very complicated.

   (B) Yes, I often wear it.

(C) No, but she used to.

2. Is this the best design?

(A) In fact, he is not in

(B) Yes, absolutely.

(C) No, not yet.

Part Three: *Conversation*

Instruction: Listen to the conversation between two people and answer the three questions below.

Reporter: What is a new product?

Engineer: The GX203 is our latest model

Reporter: What are its features?

Engineer: It includes a lot of new features that we think make it stand out from all the other printers currently on the market. As you can see, it manages to squeeze a full-color printer, scanner, and copier into a very compact package, as well as including a fax machine and cordless telephone handset. No more desktop clutter with this. What's more, in an industry first, our printer comes with a 40-gigabyte hard disk, so you can keep your entire photo collection safe and print out your pictures without the need to connect to a computer.

1. What product is being described?

(A) A cordless telephone
(B) An all-in-one printer
(C) A laptop computer
(D) A digital camera

2. Which of the following best describes the product?

(A) It creates a lot of desktop clutter
(B) It is an older model with many features
(C) It is quite large
(D) It is an innovative design

3. What is described as the unique feature?

(A) The color printer
(B) The fax machine
(C) The hard disk drive
(D) The scanner

Instruction: Listen to the short talk given by a single speaker and answer the three questions below:

> Thank you for calling Central Electric Services, your local power company. We are still experiencing problems with power failures caused by the recent storm. We expect service to be back up in most areas early this evening, although some homes in the northwest will be without electricity until tomorrow morning, and it may be tomorrow evening before service is fully restored in all areas. We apologize for the inconvenience this has caused our customers, and we thank you for your continued patience as we work to resolve these problems. This service announcement will be updated throughout the day. It was last updated at 6:00 A on Sunday, April third.

1. Where would this announcement be heard?

    (A) On the television
    (B) On the radio
    (C) Over the telephone
    (D) In a company meeting

2. What is the purpose of the announcement?

    (A) To tell people about an approaching storm
    (B) To provide information about electric services
    (C) To apologize for staffing shortages
    (D) To describe the reorganization of a company

3. When is the problem expected to be completely resolved?

    (A) This morning
    (B) This evening
    (C) Tomorrow morning
    (D) Tomorrow evening

READING TEST

PART 1: *Incomplete Sentences*

Instruction: A word or phrase is missing in each of the sentences below. Four answer choices are given below each sentence. Select the best answer to complete the sentence.

1. The recent worldwide increase in oil prices has led to a ------- demand for electric vehicles.

    (A) greater   (B) greatest   (C) greatly   (D) greatness

2. Maria Vásquez has a wide range of experience, ------- worked in technical, production, and marketing positions.

    (A) having   (B) has   (C) having had   (D) had

3. There are three divisions to an electronics system, an example of which is a television -------

    (A) box   (B) case   (C) kit   (D) set

Part Two: *Text Completion*

Instruction : Read the text on the following page. A word or phrase is missing in some of the sentences. Select the best answer from the four choices given to complete the text .

PhotoMatic

Specialists in professional quality pre-owned and refurbished photographic equipment.

WANTED

We urgently _____ **1.** (A) ask   (B) require   (C) demand   (D) invite   your cameras, lenses, cases , and other accessories.

We have customers all over North America, Europe, and beyond searching for secondhand professional equipment _____ **2.** (A) on   (B) at (C) of (D) in good condition.

We are also interested in telescopes, binoculars, and collectable vintage cameras.

Top Prices Paid We will buy for cash directly but are also happy to sell on your behalf on a commission _____ **3.** (A) way   (B) basis (C) kind (D) means

We can arrange to collect from you, or you can send directly to your nearest PhotoMatic outlet with shipping and handling charges covered by us.

For more details, please contact us at (212) 333-4444 or call your nearest PhotoMatic outlet, or visit us online at www.photomatic.com.

Directions: Read the text below then select the best answer for each question.

