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English as a Lingua Franca in Syllabus and Material Development: The Case of English for Specific Purposes (Technical Branches) ESP

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…In the special memory of my parents

A b s t r a c t

In recent years, there has been a burgeoning literature on English as a lingua franca (ELF), recognising it as a contact language. This phenomenon and its echoes in the sphere of teaching have expanded significantly since the beginning of the new millennium. Despite the fact that ELF is acknowledged in the field of applied linguists, little attention has been paid to the corresponding teaching practices in higher education, particularly in the field of English for Specific Purposes (ESP). The present study focuses on incorporating ELF awareness raising tasks into English for science and technology (EST) syllabus design for the students of mechanical engineering as a sample of tertiary technical branches. The main objective of this work is to identify these students' needs to provide insights into an appropriate syllabus, which would meet the specificities of their profiles. As part of the research process, a case study was undertaken and a field observation was conducted at three distinct mechanical engineering departments located in the western part of Algeria, namely, the University of Sidi Bel Abbes, the University of Mostaganem and the University of Mascara. An interview and three questionnaires were used as principal data collection tools to be analysed following a triangulation of qualitative and quantitative approaches. The survey participants included 341 students majoring in licence 1, Licence 2 and master1; 18 content teachers; 03 EST teachers and 10 librarians. The needs analysis (NA) findings revealed the informants' positive attitudes toward discovering the fundamentals of a growing English type worldwide as well as the international culture of the English-speaking world. The stakeholders participated actively in identifying the necessary tools mechanical engineering students need to be equipped with to achieve good academic and professional English communication. With the goal of bridging the gap between the university and the workplace, these needs were translated into a suggested content and task-based syllabus.

BASE British Academic Spoken English

BAWE British Academic Written English Corpus

BEL Basic Engineering List

BELF Business English as a Lingua Franca

BNC British National Corpus

CEFR Common European Framework of Reference

CLIL Content and Language Integrated Learning

CLT Communicative Language Teaching

CNP Communication Needs Processor

EAP English for Academic Purposes

EBP English for Business Purposes

EEWL Engineering English World List

EFL English as a Foreign Language

EGAP English for General Academic Purposes

EGP English for General Purposes

EIL English as an International Language

ELF English as a Lingua Franca

ELFSP English as a Lingua Franca for Specific Purposes

ELT English Language Teaching

EMP English for Medical Purposes

EMT English as a Mother Tongue

EOP English for Occupational Purposes

ESAP English for Specific Academic Purposes

EU European Union

ESL English as a Second Language

ESP English for Specific Purposes

ESS English for Social Sciences

EST English for Science and Technology

EU European Union

EVP   English for Vocational Purposes

FIN-CE Corpus of English Texts in Finland

GA   Genre Analysis

GE   General English

LMD   Licence, Master, Doctorate

LFC   Lingua Franca Core

LSA   Learning Situation Analysis

NA   Needs Analysis

NSs   Native Speakers

NNSs   Non- native Speakers

PSA   Present Situation Analysis

SE   Standard English

SIG   Special Interest Group

STEM   Science, Technology, Engineering and Mathematics

SWE-CE Corpus of English Texts in Sweden

TSA   Target Situation Analysis

TBLT   Task-Based Language Teaching

UK   United Kingdom

USA   United States of America

VOICE   Vienna-Oxford International Corpus

WE   World Englishes

WrELFA Written English as a Lingua Franca in Academic Settings

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General Introduction

General Introduction

Under the control of globalization, the world is struggling to interconnect, and it is undergoing a wide variety of non-ending changes. The first overall impact of development does not only impinge on the political, economic, and commercial systems, but it also has immediate outcomes, most notably in the field of English Language Teaching (ELT). In this regard, Algeria seeks both domestic and international industrial and economic harmony in order to build a brighter future. For this purpose, recent academic research in the field of applied linguistics has aimed to achieve a tertiary level reform system and has attached high significance to teaching ESP proficiency.

The growing importance of ELF as well as the expeditious expansion of technological demands are believed to be sine qua non conditions for any student whose future profession is tightly related to successful communication. English in the new era is often described as the first global lingua franca (Jenkins, 2007). It is the dominant language in communication, science, business, and international exchanges. The British Empire's influence beyond the British Isles was the primary reason for the initial language spread. However, after World War II, the United States' rising economic and cultural impact has substantially enhanced the adoption of English, in a slightly derived style.

As a result of the fast growth of science and technology succeeding World War II, along with the widespread use of English across the world, English for science and technology (EST) has emerged as a significant variant of ESP. Furthermore, as globalization progresses, communication expectations of worldwide engineers continue to rise, and employers expect professional engineers to be endowed with enhanced global communication abilities. Modern

engineers are expected to be experts in technical knowledge and they are particularly positively praised for both their communication and soft skills such as the team work spirit.

The need to be effectively trained to communicate and experience authentic situations for the projection of their future careers are two of the most challenging areas that ESP learners may face. Moreover, the recent increase in international presentations, Special Interest Groups (SIG), academic world conferences, and Visio-gatherings provides strong evidence that ESP has globally risen to prominence.

Admittedly, in the Algerian industrial sector, the range of employment for engineers and technicians expands increasingly while translators are in short supply. Accordingly, there is a need to teach multiple skills to engineering students. They are required to communicate effectively in different situations and with different people from all over the world, demonstrate good interpersonal and team skills, and have a set of soft skills demanded by job recruiters. Thus, the engineering English course needs to be consistent with and based on recruiters' expectations as well as the learners' requirements.

The Algerian Licence, Master, Doctorate (LMD) reform has been implemented to assist universities in dealing with globalization and internationalization of higher education, and ESP teaching is the paradigm that goes along with these purposes (Bouhadiba, 2013). More learners are looking to enhance their English abilities for very specialized academic and professional objectives, and courses that come under the umbrella of ESP have particular appeal for these students who are often adults and aware of their needs. They may improve their professional skills by attending an ESP course that is relevant to their profiles and can reflect on their careers. While current applied linguistics research has primarily focused on ESP and NA (Brown, 2016; Woodrow, 2018), little has been done to associate ELF communication characteristics to ESP syllabus design as a successful dichotomy. The growth in ELF may have an impact on certain ESP sub-branches, such as those responding to market and industrial job prospects.

The fact that ESP education at Algerian Universities is still a developing area with much work to do is a significant motive to undertake the present study. The incentive for this research was to correlate previous personal results on ELF characteristics identified in an Algerian industrial workplace setting with the ambition to raise learners' awareness, particularly those who study EST purposes. The first motive for the study arises from past professional experience as a fresh English graduate involved in business and workplace communication with foreign business and technical staff from different origins. Both spoken and written English professional exchanges with non-native English speakers were different from the ones studied at university. Furthermore, it is depicted via the non-English departments' echoes that English courses are technical in the form of memorising lists of terminology and used in texts followed by activities related to the specialty. Alternatively, many students, in non-English departments, portray English courses as conveying more general English grammar lessons and reading comprehension techniques than technical English skills focusing on communication.

Such incentives coincide with the current ESP teaching challenges that Algerian instructors and learners face and need to overcome. As a matter of fact, ESP classes in non-English departments encounter certain realities such as having few specialized teachers in the different fields and they are mostly of an English for general academic purposes (EGAP) profile. Furthermore, some English classes take place in large rooms with a significant number of learners who may be of mixed abilities studying English sessions, once a week. This time limit prevents the English teacher from studying his learners' needs and from tailoring materials as well as the course content accordingly.

Some EST teachers, on the other hand, complain about the learners' demotivation and their poor speaking and writing proficiencies for the assigned project presentations and communication-based activities. When university technical English teachers face difficult teaching conditions, they may, in certain circumstances, develop personal courses and select

materials that may be far from the academic and socio-professional demands of a real-life environment. One of these demands is to prepare the learners to use English as it actually occurs out of class confines.

The purpose of the study is multifold. First, it initially aspires at diagnosing the feasibility of integrating some basic notions on ELF features into an ESP syllabus design for a purely technical English audience. Second, the study looks into the extent to which certain English syllabi in the Algerian science and technology curriculum allude to the use of ELF and to some intercultural English characteristics. Thus, the dynamic correlation between the set of communicative activities, ELF promotion, and the integration of non-native English speakers' cultures into an EST syllabus such as English for mechanical engineering programme is placed at the heart of research for the present dissertation.

Another paramount objective is to design a sample of EST syllabus which would put into practice essential English communication activities of a predominantly authentic nature. Some feedback on English practices and expectations from an EST course should also be gathered from undergraduates in the technical and scientific sector, represented by students in mechanical engineering. To those ends, English NA provides vital information for the benefit of language program planning and of syllabus content design credentials. NA, in a wide sense and in accordance with ESP syllabus studies, represents, for the current study, qualitative social analysis methods used to diagnose the environment and anticipate future variables that may impact decision makers in adopting language syllabi.

Practically, the present study aims to prepare future EST learners to be aware of the intricacies of English as spoken by global speakers. It addresses both syllabus workability and future English uses in workplaces, with the goal of improving English intelligibility and interpretability in a global environment. Such compelling concerns were the underlying motives towards conducting the present research work.

Hence, it is necessary to follow NA as the initial step of an EST syllabus development and to investigate perceptions of Algerian mechanical engineering students, EST teachers, content experts and librarians by exploring their attitudes, experiences, challenges as well as their expectations from a workable EST syllabus which reflects academic as well as authentic professional realities. The study strives to raise these issues and resolve some aspects of the current debate for a modest contribution to the ESP profession. In view of this, the research addresses and seeks answers to the following questions:

1- How are content teachers and other stakeholders involved in designing an English syllabus for mechanical engineering purposes adapted to an internationalised world?

2- What are the principal mechanical engineering stakeholders' perceptions toward ELF teachability particularly in the technical English syllabus?

3- How can ELF be integrated into ESP syllabus: especially in the case of mechanical engineering?

4- What are the major real-life English communication needs for students majoring in mechanical engineering studies?

In pursuance to expand research on view of the above raised issues, four preliminary answers might be the first steps towards research undertaking.