To: Katharine Morandi

From: Ujjwal Ahmed, Optimum Software Company

Subject: Yesterday's meeting

Dear Katharine,

   Thank you for taking the time to get together with us yesterday. Everyone on our team felt that it was a productive meeting. We have a better understanding of your project's needs now, and we've started looking at ways to adapt our software to meet your requirements.

   While the basic function of the software is well suited to the project overall, as discussed, we will explore ways to adapt it to the needs of the different departments at Advantage that will be using it. This will incur some additional costs, as we indicated—we'll provide details about that at our next meeting, once our engineers have assessed the changes that will need to be made. I've asked Peter Bodell to prepare a document for you that indicates when the Training and Consulting Department could start providing services to you. He'll send this information to you directly—since you've worked with him in the past, it seems the most efficient way to go.

   As agreed, let's set up a meeting for the week of November 26 by which time our engineers will be able to outline their approaches to your departmental needs, and we'll have the information we need to put together a contract.

In the meantime, please feel free to contact me if you have any questions.

Regards,

Ujjwal

---

1. What is the main purpose of Mr. Ahmed's e-mail to Ms. Morandi?

   (A) To request a meeting with the engineering department
   (B) To introduce Peter Bodell
   (C) To follow up on a meeting with Advantage
   (D) To explain how Optimum has adapted its software

2. What service will Peter Bodell's department provide?

   (A) Training and consulting
   (B) Legal advice
   (C) Publicity
   (D) Changes to the software

3. What will happen in the week of November 26?

   (A) Peter Bodell will make a presentation.
   (B) Optimum and Advantage will meet again.
   (C) A contract will be signed.
   (D) Training in the new software will occur.

(Adapted from *TOEIC Test of English for International Communication*, 2015)

SPEAKING TEST

Part One: *Read a text aloud*

Instruction: Read the text aloud.

Laser printers use xerographic technology similar to that used in photocopiers. They can reproduce an almost limitless variety of type forms and sizes, as well as complex graphics. Images are electronically created on a light-sensitive drum, usually with a scanning laser. Powdered toner adheres to areas where light touches the drum and then transfers to a sheet of paper, which is briefly heated to ise the toner to the paper permanently. They operate very quickly. A typical laser printer can print 20 color pages a minute, compared to 12 for an ink-jet printer, older dot-matrix printers can take 45 seconds to print a single page. When they were first introduced, laser printers typically cost over a thousand dollars. Now prices have dropped to only a few hundred, at most.

Part Two: *Describe a picture*
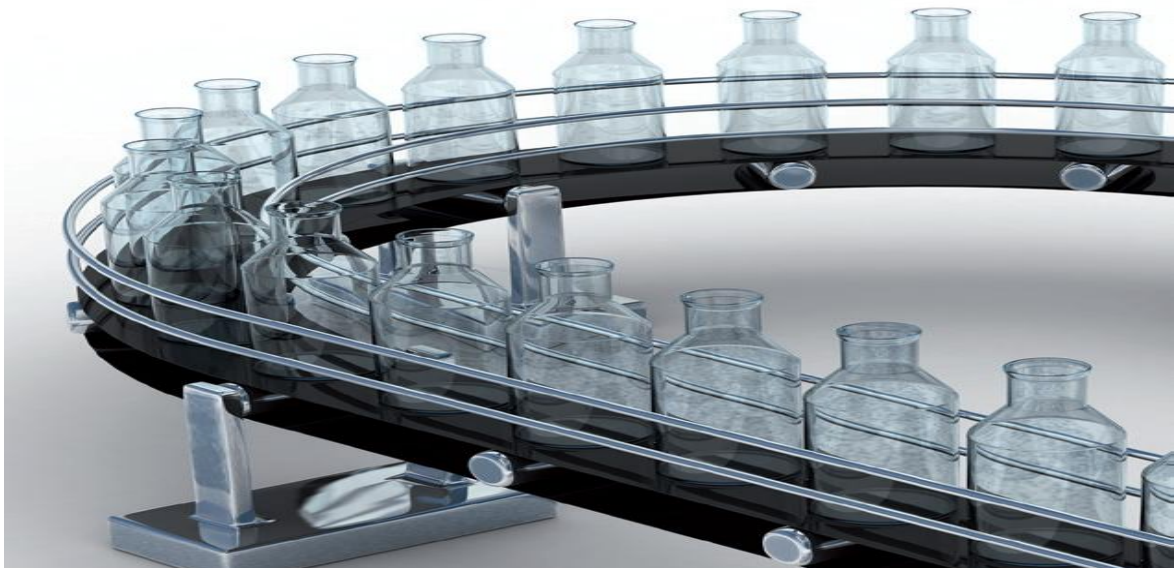
Instruction: Describe the following picture.