To begin with, English syllabi for science and technology, in general, focus mostly on technical vocabulary and reading comprehension as well as associated grammar and functions. EST courses are mostly technical and utilitarian in nature, with limited emphasis on communication tasks and activities. The various students' profiles that university graduation levels gather may disclose numerous needs. Students may need to communicate to further their academic studies and be members of the academic community to participate in events and research conferences. For such a population, English may be useful in becoming competent at using academic genres such as writing and presenting academic research proposals and making

presentations. As for another type of student population, real-life communication may be embodied in speaking and writing the professional genres found in the workplace, such as writing emails and speaking with English-speaking partners.

Second, it is necessary not to settle for asking students only about their own needs; this is far too subjective. For greater visibility and objectivity, other concerned stakeholders must be consulted. These actors may principally be those who participate in the teaching act of mechanical engineers. Besides learners, EST teachers will add interesting suggestions about learners' needs. In addition, because of their expertise in the subject field, content teachers are the most convenient persons to consult for a sound NA.

In view of teaching ESP in the light of ELF, different views may emanate from this issue. First, the consulted stakeholders might be aware of the extent to which ELF is gaining ground in Algerian business and workplace communication. It is also supposed that most of the participants will find it difficult to teach ELF as an independent variety.

Teaching EST is, by definition, technical and diverse. Consequently, classical syllabi in the field of science and technology, in their turn, have imposed a certain pattern on experts in the field, who may become obedient to it. What is commonly conventionalized is to study British and, to a certain extent, American varieties only. Since the provided pedagogical materials and the available ready-made textbooks are generally written in SE, the learners' brains are more familiar with assuming that all professional transactions and workplace communications are conducted in the same model. Furthermore, the concept of World Englishes might be acknowledged by stakeholders, but this might not be in association with the field of ESP. It is also expected that speaking a native-like English will be the dominant participants' view.

Finally, mechanical engineering is a significant sub-field of science and technology, with job opportunities closely related to the technical and industrial worlds. As a matter of fact,

it is part of the globalized world where ELF is present and where it plays an important role in workplace English communication. Therefore, it is important to elaborate a sample of EST syllabus which alludes to certain typical ELF features and that learners need to be aware of when communicating with non-native speakers in both academic and professional contexts.

In order to corroborate or refute the aforementioned hypotheses, the present research is a fieldwork mainly based on a triangulation of qualitative and quantitative methodology. In practice, the research design will be interpreted as a case study framework studying mechanical engineering students' English demands and employing the NA auditing approach, due to the three geographical areas examined in the current research survey (The University of Sidi Bel Abbes, the University of Mostaganem and the University of Mascara). Previous research findings concerning mechanical engineering students' English needs conducted at the University in Oran (Izidi and Zitouni, 2017) is also considered in the present study for data significance.

In view of manipulating all the research variables of participants and academic institutions setting, the survey deploys three main instruments to collect a significant amount of data to service the present research requirements. The study is initiated by personal field visits with the purpose of testing the ground, collecting important documents from administrators and attending content subjects' classes. The second step consists of exploring the library and interviewing its staff for necessary data collection about English sources. The final stage concerns asking probing questions via questionnaires administered to both content and ESP teachers in order to collect data about learners' needs. Data are collected from the mechanical engineering students as well.

This research work is structured into seven chapters. The three first parts cover English use from its world to its specific context with substantial examples derived from the literature. The field work research is put into evidence with data collection and analysis in the three

succeeding chapters. The whole thesis ends by a seventh chapter which carries a personal English syllabus designed in the light of mechanical engineering students' articulated needs.

The first chapter, describes the setting of English different uses and varieties in today's world. It mainly discusses key terms in the literature to simplify some existing ambiguities between the varieties. A brief historical overview is provided in the chapter to describe the spread of English from the British Isles to the other parts of the globe to be granted different appellations. The main variety that the chapter pictures is ELF; it is therefore defined in terms of its core features from the main literature figures' perspectives. However, these core characteristics are also portrayed in the Algerian workplace setting as the outcome of previous personal research findings. The chapter ends with the crucial link that ELF may have with ESP as a teaching field, and discusses the issue of ELF teachability offering some teaching practices.

Chapter two provides a general overview of ESP literature. It initially consists of placing ESP in the field of ELT and studying its subdivisions to make science and technology a prominent subdiscipline. The chapter also addresses the issues of the different types, main features and basic principles that characterise ESP as a teaching approach. In a second step, ESP is also described in terms of its phases of development throughout history. The latter phases pave the path to ESP practices and empirical applications. ELF meets ESP once again in the chapter's closing pages for a possible dichotomy in teaching technical English communication for students majoring in mechanical engineering.

To this end, chapter three provides a dual definition of NA as a concept as well as a process. By exploring what NA is, fundamental concepts in the field of ESP are exposed. Furthermore, a detailed account of the main elements (sources, steps, tools and stages) to undertake a NA approach is provided in this part of the thesis. Finally, the section displays the most prominent and recent approaches to NA, emphasising auditing and environmental situation analysis as the adopted tools for the present work.

The fourth chapter covers the main investigation methodology followed by the researcher to undertake the present research. It displays a comprehensive data-gathering approach, design, and tool description that are selected to be conducted for mechanical engineering NA. As far as the target population of this study is concerned, the focus is on key figures from three mechanical engineering university departments who may provide data about learners' needs in the same way that students can. A preliminary field description is offered in this section with the purpose and the layouts of each NA instrument.

Chapter five examines the data collected from the adopted NA instruments in conjunction with chapter six. The analysis is divided into two sections because of the substantial amount of study data that have been obtained in the field of investigation. The qualitative analysis in both chapters includes field observations details and stakeholders' answers to open-ended questions in the survey conducted with librarians, content and ESP teachers, as well as mechanical engineering students. Concerning the qualitative analysis that is conveyed in this chapter, statistics in tables and graphs display the informants' answers and reactions about the survey probing questions. The bulk of the chapter is devoted to a detailed examination and interpretation of the data.

The closing chapter serves as an academic document taking advantage of the procured learners' needs and translating them into a syllabus for the target population. The suggested programme includes detailed descriptions of the syllabus template essential constituents. It is thereupon a step-by-step arrangement as an inclusive content and task-based syllabus with proposed tasks and activities in response to the learners' demands. The last part of the syllabus in chapter seven is devoted to some ELF tasks and activities with the character of raising learners' awareness of English use in an internationalised world. Finally, the syllabus is intended to be used by novice ESP practitioners or future researchers in the field of English for mechanical engineering.

Chapter One: English in its World Context

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1. Introduction

English is spoken practically everywhere and in almost every kind of situation in the world. It serves as a means of communication between people who share it as a mother tongue, and, on an international scale, it is a means of communication between non-native speakers in academia, business, politics, and intercultural exchanges. In trying to delimit the scope of the present study, various slightly differing English understandings have been identified in the literature. Therefore, this chapter aims at establishing reference marks to the concepts utilized in the present study. This part of the work offers an overview of relevant concepts in English as a world language. The chapter also displays an overview of ELF, World Englishes (WE), and English as an international language (EIL) with their miscellaneous linguistic features as evidence of gaining ground in international communication today. It also provides previous research investigation findings related to the current nature of English in an Algerian professional context. Finally, the section discusses how to include and adapt some activities and course content covering ELF forms and awareness-raising exercises.

1.1. English as a World Language

One of the significant consequences after Brexit, i.e., the United Kingdom's (UK) withdrawal from the European Union (EU), is the number of significant changes that the UK undergoes in the present circumstances. These significant political and economic developments have an impact on the linguistic and cultural hegemony of English (Lalić-Krstin and Silaški, 2018). Similarly, Modiano (2017) notices that Brexit may also revolutionize the English language status in the EU and the world in general, particularly as the non-native speakers (NNSs) outnumber the native speakers (NSs) of English. For example, English used nowadays is the language spoken by a "Turkish businesswoman communicating with a Korean sales representative at a convention in Sao Paulo, or by a Finnish diplomat discussing climate change

with a Romanian scientist at a conference in Johannesburg" Toolan (1997:8). Therefore, English has an international context influenced by a multitude of linguistic identities and cultures. The aforementioned instances tell us much about the weight of English status worldwide; consequently, it is evident that English plays a crucial role in enhancing worldwide communications. Crystal (1997) refers to the world English position by declaring: "When new technologies brought new linguistic opportunities, English emerged as a first-rank language in industries which affected all aspects of the society-the press, advertising broadcasting, motion pictures, sound recording, transport and communication" (p.110-111).

By examining the current variables that might be linked to English study requirements and its function as an international language, McKay (2002) points to several areas. The applied linguist mentions, for example, how English is used across the world to negotiate and debate educational, social, political, and economic concerns. Moreover, book publishing, travel, and tourism are other factors that contributed to the spread of English worldwide. It is important to note that most international commercial transactions are conducted in English. Several companies demand their employees to have a good command of the English language in order to interact with their business partners. Nishanthi (2018) embodies this matter by stating:

> Global companies such as Airbus, Daimler Fast Retailing, Nokia, Renault, Samsung, SAP, Technicolor, and Microsoft in Beijing, have mandated English as their official corporate language. In addition, in 2010 the company Rakuten, a Japanese cross between Amazon and E.bay, made it mandatory for their 7,100 Japanese employees to be able to speak English (p.873).

From these perspectives, learning and speaking English will help learners, especially professionals, connect and communicate globally. It can also help them acquire intercultural communicative skills when mainly communicating with NNSs. Learning English will offer

more opportunities to participate in international seminars, business meetings, and technical industrial exchanges (Mauranen, 2007). When using English globally, the acquired cultural knowledge is useful for a better understanding of the others and will allow users to save time and efforts in resolving communication misunderstandings.

English has historically been acquired to interact with individuals originating from the UK, the United States of America (USA), and other countries where English is a mother tongue. However, the English worldwide position is growing faster and is continuing to increase (McArthur, 1998). It is, therefore, evolving at a faster rate and being used in a wider range of situations than ever before. From international politics to entertainment, from air traffic to academia, trade, diplomacy, and social media, English is used as a global language in an immense range of sectors (Crystal, 1997). Nevertheless, if speakers in certain situations and communities do not share a first common language, certain forms of varieties emerge for communication (Coffin, 2001). They are developed mainly for one reason; to share a simplified form of this language and to adapt its uses according to the speakers' needs (Jenkins, 2015). Simply put, the new language variety is chosen as a strategy for resolving communication issues.

Many of the actors in this language dynamism are non-native users, such as professionals, students, and teachers, who convey the rich impact of their languages and cultural backgrounds on English (Blake, 1992; Kerswill and Torgersen, 2011). To this end, they are re-adapting English to serve as a lingua franca for people who speak different first languages. It is in this sense that English has been globalised (Mauranen, 2012; Laitinen and Levin, 2016; Laitinen, 2017). Therefore, it would be of a high importance to set the scene to learn how English acquired that multifaceted characteristic. Nevertheless, before delving into the discussion, it is interesting to know the etymology of the lingua franca concept. Subsequently, a brief hint on the historical origin of the word will be described.

1.2. Algiers, the Cradle of Lingua Franca

The term lingua franca has been a concept of ongoing change and evolution in use and a matter of interest in both sociology and linguistics since the end of the nineteenth century (Cogo, 2015). Concerning etymology, Hall (1966) explains that some linguists translated Franca as Franc, which signifies French. He maintains that the term derives from the Crusades. Baglioni (2017) refers the concept of lingua franca to a contact language that arose naturally to overcome communication difficulties, with a basic grammar and lexicon restricted to the representation of the required concepts for the participants' communication goals, frequently merchants. In fact, historians and linguists offer insights into the use of lingua franca as a language spoken around the Mediterranean and the North African region comprising Algiers, Tunis and Tripoli:

> In Algiers, as throughout almost all the Levant, Muslims and foreigners used a jargon made up of Italian, French and Spanish, known as Lingua Franca or Petit Mauresque, which facilitated understanding of the three languages, and in which any resident could make himself understood.
>
> (Nolan, 2020:14)

A compilation of samples documented in the region of Algiers and its neighbourhood witnessed that the dominating linguistic situation in the region after the seventeenth century was of a lingua franca, under the rule of the Ottoman Empire with a multilingual population (Mallet, 2013). In another piece of work, Akbari (2013) reports that the fluctuating population and their linguistic diversity typified the Mediterranean character of the region. People in Algiers, Tunis, and Tripoli were not only hosts of multiple cultures and histories of different nations, but a "a more complex setting of polyvalent cultures that existed in the contact zones of the pre-modern world" (p.6).

From this evidence, lingua franca had its origin in the North African region because of its civilization and multiculturality, which helped grow the demand for a common tongue. On the other hand, the history of the English empire created a new form of English spoken all over the world. Crystal (2003) notes: 'There has never been a language so widely spread or spoken by so many people as English' (p.139). In his work, he also mentions that English is a language that started spreading from tribes and is still extending over the globe.

1.3. The Early Beginning of English as a Lingua Franca

English was brought to the new continent with the first colonists, at the commencement of the seventeenth century. Words that had perished or changed meaning in the UK may have survived in the US (Barber et al., 2009). For more than three centuries, the American lexicon evolved independently of the British capital and was affected by the changing environment. The early Americans had to invent terms to describe the strange things they encountered (McArthur 2003; Graddol, 2006). Therefore, English sub-categorization and the early signs of varieties may be traced back to 1930, when Ogden introduced the idea of Basic English (Crystal, 2003). He maintains that after regular interactions with English, vernaculars in some colonies were converted into creoles. The indigenous people had minimal effect on English after that, which was the distinction between "settlement" and "trade" colonies establishing Englishes.

According to Mufwen (2001), the impact of local languages and cultures in exploitation colonies in India and Malaysia was higher than the impact in settlement colonies in Australia and New Zealand. And this is how the first deviations from the English language began. On the other side of the globe, English has established itself as the primary vernacular and commercial language in the US. Many countries wanted to trade with the US as it grew economically dominant (Hutchinson and Waters, 1987). After World War II, the US became a major military and economic force and English gained primacy as the world's language of trade, business, and

eventually academia as well as diplomacy. That was not just due to military or imperial factors, but also to media, cinema, and technology, which played a role in granting it world hegemony.

As a language expands away from its origin in terms of geography, changes in pronunciation, grammar, and even vocabulary will result. Consequently, a nearly new type of language will emerge (Crystal, 2003). This fact explains the existence of WE, as defined by Kachru (1985). In recent years, talk has been more about Indian English, Singapore English, Australian English, Irish English, British English, and American English as different variations. Later, Crystal (2012) foresees the status that English could have in the future and he asserts that "English will retain its role as the dominant language in world media and communications...It is essential for progress as it will provide the main means of access to high-tech communication and information over the next 25 years" (p.113).

1.3.1. Definition of English as a Lingua Franca

It is widely believed that ELF is "a contact language between persons who share neither a common native tongue nor a common (national) culture, and for whom English is the chosen foreign language of communication" (Firth, 1996:240). The focus that has been under investigation in recent applied linguistics studies has been on the interactions which occur between speakers for whom English is not necessarily the mother tongue. ELF, according to Mauranen (2018), is a second-order contact language that brings together a huge number of distinct second language similect users. Coined by Mauranen in (2012) from similar + lect, she defines the term as a linguistic variety spoken by people who speak a second language (L2) other than their first language (L1) or foreign language (L3), for instance, with characteristics conveyed from the L1 in parallel by individual speakers, rather than by a whole coherent group.

The new aspect that has lately made a difference in the ELF debate, is the fact that English is spoken not only by English native speakers in multiple countries and with various origins, but it is also spoken by speakers of various mother languages in various situations

across the world (Brutt-Griffler 2002, Crystal 1997, Graddol 2006, Jenkins 2003). In WE study, the difference between a native and non-native speaker of a language is increasingly being put into question. A natural speaker is traditionally thought to be someone who learned a language without formal schooling from birth. A NNS of a language, on the other hand, has learned it as a second or foreign language after being introduced into his or her first language and does not have the same instinctive fluency as in the native language (Mestherie & Bhatt, 2008).

Although the goal of ELF is to be functional regardless of the speaker's nationality, it is critical to be aware of the other's culture in order to acquire communication methods and cope with communication breakdowns that occur in ELF situations. Mauranen (2018) opines that "ELF is not just a contact language where English is a domestic language or otherwise especially salient in a given community, but a non-local lingua franca, the means of communicating between people from anywhere in the world" (p.07). In this respect, there are two common beliefs in the field of applied linguistics with regard to ELF definition; the first view provided by a number of scholars (e.g., House, 1999; Seidlhofer, 2001) support the principle that NESs are excluded when referring to NNSs Vs NNSs' interactions. The second school is in favour of incorporating NSs involvement in information and intercultural exchanges combination (Gnutzmann, 2000; Jenkins, 2007; Mauranen, 2012). The present research study is in favour of the second view advanced by the founding figures of ELF in the field of applied linguistics, as many of the Algerian transactions are conducted with both native and non-native speakers.

One of the earliest studies Lingua Franca Core (LFC) about ELF phonological characteristics established by Jenkins (2000) includes features and elements mostly required for intelligible pronunciation collected by speakers who do not have a common mother tongue. Jenkin's research also demonstrates how certain sounds regarded as "notably English" but also particularly challenging for learners, such as the "th" sounds /θ/ or /ð/ are frequently *"dropped*

or pronounced differently" (p.138) from natives by ELF speakers, with no effect on communication success, and thus should not be included in the LFC (Jenkins, 2007).

Morphology and syntax have been studied in a similar approach. "Different constructions" that emerge often in ELF communication frequently include deviations from "most typically English" characteristics such as 3rd person '-s, tags (Seidlhofer, 2011:106), phrasal verbs and idioms, and tense use with a penchant for '-ing' forms. (Jenkins, 2002:90). These deviant uses, however, should not be considered as "errors", according to (Seildhofer, 2004:213; Jenkins, 2007), as they do not impede successful communication and do not create communication breakdowns. However, Kasper and Rose (2002) bring to light that the lack of awareness in both linguistic and pragmatic competence may cause strong incomprehension especially among NSs Vs NNSs interactions. Thus, ELF most essential characteristics regard the speakers' degree of awareness as well as their behaviour to make the conversation or the written message as intelligible and comprehensible as possible (Meierkord, 1998).

1.3.2. The Position of English as a Lingua Franca in the World

The word 'variety' has been questioned in relation to ELF, (e.g., Seidlhofer, 2007; Jenkins, 2015) for indicating an established language form, along with a speech community that can be accurately characterized as such. It is then a contact language that speakers acquired in their learning process or by encountering it through contact with other foreign speakers. Consequently, speakers in lieu of attempting to reproduce a target variety, mainly the native one, ELF users concentrate on the grammar, vocabulary, and pronunciation that will let them communicate effectively with as many people as possible around the world.

The recent studies conducted to understand the ELF issue, in particular, provide valuable indications for evaluating the influence of English in intercultural communication. In this line of thought, the communicative effectiveness of English in ELF is emphasized by ELF academics. For example, Seidlhofer (2001) argues that "the intellectual battles which are being

fought over issues rooted in ideological positions, commercial interests, ecological concerns and social identities go largely unnoticed by the largest group of users of 'English' (p.141-142). She emphasises that English speakers do not need to be native-like as "ideal speakers"(p.141) are, especially when conversing with other NNSs, and that they are more concerned with the speech act and the functional element of language than with its form. "People need and want to acquire the instrument 'English' whatever the ideological baggage that comes with it" (ibid: 142).

For this purpose, it is of utmost importance to reveal some communication strategies used by ELF speakers to achieve intelligibility in communicative situations. According to (Lowe, 2019) ELF users employ a variety of communication techniques as described in the following scenarios:

➢ Speakers learn to pay attention to their discussion partner and change their words accordingly.

➢ To make what they are saying easier to comprehend, they may use simpler vocabulary or syntax, use more gestures, or slightly alter their pronunciation.

➢ They may add additional pauses to their speech or use shorter phrases if they are having trouble being understood.

➢ It is more important to be understood than to sound like a native speaker.

Hülmbauer et al., (2008) conclude that the "capacity for accommodation is likely to emerge as a crucial factor for communicative success" and that "the communication process is based on collaboration in which all the interlocutors are continuously and actively involved" (p.32). In a situation of international business dealings, most interlocutors assert communicative confidence when exchanging deals because what matters for them finally is what they say rather than how they say it (Alessia, 2010).