Part Three: *Respond to questions*

Instruction: Answer the following questions

Imagine that you are being given a customer satisfaction survey over the phone.

Question1: What would you do if you ordered a product and it wasn't what you expected?

Question2: Have you ever returned a product? Why or why not?

Question3: Do you prefer to shop online or in stores? Why or why not?

Part Four: *Respond to questions using information provided*

Instruction: Answer the following questions based on the information provided.

> Street Sale and Block Party!
>
> Saturday, May 2nd 12-5PM
>
> Bring your gently used items to our 5th annual street sale! Profit from donated items will go toward planting neighborhood trees and renovating the local park!
>
> Admission: $5 (Free for children under 12)
>
> $2 to enter the raffle. First place discount passes to the amusement park!
>
> Second place winners receive a t-shirt.
>
> Come join us for an afternoon of shopping, prizes, and food!

*Question 1***:** Could you tell me what day does the event begin and end?

Question 2: What is the prize for the first place raffle winner?

*Question 3***:** If I have a daughter who is 10 years old, how much is her admission?

Part Five: *Propose a solution*

Instruction: Propose a solution to a problem presented to you.

Hello,
I downloaded an MP3 file and my computer thinks it's a text file. What can I do?

Thanks,

Sam

Part Six: *Express an opinion*

Instruction: Give your opinion about a specific topic.

Question:

A lot of companies are now allowing their employees to work from home. Do you think it is smart to let employees work at home*?* Give reasons for your opinion.

(Adapted from *Standardized Testing Preparation: The TOEIC, 2014*)

WRITING TEST

Part One: *Write a sentence based on a picture*

Instruction: Write ONE sentence that is based on a picture.

Part Two: *Respond to a written request*

Instruction: Read then respond to the e-mail. Respond Respond to the email with at least two requests for further information.

From: The English School

To: Student

Subject: Thank you for your interest in our program

Sent: May 5, 3:32PM

Thank you for your interest in our program! We offer English classes open to engineers in different fields. Any student can register. If you are interested in attending our next English class, please email us for more information.

Part Three: *Write an opinion essay*

Instruction: Write an essay in response to the question below:

A company recently created a drink that will eliminate the need to eat real food. The drink provides all of the nutrients needed for a complete diet. What are some of the benefits or consequences of selling a drink like this?

APPENDIX *J*

Course Evaluation Checklist

Course Evaluation Form

1- Strongly Agree 2-Agree 3-Neutral 4-Disagree 5- Strongly Disagree

The teacher	**1**	**2**	**3**	**4**	**5**
a. Teacher is knowledgeable about the subject					
b. Teacher is prepared					
c. Teacher encourages participation and answers students' questions.					
d. Instructor is enthusiastic about teaching.					
Assignments					
a. Assignments are in the right level of difficulty for the course					
b. Assignments help me learn the material					
c. Assignments given for the class are interesting					
d. Assignments meet my learning needs					
Learning materials					
a. The instructor uses variety of web-based learning materials such as YouTube videos, encyclopedias, Internet texts and email.					
b. The learning materials fit the course objectives					
c. The materials motivate me to engage more effectively in the course.					
Lessons and activities					
a. Lessons prepare me to use English in academic and workplace settings.					