The opposing view held by the opponents and those who are in favour of the inner circle varieties Quirk 1982; Honey, (1997); Trudgill, (2002); McArthur, (1998) concerns the validity of the good command of the language for a successful communication. Some differences are considered as mistakes or errors, Jenkins (2000) responds "There really is no justification for doggedly persisting in referring to an item as 'an error' if the vast majority of the world's L2 English speakers produce and understand it" (p160). The non-native varieties of English are also considered as interlanguages, i.e. "The type of language produced by second- and foreign-language learners who are in the process of learning a language, borrowing patterns from the mother tongue", as defined in Longman Dictionary of Language Teaching and Applied Linguistics (1992:267). Moreover, Mufwene (2001) considers interlanguages are "individual phenomena . . . based on no communal norm" (p. 8).

In terms of interculturality, NSs, according to Seidlhofer (2004), are typically underprivileged concerning intercultural skills and tactics due to a lack of expertise in these processes and an over-reliance on English as their first language. For instance, NSs' idiomatic language is frequently an impediment to cross-cultural dialogue between NNSs of English and can be a source of communication breakdowns.

Non- native varieties or WE as labeled by Kachru (2005) have long been regarded as "incorrect," "improper," or "imperfectly taught" forms of English. ELF has also regularly been described as 'defective' English (Phillipson ,1992:49). He believes that the spread of English itself was a kind of imperialism and its growth might have caused to raise the issue of which English form to use and which one to standardize.

For example, in a recent error analysis study of English pronunciation by Arabic speakers, Khalifa (2020) overtly depicts the difficulties that Arabic learners have when speaking English as "errors" (p.2). These speakers, according to him are subjects to improve

their English accent and to "erase" (ibid) their first language second nature when learning a new language:

> The Arab learners have to acquire the new habits and at the same time try to avoid interference from the old habits. In particular, they need to learn how to stress the English words, since knowing the correct stress placement is part and parcel of what we mean when we say that a person has command of English (p.3).

As a result of such a view, it is reasonable to conclude that the discourse around a global form of English focuses around who owns English and where competency rests. While some scholars, for instance, (Quirk, 1985) argues that only Standard English, American or British English should be promoted over the whole world. Firth (1996: 245), for instance uses terms such as "linguistic incompetence" and "linguistic infelicities" to describe the talk of lingua franca speakers. Meierkord (2012) on his part, refers to ELF as an interlanguage. Others, mainly (Kachru, 1985), defend the stance that new forms of Englishes have arisen in new sociolinguistic as well as sociocultural contexts. this English reality should be recognized in the field of applied linguistics. While the former defines proficiency in terms of the NSs' norms, the latter argues that "the native speaker is not always a valid measure for the global uses of English" (Kachru, 1992:358). Therefore, he focuses on NNSs' proficiency under the perspective of bilingualism and multilingualism.

According to Seildhofer (2009), both ELF speakers and their talks should not be simply compared to native speakers whose English varieties are seen as the model and therefore be considered as "incomplete" or called "learner language". ELF should be defined in terms of its very own characteristics. This clearly highlights the controversy and complexity in researching ELF talk. What House' (2003) notifies as the most prudent behaviour is to avoid any value

judgement towards the constructions made in ELF situations. This is extremely appropriate for the current research concept.

In this spirit, it is necessary to emphasize that, although analyzing each understanding among the whole discussion, one's viewpoint has been increasingly verified; the goal of the study is not to ascribe ownership of English to any of the countries involved in forming the objective of the study. It rather refers to discovering the context in which English is used between people coming from different cultural and national backgrounds and to raise the English learners' awareness about its existence and about its features. This process is in academia, an open field for learning both foreign languages and intercultural communication particularities.

To conclude, Widdowson (1994) resolves the debate by saying: "The very fact that English is an international language means that no nation can have custody over it" (p.38). It can also be noticed that learning English has long been considered a pedagogical concern with the emphasis on eliminating vigorously learners' mistakes in writing as well as in speaking. However, English needs to be taught as it is actually used and developed in the world and as a language not just appropriated by the natives, but simply by all who use it. This will promote cultural unity and neutrality McKay (2002).

1.3.3. English as a Lingua Franca Empirical Investigations

Contemporary lingua franca research has sparked a lot of interest among academics, and the number of studies on the function and character of English used by NNSs has grown extensively and very rapidly. Seildhofer (2005) opines that "In order to gain acceptance as a legitimate, and not a 'deviant', linguistic code of intercultural communication, ELF has to be well-grounded in empirical description" (p.65). With the development of an ELF corpus, the Vienna-Oxford International Corpus of English (VOICE) project (Seidlhofer, 2009) has achieved important advances in this regard. The VOICE is a bank of a million-word systematic collection of mainly spoken linguistic data (Seildhofer, 2010) that is the first computer-readable

corpus of its sort to capture spoken ELF exchanges. As its name indicates, the VOICE corpus is mainly spoken, and most empirical investigations into ELF date back to the 1990s or later (Watterson, 2008). The majority of the included ELF grammar research has relied on spoken corpora or on a small number of texts genres (figure 1.1). Little attention had been paid with regard to collecting written corpora and genres before 2015, when another significant and initial corpus called Written English as a Lingua Franca in Academic Settings (WrELFA) was created and directed by Mauranen (2015). In fact, WrELFA is a new initiative in the realm of ELF research, it is a project that gathers and analyses academic writings published in ELF. The works, both published and unpublished, embody genres in several disciplines. Evaluative reports, such as examiners and peer reviewers' ones, digital media texts and research blogs are among the target text types (ELFA, 2015).

Other interesting initiatives in the written corpora were compiled as database of written academic ELF. These banks of information are: Corpus of English Texts in Sweden (SWE-CE) and the Corpus of English Texts in Finland (FIN-CE) which gather collections of various spoken and written genres. Figure 1.1. displays the organisation of texts types and their sources.
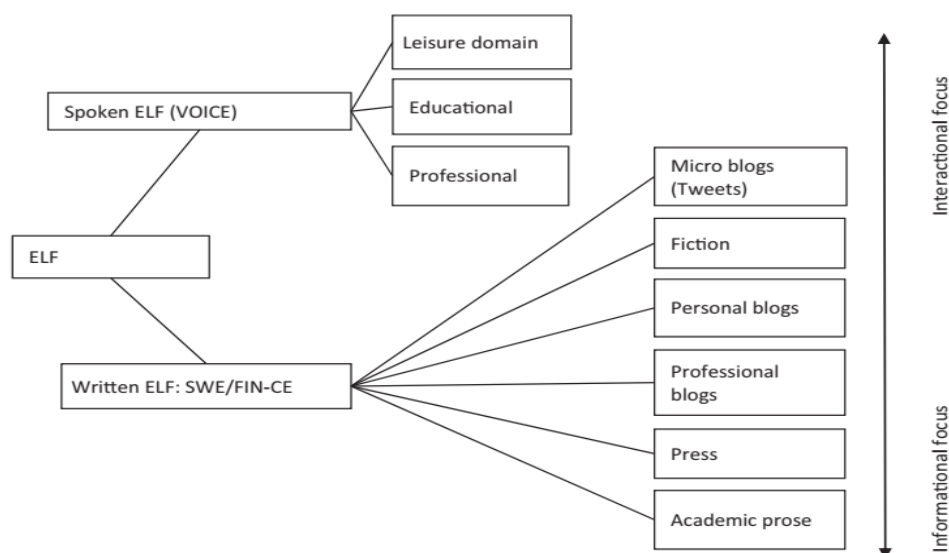
Figure 1.1. Covering the informational–interactional continuum of ELF genres (Latinen, 2020: 431).

The diagram shows the different assortments of spoken and written texts collected by the main figures in ELF research. The diagram shows clearly the wide array of written sources compared to the spoken ones. Masters-level theses prepared in areas other than language studies make up the academic component. The news component comprises news pieces (reportage, editorials, and reviews) produced in English by Finnish and Swedish journalists from online news sources (Latinen, 2020). English as a foreign Language (EFL) teachers can largely refer back to the above-mentioned types and database as valuable materials to course and syllabus design generally in ESP and more particularly in EST. It serves the goal of creating a solid empirical foundation for academic instruction and research for this emerging concept.

In the same line of thoughts, Hülmbauer (2018:31) explains that the 7th edition of Oxford Advanced Learner's Dictionary of Current English includes a preliminary description of some lexico-grammatical patterns in ELF users' language, which could be very suitable for the ESP learners in general. In fact, ESP learners' needs regarding ELF can be very basic and may revolve around discovering the initial features to raise their awareness about it. The preliminary findings in the VOICE research project indicate that ELF speakers seldom use the third-person singular present tense –s and most of the time they interchange the use of relative pronouns "who" and "which" (Seildhofer,2009).

ELF is also characterised by inserting the "definite and indefinite articles" where they are not required in SE, and by omitting them; where they are necessary (e.g., they have a respect for all, he is very good person). (Hülmbauer; Böhringer, & Seidlhofer, 2008). The three researchers also add the plural form of nouns which is not identical to the standard norms (e.g., informations, knowledges, advices) as well as the deviant use of the demonstrative "this" with both singular and plural nouns (this country, this countries). Other features are added such as the exhaustive use of some verbs for different meanings as compared to its general use in SE (e.g., make instead of do, have, put and take; e.g., make sport, make a discussion, put attention).

Seidlhofer (2005) adds to the lexico-gramatical characteristics list, the irregularities in using prepositions (discuss about something, phone to somebody) and adding nouns (black colour rather than just black, how long time rather than how long) (p.92).

Khalifa (2020) observes in his English error analysis among Arabic speakers that in pronouncing /p/ and /b/, /v/ and /f/. the sounds /p/ and /v/ pose a problem for the speakers, because these do not occur in Modern Standard Arabic (MSA) (p.148). As a result, the learners substitute their MSA /b/ for English /p/ and /f/ for /v/ due to L1 transfer into English or they may also pronounce English initial /p/ and /v/ unaspirated like when they occur in the middle of words. These particularities in English pronunciations by some Arabic speakers can also be added to the ELF core features and used as authentic instances in the English class.

The following are some of the potential salient lexico-grammatical features that Seidlhofer (2004) has identified in VOICE. The samples are taken verbatim.

a. *Non-use of the third person present tense "s"*

   "She look very sad"

b. *interchangeable use of the relative pronouns who and which*

   "a book who,"   "a person which"

c. *Omission of the definite and indefinite articles where they are obligatory in native speaker   English and insertion where they do not occur in native speaker English.*

d. Use of an all-purpose question tag *"isn't it?* or *no?"* instead of *"shouldn't they?"*

   "They should arrive soon, isn't it?"

e. *Increasing of redundancy by adding prepositions:*

f. *"We have to study about . . ." and "can we discuss about . . . ?", or by increasing explicitness "black colour" vs. "black" and "How long time?" vs., "How long?"*

g. Pluralisation of nouns which are considered uncountable in native speaker English "informations," "staffs," "advices"

h. Use of that-clauses instead of infinitive constructions (p.220).