b. Lessons and activities are related in content to my discipline				
c. The language used in the lessons (grammar, vocabulary, skills) is related to my discipline				
Objectives				
a. The course objectives are clearly identified				
b. The teacher has fully achieved the course objectives.				
c.My learning objectives are entirely achieved.				
Tests				
a. The level of tests was just right				
b. The tests covered all the learning points				
c. The tests' grading scale is acceptable				
d. The grades are convincing				
Web assignments				
a. Web assignments are clearly written and properly instructed.				
b. Web assignments are the right level of difficulty for the course				
c. Tasks and web-delivered assignments help me learn the material.				
d. Web assignments given for class serve the objectives of the course.				
e. Web assignments have motivated me to develop the needed language skills for the course				
f. Web assignments meet my learning needs.				
g. Web assignments make learning dynamic				

What do you recommend to improve this course?					

(Adapted from Meddour, 2014)

الملخص

يكمن هدف هدا العمل البحثي في أربعة أبعاد: أولاً ، تصوير الحالة التعليمية والتعلمية للانجليزية لاهداف خاصة في قسم الهندسة الصناعية في جامعة تلمسان. ثانيًا ، لتحليل احتياجات طلاب السنة الأولى ماستر من حيث اللغة الانجليزية ؛ ثالثًا ، تصميم درس باستخدام الانترنت يستجيب لاحتياجات المتعلمين ؛ وأخيرًا ، لقياس مدى فعالية هدا الدرس لتعزيز مهارات الطلاب اللغوية ، خاصة التحدث والاستماع للغة الانجليزية. وقد أظهرت النتائج أن الطلاب بحاجة إلى تعزيز مهارات محددة في اللغة الإنجليزية وتعزيز قدراتهم على التحدث والاستماع. وكشفت ان استخدام الانترنيت يضمن الاتجاه نحو العمل بلغة أكثر واقعية ، مما يؤدي إلى تلبية احتياجات الطلاب اللغوية ، ومن ثم مساعدتهم في تطوير معرفتهم بالمحتوى وتعزيز المهارات اللغوية الأربع مع التركيز بشكل أكبر على الاستماع والتحدث.

الكلمات المفتاحية: اللغة الانجليزية لاهداف خاصة ، الانترنات،الاحتياجات اللغوية،طلبة الهندسة الصناعية.

Résumé

L'objectif du présent travail de recherche s'articule autour de quatre objectives: premièrement, décrire la situation d'enseignement et d'apprentissage de l'Anglais pour des buts spécifiques au sein de Département de Génie Productique, analyser les besoins des étudiants en première année Master ; troisièmement, concevoir un cours qui répond aux besoins des apprenants en utilisant Blended learning; enfin, pour évaluer l'efficacité du cours pour améliorer les compétences linguistiques des étudiants à savoir parler et écouter l'Anglais. Les résultats ont montré que les étudiants ont besoin de promouvoir des compétences spécifiques en Anglais et améliorer leurs capacités de parole et d'écoute. Il a également été révélé que la tendance de Blended Learning permettait de travailler avec un langage plus réel qui répondait aux besoins des étudiants et les aidait désormais à développer leur connaissance du contenu et à promouvoir les quatre compétences linguistiques en mettant davantage l'accent sur l'écoute et la parole.

Mots Clés : Anglais pour des buts spécifiques, besoins linguistiques, blended learning, étudiants de Génie Productique.

Summary

The objective of the present research work is fourfold : first, to portray the teaching and learning situation of ESP in the Department of Manufacturing and Engineering Sciences at Tlemcen University ; second, to analyze first year Master's students' needs ; third, to design an ESP blended course that respond to the learners' needs ; finally, to gauge the effectiveness of the course to enhance the students' language skills namely speaking and listening.The results of the NIA and the experiment showed that the students need to promote specific English language skills and enhance their speaking and listening abilities. It was also revealed that blended leaning ensured a trend towards working with a more real language which brought the students' needs to their ends, and henceforth, helped them develop their content knowledge and promote the four language skills with more emphasis on listening and speaking.

Keywords: English for Specific Purposes, Needs Analysis, Blended Learning, Manufacturing and Engineering students.