Widdowson (2003) elucidates that communicating in this manner is "to exploit the resources of the language to produce a novel combination, not allowable by the conventional code, but nevertheless a latent possibility which is virtual in the language though not actually encoded" (p.48). These ELF characteristics reveal that using them entails using English 'exolingually,' that is, adapting the language to communication requirements, which frequently implies that established rules are not followed (Seidlhofer et al., 2008).

All in all, the fact that ELF might have such unusual properties does not imply that it is solely made up of language that deviates from accepted conventions. These deviations are related to their contexts of occurrence. Therefore, ELF according to Jenkins (2006) "Includes both [...] variants that would be considered errors in relation to EFL and, inevitably, given the common ancestor, also variants that are native-like, but by default rather than design" (p.141). On this account, the focus of attention should not simply be, and certainly not primarily on language qualities in the broader sense, but critically, on what these features reveal about underlying communication strategies, as mentioned earlier. ELF encounters are thought to provide insights into certain patterns and processes of communicative engagement.

1.3.4. English as a Lingua Franca in the Algerian Professional Context

Algeria, as part of the Mediterranean region, is an active participant in the English-speaking world. By virtue of the Algerian involvement in international business, economics and intercultural communication, the country has strategic partnership with countries where English is a mother tongue such as the UK and the USA. Important business and industrial collaboration are also set up with countries such as China, Turkey, Poland and Spain where English is the international communication currency.

In a personal research study carried out in 2012, with the purpose to obtain an overview of the type of English used in an Algerian workplace. The designed company had as main

partners anglophone and non-English speaking partners. A triangulation study design of both qualitative and quantitative methods was followed to investigate and analyse a corpus composed of mails and other written guides, safety data sheets, contracts and brochures.

The analysed texts indicated that the written documents in SE, were only the official ones such as commercial papers, catalogues or manuals, devoted to fairs and exhibitions. Whereas other text types, such as instructions, invoices, and manuals which were intended for a local use, were deviated from Standard and were not necessarily requiring high level of English proficiency. Not surprisingly, e-letters were considered to be the type of texts with the lowest level of language proficiency (Benaouda, 2012). However, a great deal of misunderstandings behind communication breakdown occurred in mails, especially if the type of deviations concerns mainly the change in word order, misuse of tense, or more importantly the different cultural conceptions.

The case study has highlighted some considerations for future business and technical English teaching, particularly about the use of ELF and to some hints on intercultural communication. The study has demonstrated that English, in business texts produced by NNSs is not completely free from being mixed with WE features. Algerian Workplace English is then identified as in Jenkins' (2006) term exonormative. It is characterised by deviations from SE such as in grammar, vocabulary and syntax, besides the distinct NNSs' cultural conceptions. These different uses of English are not errors but deviations and only the unawareness of these elements in workplace communications makes business communication failures.

To examine and spot these deviations, an applied linguistic researcher needs to follow a framework of analysis. For this purpose, Crystal (1997) sets a model of distinctive grammatical features of New English(es), considered as a model of discourse analysis in ELF. However, it has received much criticism for its length and complexity. As an alternative, a simplified version may be suggested to facilitate and make the analysis more practical and

serviceable for ELF written texts as displayed in (figure 1.2). This model was used as a support to easily detect the ELF deviations in the Algerian context. Hence, it can be utilised for further analysis of both ELF and WE corpora analysis.
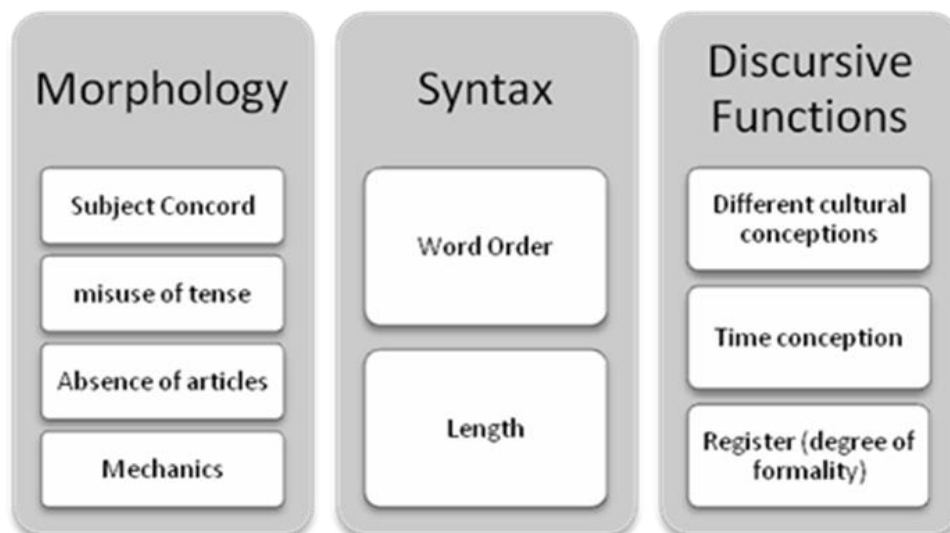
Figure 1.2. Levels of ELF Written Corpora Analysis

The collected instances revealed important deviations in inflections belonging to ELF features used by NNSs. These deviations included mainly some words spelling that were spotted throughout reading. The great majority of deviations concerned; verbs, especially concord in tense and subject and the different use of articles. With regard to the category of Syntax; it unveiled an important rate of different sentence structures, in terms of word ordering, sentence length due to disrespect of punctuation rules. Finally, a set of amassed examples showed variations in cultural conceptualization which differ from a partner to another. Subsequently, some of the accumulated examples will be exposed as authentic instances of ELF characteristics in the Algerian context. (Benaouda, 2012) (the instances are taken verbatim).

(a) Subject Agreement

"We offers" (Spain)
"You is placing" (China)
"It demand" (Turkey/ China)
"there is problems". (Poland/ China)

"Regarding the shipments of the good, I'd like to ask you why the good don't goes through Ghangzhou? because we have other products, that we gather and ships together from Ghangzhou". (China)

"Pressurised contoiner........ Protects from sunlight and not exposes to temperature exceeding 50°C. .... Keeps away from sources of ignition. No smoking. Avoids spraying in eyes. Keep out of reach of children". (Spain)

subject agreement is an important deviation from the Standard, used in workplace English, on accounts of the high rates detected in the analyzed documents. Though the absence of third person singular concord does not change the meaning, it offers an unusual texture to the reader and makes him uncomfortable.

(b) Deviations in the Use of Tense

'Can be eat up". (China/ Spain)

I sent the parts' instead of "I will send the parts". (China)

"I will delivery the mould and moulds after received your payment" (China)

"Andy ckeck with the bank details and reply you asap tomorrow" (China)

"On the 23th we start manufacture samples of long neck bottles for your attention"

(Turkey)

"About the formal invoice, I just wanting know we making it, if you have not, no problem".

(China)

"should be depositing". (Poland)

"must be sterilizing", (Spain)

"Spout standing pouch is very fit for the packagings of the flavoring and the soy sauce which can be eat up at once after open" (China)

This deletion, un-deletion of correct verb forms on different occasions can characterise World Englishes. Becoming familiar with these mechanisms proves to be very productive for reading and writing in such workplace contexts.

(c) Mechanics

"the chang", "liguid" , "bagrow". (China) instead of

"the change, "liquid", "background" (Standard)

"We passibly products same samples of yours". (Spain)

(d) Absence of Articles

"***LARGESPILLS*** Immediately evacuate personnel from area.
Insolate source of leak. Dam spillage with earth or sand to prevent the
material from entering a sewer or water course. Collect up for
authorised disposal. Full protective equipment must be worn, includ
respirator or self contained breathing apparatus." (Spain)

"when we take order, quantity is 50000 pecs." (China)

(e) Syntax

Word Order

"Rinse your head and retain half hair conditioner. If it is dry you will cause
it to frizz", (Spain)

"To detangle your hair, from the end you start at the roots of the hair". (Spain)

The word order in the above- mentioned sentences had a negative effect on the
customer's use of the product as the sentences are not well constructed.

Sentence Length/Absence of Punctuation

"According to the characteristic of fan-coil air-conditioning systems you require
cooling formula of fan-coil units based on the heat transfer and gauge cooling system which
can monitor the individual air-conditioning cooling consumption during a period of time by
detecting the parameters of inlet air condition –temperature and humidity – of the fan-coil air
conditioning system as well as the parameters of inlet cooling water provided by chiller."

(China)

The above is an example taken from a machine guide document to explain the use of a
spare part in a machine that was misused and exchanged. Therefore, the length of the sentence
was a major reason for the misunderstanding in the use of the part.

(f) Discursive Functions

NS business correspondence	**NNS business correspondence**
	I miss you
"Hope you are well,"	it has been so long that I haven't hear
"Hope business is well,"	about your news"
	"How about last night? "
"It has been so long that we	"Can you send me a picture of you"
	"I want to imagine your life there…"
haven't heard about your news"	"You found a wife?"
	"What is the name of your secretary
"It is very nice to hear from you,	

Cultural differences in the business context have been noticed in the correspondence between the Algerian jobholders and their respective partners in provenance of the anglophone countries and those of the non-English speaking ones. Examples of the sort may cause a cultural shock especially when received for first time. Sometimes it may even cause embarrassment when the employee is asked to translate the message simultaneously. This evidence shows how important is ELF to be integrated in teaching English for technical branches, as they are tightly linked to the professional globalized world. Therefore, raising awareness about ELF pragmatics is crucial in intercultural communication success.

1.4. Models of English in the World

From its early start, English has always been a highly dynamic language and its continuous growth worldwide has granted it different status and by consequence different names. Further to what was stated earlier, it is evident that the acquired taxonomy carries historical and ideological connotations. In this respect, the different varieties can be determined by area, education, subject, medium, attitude, or interference, according to Quirk (1982). Accordingly, using the words interchangeably needs careful linguistic and cultural considerations. Different names for the same concept will almost result in hot debates about which term to use or which language to speak.

1.4.1. World Englishes

WE term serves as a broad 'umbrella label' for all varieties of English used across the world (Kachru, 1985); WE and international English are two terms used interchangeably although the former typically refers to 'new Englishes' (institutionalized ESL varieties, or nativized and indigenized varieties in Bolton's (2004) view. In the Kachurvian's view the term "Englishes" suggests that the language is not a monolith but a number of varieties that refer to the same entity and which are different at the same time. Therefore, WE is highly heterogenous and reflects a high level of intercultural diversity.

Bolton (2004) also opines that due to the close relationship between these words, the variety of labels may generate confusion in use. However, the issue behind WE discourse is not only a matter of outnumbering nor a question of labelling according to Kachru (1985). It rather regards the reference to the internal norms of usage (endonormative) within countries where English is spoken as a second language which is gradually shifting from Anglo-American external models(exonormative) (Jenkins, 2000). Regarding speaker status, Kachru's (1985) influential classification of English into three concentric circles categorises the NSs in the Inner Circle, New English speakers in the Outer Circle, and ELF speakers in the Expanding Circle. Figure 1.3. displays the three concentric circles as viewed by Kachru and described in an academic research study.
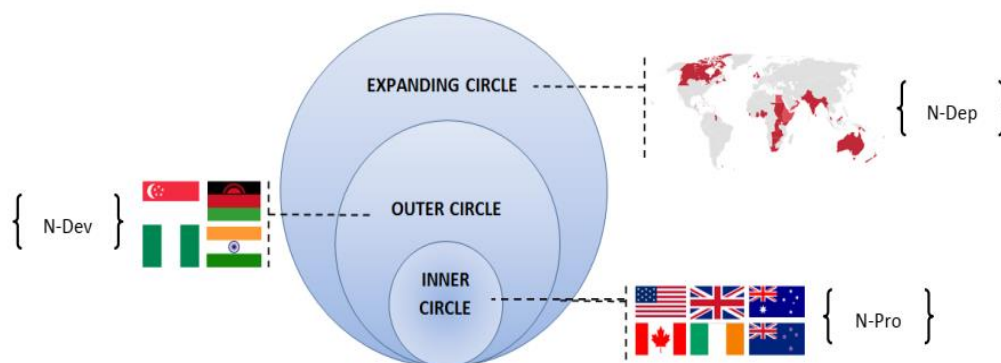
Figure 1.3. Interpretation of Karchu's three circles of English (Agüera, 2016:12)

First, the Inner Circle is the long-established base of English in terms of linguistics and culture. It is considered as the "norm-dependent" circle (Kachru, 1985) where English is the native language or mother tongue of most people in countries including the British Isles, Ireland and the US. Kachru (2005). English is also the dominant language in the regions where the first diaspora began in the sixteenth century and as a considerable number of speakers left England for Australia, New Zealand, several Caribbean islands, and Canadian Anglophone population.

Second, the Outer Circle is also considered as 'norm-providing' and "norm-developing" (Kachru, 1985). English, in the Commonwealth countries, has a historical as well as an official status. It is also spoken by the second diaspora which includes the Asian and African ancient colonies such as Bangladesh, India, Kenya, Malaysia, Pakistan, the Philippines, Singapore, Sri Lanka, Ghana, Nigeria, Tanzania and Zambia (Crystal, 1997). English in these countries is the most widely used language in the educational, legislative, and judicial sectors, as well as in national business. The worldwide developed varieties are referred to as "New Englishes". They are varieties mainly distinguished by a diverse range of local languages and different cultures. According to Kachru (1996), these variations developed their own grammatical innovations, lexis, pronunciation, and unexpectedly their particular idioms and conversations.

Finally, the 'norm-dependent' Expanding circle (Kachru,1985) includes English as used and adapted according to the speakers' needs. Jenkins (2007) explains that the purpose in ELF is to learn English for intercultural communication, whereas English as a foreign language (EFL) learning targets communication with NESs. In this context, the Australian (Hülmbauer, 2008) says: "ELF is defined functionally by its use in intercultural communication rather than formally by its reference to native-speaker norms" (p.27). In this domain, English is not official, but it is present and necessary in a variety of settings and for a variety of activities such as international business promotion, tourism, economic development, and technological access. It can also be found in higher education and cross-cultural interactions. China, Indonesia, Japan,

Korea, Nepal, Saudi Arabia, Taiwan, the former Soviet Union, and Zimbabwe are just a few instances of expanding circle countries. Algeria and the Mediterranean countries are also part of the expanding circle by virtue of English use in the sectors mentioned above.

It is worth mentioning that Kachru's model of the three concentric circles has been praised for the plurality that it offers to English and has been criticised for its sectarianism. Kachru's model of WE can no longer be viewed via the three-circle paradigm since a substantial proportion of speakers from the Outer and Expanding circles now live in the countries of the Inner circle. Because of immigration and other social and economic forces, even native speakers are subject to ESP (Kirkpatrick, 2010; Canagarajah, 2006). The main concern with Kachru's three concentric cirlces is what Jenkins (2003) says about the model's lack of grounds for ESP, which is still a subject that needs more investigation.

1.4.2. World Englishes Linguistic Features of Variations

McKay and Heng (2008) show characteristics of diversity arising from the use of WE. These characteristics are mostly phonological, with lexical, syntactical, and discourse elements of the English varieties receiving minimal attention. Both authors emphasize strongly that teaching EIL should be aware of the world's existing varieties and should enhance speakers' and learners' awareness of any phonological and lexical differences. It would be then convenient for a pedagogical purpose to look at some of the linguistic features of some varieties in WE and make more acquaintance with some constructions collected from different topics. The examples are taken verbatim from a number of researchers reported by Mckay and Heng (2008) in their work:

a) Grammar

Platt et al. (1984) offers an array of instances collected mainly from different countries of the Outer Circle, the instances also represent features regarding Nouns and Verbs.

b) Nouns

  (i) Absence of plural concord

Up to twelve <u>year</u> of schooling. (India)

A province will be divided into <u>district</u>. (Philippines)

   (ii) Confusion between countable and uncountable nouns

Although it is <u>a hard work</u>, I enjoy it. (Korea)

An old man showed <u>a great patience</u>. (Korea)

   (iii) Interchangeable use of "she" and "he"

My mother, <u>he</u> live in Kampong. (Malaysia)

My husband who was in England, <u>she</u> was then my fiancé. (East Africa)

   (iv) Change in the word order within the sentence

<u>*Ninety over*</u> *cheques. (Singapore/ Malaysia)*

<u>*That your*</u> *brother will he come? (Nigeria)*

  c) Verbs

This category is very revealing as to the native speaker's language and its mechanisms:

  (i) Absence of the third person singular concord in the present

She <u>like </u>the news. (Philippines)

  (ii) Nonappearance of the past indication

I <u>move</u> to hostel. (India)

I stay three months in Germany. (Singapore)

  (iii) New constructions of phrasal and prepositional verbs

The older generation find it difficult to <u>do with</u> the younger people (Korea)

Gardens <u>come on</u> life again.(Korea)

  (iv) Borrowings from local languages

Away with this <u>lobola</u>. Why do they have to be so demanding for their daughters?
(South Africa)

  Kamwangamalu (2001) gives the word "dowery" as an equivalent to the word "lobola" though it has got shades of meaning within the local language. Bauer (2002) reports that some borrowed words in the topic of artefacts and culture have undergone a slight shift from the original form and have integrated English for everyday use.

d) Discourse Style

Acquaintance on the cultural knowledge is highly required so as not to misunderstand the pieces of discourse we read when reading or dealing with non-native speakers, consider the following example:

A: *He died yesterday morning.*

B: <u>*Wonderful*</u>*!*

Platt et al.(1984) explain that in West African English, "wonderful" conveys good as well as bad amazement.

A: *You know, I <u>took in</u>.*

B: *Really, congratulations!*

Crystal (2003) explains that in New Englishes "take in" means to be pregnant; he sets also a table where he displays some constructions that may seem unusual to a native learner or an EFL learner who is only acquainted with British and American English. The most famous confusing word in business, when dealing with speakers of World Englishes, is 'costive' for 'costly'. Costive in Inner Circle English or in the Concise Oxford Dictionary stands for the adjective 'constipated', whereas the World Englishes speakers use it for 'expensive'.

Construction	Illustration	Sample Sources
Sentence Functions		
Rhetorical questions	Where young! (= I'm certainly not young)	Mesthrie (1993b)
	Where he'll do it! (= He certainly won't do it!)	Mesthrie (1993b)
	What I must go! (= I don't want to go)	Mesthrie (1993b)
Tag questions	He can play golf, or not?	Baskaran (1994)
	He can play golf, yes or not?	Baskaran (1994)
	You stay here first, can or not?	Baskaran (1994)
	You didn't see him, is it?	Tripathi (1990)
Clause elements		
SV order	at no stage it was demanded . . .	Baumgardner (1990)

	Why a step-motherly treatment is being . . .	Baumgardner (1990)
Object deletion	Those who cannot afford	Fisher (2000)
End-placed Conjunctions	She can talk English but	Mesthrie (1993b)
Noun phrase		
Preposed elements	milk bottle (= a bottle of milk)	Baumgardner (1990)
	knife bread (= bread knife)	Tripathi (1990)
	under construction bridge (= bridge which is under construction)	Baumgardner (1990)
Pronoun deletion	Did you find? (something previously mentioned)	Mesthrie (1993a)
Other constructions		
Prepositions	request for	Gyasi (1991)
	investigate into	Gyasi (1991)
	gone to abroad	Gyasi (1991)
	ask from him	Awonusi (1990)
	discuss about politics	Awonusi (1990)
	return back	Tripathi (1990)
Comparatives	more better	Tripathi (1990)
	younger to	Tripathi (1990)
	junior than	Tripathi (1990)
Lexical morphology	coloured television	Awonusi (1990)
	repairer (= repairman)	Awonusi (1990)
	second handed	Awonusi (1990)
	proudy	Tripathi (1990)
	poorness	Mesthrie (1993b)
	imprudency	Fisher (2000)
	delayance	Gyasi (1991)
	costive (= costly)	Gyasi (1991)
	matured (= mature)	Gyasi (1991)
	storeyed (= with several floors)	Fisher (2000)

Table 1.1: Some potentially distinctive grammatical features of New Englishes (Crsytal, 2003:153)

Considering the important number of varieties in WE, gaining access to the various structures would be a challenging undertaking. Therefore, it is critical to note that what Crystal (2003) has gathered in the above table may appear obvious and simple to decipher. However, in a professional setting where the reader is focused on understanding the message provided by the foreign partner, some constructions of this nature can be perplexing and require multiple readings to decipher the intended meaning.

1.4.3. English as an International Language

English as an International Language (EIL) does not relate to a specific type of English according to Sharifian (2009). He emphasizes that "English, in all of its forms, is a language of international communication, and hence intercultural communication across the globe." (p.2) The Longman Dictionary of English Language and Culture defines the term "international" as "inter-nation-al," meaning "occurring between various nations." Although some readers may incorrectly believe that international is a type of variety, a number of experts (Kirkpatrick, 2007; McKay, 2008; Jenkins, 2003) emphasize that international refers to the global region that English has covered. WE in its broad definition is frequently regarded as encompassing all varieties spoken worldwide covering even the varieties in Kachru's (1985) three concentric circles. The terms international English and global English are frequently interchanged in this description of World Englishes (Jenkins, 2006). In this context, it is claimed that:

> EIL contexts are ones in which English is used between speakers coming from
> different cultural and national backgrounds. In response to the rapid
> development of new Englishes, in particular in what was termed 'Expanding-
> Circle' countries, it has become safe to replace terms like 'English speakers
> coming from different cultural and national backgrounds' with 'speakers of
> World Englishes.   (Sharifian, 2009:3)

Smith's (1976) views, for example, the term 'international language' as "one which is used by people of different nations to communicate with one another" (p39). Later in (1983), he modifies it to "English as an International Auxiliary Language" (p.2) to refer to a type of English which is formed of features of WE of the outer circle and to the native speaker standard English. Quirk (1982:152) uses the term "Nuclear English" to describe a reduced version of Standard English spoken by native speakers. The underlying structure of English, he argues, is the common core of all variations.

On the other hand, Crystal (1997, 2003) employs the concept "World Standard Spoken English" to describe a global standard English that he predicts will emerge from present local Englishes. Nerrière (2006) is the first to coin the term "Globbish" (p.3) to describe a common language which is in one's sense synonymous to ELF. He characterizes it as "correct English without the English structure". When thinking about and debating EIL a main pattern, it is important to remember that WE and ELF are not completely irrelevant. Indeed, it would be argued that the EIL model is inextricably linked to WE and ELF. (Marlina, 2004)

As mentioned above, and contrary to common perception, EIL does not refer to a particular variety (Baker, 2015) and it is "variously actualized" (Widdowson, 2003) according to its contexts of use. Following this line of thought, EIL is regarded as ELF and as "a function that English performs in multilingual context" (Friedrich & Matsuda, 2010: 20) and both terms will be used interchangeably, despite the fact that "ELF researchers prefer the term English as a lingua franca to English as an international language […] both terms are currently in use" (Jenkins 2006:160). This is an adequate paradigm for the present research, where awareness of the other culture is very important and yet regardless of which "circle" it belongs to. Therefore, one needs to be aware and able to negotiate with people from different cultures and backgrounds to facilitate communication, as EIL recognizes WE in the angle of intercultural communication and competence.

1.5. English as a Lingua Franca in the Academic Setting

In what has been described so far, it was a question to discuss the ELF and WE characteristics with few hints on the hegemony of the English varieties. However, the heart of the matter is not about whose language to speak, it should rather concern the teachability of ELF in the language classroom and more specifically what should be proposed to the language learners. In this context, ELT materials have traditionally tended to emphasize on established and standard representations of language, most commonly portraying British – and to a lesser

extent American – Standard variants as the only legitimate exemplifications of the English language (Matsuda, 2012).

English materials spread over the world are determined by market needs, the second factor that influences the textbooks conception is the authors' view in conceiving the content and teaching it (Hutchinson and Waters, 1987) Moreover, the complex nature of polylingual environments as well as the expanding roles and functions of ELF provide fresh challenges to generally held ideas about language, language teaching, and language education. (Matsuda 2003; Seidlhofer, 2004; Canagarajah, 2005; Jenkins, 2006; Matsuda and Friedrich, 2010; Cogo and Dewey, 2012)

Ferguson (2012) offers some concise recommendations. According to him, "teaching ELF is far more than teaching a collection of forms, though this is, of course, still necessary" (p. 178) and what should be taught needs to include both SE forms as well as what has been identified as unique to ELF. He further goes on to state:

> Teaching ELF will need [….] to focus more on processes of communication –
> that is, on how to adapt what one wishes to say to the needs of the interlocutor
> through paraphrase, repetition, exploitation of redundancy, through variation in
> lexis, through the exploitation of shared plurilingual resources (e.g., borrowing,
> code-switching, cognate lexis), and so on (p.178).

Ferguson does not only focus on teaching the form, he prioritises the awareness raising of the learners about the existence of other varieties than the Standard with its distinctive features. By doing so, the learners will learn communication strategies to negotiate meaning with their interlocuters coming from different origins. In the same page Ferguson asserts that "

> What seems required is an increased emphasis on communication strategies and
> processes. […] Specifically, awareness of variation in language, awareness of

how successful communication of meaning is negotiated in ELF contexts, awareness of crosslinguistic similarities and differences (p.178-9).

In these circumstances, Jenkins et al. (2011) declare very explicitly that the ELF is not about deciding what should or should not be taught in language classes. Instead, ELF researchers believe it is their concern to make their research findings available for teachers and allow more flexibility for them to introduce the importance of ELF in their own individual contexts.

Nevertheless, the nature of ELF, its characteristics and the numerous contexts in which it is used, necessitates classroom techniques that provide the above-mentioned requirements. In other words, a workable pedagogy that supports ELF as an established English variety needs appropriate classroom activities that can raise the learners' awareness about the existing differences between the standard variety and those which deviate from it. Activities that help the learners accommodate themselves with linguistic and intercultural communication strategies.

Intercultural awareness and culture-focused sections are areas where more ELF activities could be exploited to raise the learners' awareness. In terms of material development Gray et al., 2002) observes that the penchant towards introducing WE features is likely to be apparent in the sections devoted to (inter)cultural awareness. Others (Lee 2012; Sharifian and Marlina 2012) propose to introduce the ELF designed activities, either in courses, primarily in higher education, or as separate subjects that may be included into a syllabus. A third view by (Sifakis 2006; Lee 2012; Friedrich 2012) supports the idea to prepare a communicatively oriented curriculum with the purpose of developing varieties awareness.

The present study adopts to a great extent the first approach and in one's opinion, it is more practical to introduce ELF forms and functions besides raising learners' awareness as

sections devoted to intercultural communication practices. This would help learners, especially ESP at higher education, be encouraged to detect ELF deviations within authentic situations.

1.5.1. Classroom Practices for ELF Awareness-raising

Bowles & Cogo (2016) work on a number of activities that may be proposed in language as well as Content and Language Integrated Learning (CLIL) courses and syllabi. The two authors consider the plurality of English and the diversity of the contexts in which it is used a plus in offering the teachers opportunities to extend materials, textbooks and activities including samples of ELF and WE. The suggested activities are classified into four main categories; WE and ELF awareness, out-of-school exposure, intercultural communication strategies and intercultural sensitivity.

a) *WE and ELF Awareness Raising Activities*.

When exposed to different situations be it academic or professional, English learners must learn how to detect how English is used differently in diverse contexts. This is the outcome of a prior training about the English varieties and their development. On the ground of this, Bowles & Cogo (2016) propose a number of activities and materials to raise the learner's awareness about the language diversity and to help them be interested to observe independently the different deviations. To achieve this goal the learners could:

- Work in groups, using the internet, to look for videos, extracts of movies, songs or documents that contain different varieties and samples of WE or ELF. From these samples the members of the group could identify ELF characteristics and discuss them with the classmates.

- Be able to notice and spot differences and similarities in provided materials such as textbooks, English in media and authentic materials. The same activity could be done through listening and speaking.

- Make the difference between the use of English occurred in different situations especially the professional context.

- Have more opportunities for real or virtual contacts with individuals from different origins and speaking different languages for intercultural exchanges.

Lopriore & Vettorel (2015) find possible materials that suit the above-mentioned activities, such as interviews with famous native and non-native politicians, actors, singers, and sports champions using English as an international language as well as video excerpts from different parts of the English-speaking world TV series.

b) *Out-of-school Exposure Activities*

Cultural contact beyond the school confines has a crucial importance in the learner's academic cycle. A strong link should be created between the instructional materials, the teacher and what occurs in real life situations through guided observations as well as via programs that promote possibilities for language use. Vettorel (2015) suggests the following activities:

- To participate in forums and blogs or special groups interest where international speakers meet and use English to interact.

- Examine the occurrence of English in the environment (online media, advertising, some authentic documents and sort out all characteristics and possible deviations of English use.

- Using particular follow-up activities from the teacher or the coursebook, the learners can identify the communicative strategies they use when interacting with foreign partners on the web. The learners then can report, exchange with partners and compare these techniques to evaluate their effectiveness (Matsuda, 2012).

c) *Intercultural Communicative Strategies*

Intercultural misunderstandings are more likely to happen among NS-NNS interactions than in NS-NS ones. The revolution that Communicative Language Teaching (CLT) has bought about in ELT was fostering the communicative approach and by consequence the communicative strategies. Therefore, within an EFL- oriented perspective, the plurality of the linguistic and cultural nature of interaction offers a fertile ground to CLT to be stimulated in. Seidlhofer (2011) proposes that learners:

- Can participate in observation activities, such as detecting communication methods employed by speakers in video excerpts and those used by the speakers in their L1. These strategies may be then used in simulations or in interactive tasks by learners in classrooms.

- Be active members in specially designed blogs, Facebook pages and e.twinning platforms and communicate in ELF authentic situations.

She also sees that:

- The syllabus content should contain activities that promote knowledge and sensitivity to many languages, cultures, and traditions, as well as varied identities, modes of communication, emotional expression, and etiquette.

In a nutshell, the reality of ELF and English diversity of forms and functions, as well as resources and classroom methods, can no longer be overlooked in foreign language pedagogy. Developing materials in ELT and even in ESP should no longer be limited to native speakers only. Rather, developing a sociolinguistic awareness (Bayurt & Sifakis, 2015) towards other world varieties needs to be present in the 21st century English syllabus design. Fostering the learners' competence to observe and analyse the world existing varieties will teach them how to become independent learners.

1.5.2. ELF and Teaching English for Specific Purposes

Taking into account the significant ELF data discussed earlier, there is always an open debate about teaching ELF in English as a foreign language (EFL) and more interestingly in ESP. "English language teachers, both native and nonnative speakers of the language, need to know about varieties of English that they and their students are likely to encounter in and outside of classrooms, and they need to teach their students the sociolinguistics tools to navigate across Englishes" (Dogancay and Hardman, 2017: 19). In fact, ESP learners are subject to encounter ELF and WE in their respective future workplaces; therefore, they require higher levels of communicative competence in intercultural contexts. However, many teachers and ESP practitioners may not agree with the idea of integrating ELF data as pedagogical source, as it represents a challenge to many of the teachers, syllabus designers and learners. Seidlhofer (2004) particularly draws attention to the fact that there are no misunderstandings in ELF interactions and if any of them exist, they are repaired by communication strategies such as repetitions and rephrasing. These strategies are the ones that need to be focused on in incorporating ELF in EFL or ESP (Seidlhofer, 2004, 2007).

1.6. Conclusion

This chapter has attempted to give an overview on English in its natural context. A brief historical outlook has shown the origin of the term lingua franca followed by a succinct hint on the spread of English as an account to the many English(es) existing in the world today. Further, discussions, undertaken so far, have defined some of the world varieties and have exposed the main characterisations of ELF, EIL and WE. The debate has been over distinguishing the three concepts in terms of both ownership, and flexibility to tolerate specified terms shared by the interlocutors especially in a professional setting.

This part of the work has included a summary of a personal research results reporting ELF features as used in an Algerian setting. These typical features could modestly be added to

the ELF Core established over the world. Another important discussed point has been the issue of ELF teachability and materials content. The chapter has provided some interesting insights over the possibility to adapt some materials and course contents including ELF forms and awareness raising activities. Finally, the section has concluded with activities that could be key elements for meeting the challenge to introduce ELF characteristics in some of ESP syllabi. The analysis in the next chapter is based on the current conceptual apparatus, and some ESP findings are related to syllabus ideas in order to align the framework with the language characteristics illustrated herein.

Chapter Two: English for Specific Purposes: Concepts and Approaches

Chapter Two: English for Specific Purposes: Concepts and Approaches

2. Introduction

The main goal of this chapter is to establish a clear description of the ESP concept that is not a simple process. However, the gathered components help summarise a practical definition before working on an appropriate elucidation in the context of the current work issue. To this end, ESP concept are examined from different perspectives and cover a number of areas in the literature. The section investigates how different approaches, developed in the area, have influenced its evolution. The present review of literature reflects, in a large part, the nature ESP, taking into account the necessary and unavoidable position of English today. The first part of the present chapter introduces the major ESP concepts, features and main academics who have marked the field. Further typical characteristics as well as sub- classification are provided in this section to better visualise the context in which the discipline may be found in academia and professional life. It is also critical to refine the concept of ESP with special reference to ELF in an international specific context.

2.1. English for Specific Purposes: A Conceptual Consideration

One of the most important concerns of a considerable number of researchers in the field of ELT is the area of ESP (Anthony, 2018). This interest is mainly justified by the importance of English as the key to different disciplines such as technical and scientific ones. Therefore, linguists and teachers of the field have devoted long time and accentuated attention on research to provide more insights into the teaching of ESP. With regard to the Algerian context, teaching ESP in universities is a young field and still needs deeper investigation and thorough research to improve its practice. In consideration of that, ELT and ESP cannot be dissociable in a globalized intellectual world, and some characteristics that belong to ELT, in general, should be accounted for in teaching ESP.

It is therefore quite a challenging task to find the right and the most adequate definition of ESP which fits learners who are at work or those who are still studying, since the workplace is continuously evolving to meet the demands of globalization (Richards & Smith, 2010). Today more than ever, learners and professionals need to cope with professional communications in a variety of international situations. In this sense, according to Taş and Kenny (2020) "English for Specific Purposes (ESP) provides English language instruction that aims to serve learners' communication needs in English in a certain domain" (p.1). To this end, ESP should not only prepare learners for pure technical specific professional demands, but it needs also to strengthen their competencies for worldwide communication.

Due to its flexibility, ESP as a discipline has known many attempts in terms of definitions; it has been defined amply by different experts, yet little divergence has been noticed in the literature. The analysed definitions are rather harmonious and coherent; all matching the same nature. In fact, the literature according to Basturkmen & Valle (2018), is divided into two main schools; the first paradigm defends ESP as the discourse and genres used in the field, professions and workplaces. In contrast, the second school supports the understanding of ESP as being synonymous to academic practice.

Within the same regard, linguists, experts and researchers focus on the significance of the "s" which stands for specific as being the key element to ESP. As it is explained by Hadley (2006) "the key to teaching ESP is to focus on the "s" for specific. ESP can be differentiated from general ELT by its concern with specialized language and practice" (p.3). Nevertheless, the difference between "s" special language and "s" for specific needs is clarified by Mackay and Mountford (1978) who declare that:

> The only practical way in which we can understand the notion of special
> language is as a restricted repertoire of words and expressions selected

from the whole language because that restricted repertoire covers every

requirement within a well-defined context, task or vocation (p.4).

ESP hence, focuses more on language in context and through subject matter than on teaching grammar and language structures (Lorenzo, 2005). It concerns various domains ranging from law or medicine to tourism and business management. It especially covers communication demands and practices of certain occupational or professional groups. However, Hyland and Jiang (2017) argue that research results should be considered as implications in ESP classroom. They also contend that teachers are mostly motivated to emphasize speech rather than language form and to frequently refer back to a research-based approach to collaboratively understand language variations and varieties in different target settings and professional situations.

The second line of argument, concerns the most famous about ESP as an approach to teaching English (Hutchinson and Waters, 1987). For instance, Richards and Schmidt (2010) define ESP as "the role of English in a language course or programme of instruction in which the content and aims of the course are fixed by the specific needs of a particular group of learners" (p.198). Thus, ESP is characterized as being unique since its first objectives are to set the course purposes, materials, and methods in accordance with the learner's needs. ESP courses, then, focus on the language, skills, and genres appropriate to the specific activities the learners need to carry out in English (Dudley-Evans and St John, 1998).

Recent researchers have developed and have refined the concept of ESP, for instance, Anthony (2018) provides a definition that supports the above-mentioned discussion:

English for Specific Purposes (ESP) is an approach to language teaching that

targets the current and/or future academic or occupational needs of learners,

focuses on the necessary language, genres, and skills to address these needs, and

assists learners in meeting these needs through the use of general and/or discipline-specific teaching materials and methods (p. 10-11).

Other earlier definitions such as the one advanced by Mackay and Mountford (1978) who define it as the teaching of English for "clearly utilitarian purposes" (p.2). In addition to the claim by Robinson (1980) who states that ESP is the teaching of English to the students who have specific objectives and purposes which might be professional, academic, scientific etc. later, Strevens (1988) also meets the preceding definitions with his statement on ESP, he therefore opines that ESP is "designed to meet specified needs of learners; related to content, to particular disciplines, occupations and activities; and centred on the language appropriate to those activities, in syntax, lexis, discourse, semantics"(p.84). These definitions clearly indicate that ESP is not confined to any specific field, discipline or profession and has a broader area of action.

Further to these preliminary definitions, ESP has been the centre of interest of the worldwide educational institutions especially at the tertiary level. It is clearly evident that the sole objective of ESP is to create adequate programmes and essential tailored materials for the purpose of meeting the learners' needs in the different domains. Their specific needs analysis is a sine qua non condition in order to identify, first, these utilitarian purposes and to prepare the ESP syllabi together with its operative pedagogy. To conclude, Dudley-Evans and St. Johns (1998) highlight a very important feature of ESP that can summarise the definitions for ESP as being a teaching process to meet specific needs of the learners and which makes use of the methodology and activities of the discipline it serves. It is also known as a strategy which focuses on language that is acceptable for these tasks.

2.1.1. ESP Main Features

In another set of definitions, Strevens (1988) introduces new elements to ESP description. He embodies ESP in terms of four absolute and two variable characteristics. Later, two other items are suggested by Dudley-Evans and St. John (1998) as absolute and variable ESP characteristics to define clearly what ESP is. These characteristics take account of:

Absolute Characteristics

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

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

3. ESP is centred on the language appropriate to these activities in terms of grammar, lexis, register, study skills, discourse and genre.

Variable Characteristics

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

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

3. ESP 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 is generally designed for intermediate or advanced students.

5. Most ESP courses assume some basic knowledge of the language systems.

Afterward, Dudley-Evans and St. John have added and have removed some of the characteristics mainly the one which makes ESP in contrast with EGP. As mentioned before, they assert that both types are considered as approaches to teaching and they describe ESP as being a "state of mind".

A number of other researchers promoted other characteristics. Mohan (1986) for instance, states that ESP courses focus on preparing learners "for chosen communicative environments" (p.15). Belcher (2006) adds that "ESP assumes that the problems are unique to specific learners in specific contexts and thus must be carefully delineated and addressed with tailored to fit instruction" (p.135). Thus, it could be maintained that ESP, from the outset, focuses on learner centred teaching, the thing which was unusual for traditional general English courses. The techniques for language instruction must be well investigated and attentively oriented on the unique demands and objectives of language learning and use.

2.1.2. ESP as a Sub-branch of English Language Teaching

ELT can be significantly classified into English for general purposes (EGP) and ESP. The teaching of English language at schools, colleges, and universities comes under EGP. ESP, in its turn, is broadly meant for English for occupational purpose (EOP), English for academic purposes (EAP) and EST as explained by Hutchinson and Waters (1987).

Based on this classification, Umera-Okeke (2005) adapts the ELT tree proposed by Hutchinson and Waters (1987), the pioneers in elucidating the nature of ESP, into a modified diagram. In her proposition, she makes prominent the place of ESP as a building stone into the ELT branch. She also traces the teaching of English first purpose as for learning and communication. English is taught around the world in multiple ways; it is qualified as a mother tongue (EMT), as a Second or Foreign Language (ESL) and EFL which later gave birth to ESP and general English (GE). The diagram below is a suggested model combined between what Hutchinson and Waters (1987) established as the "ELT tree" (p.17) tree and what was suggested by Umera Okeke (2005).
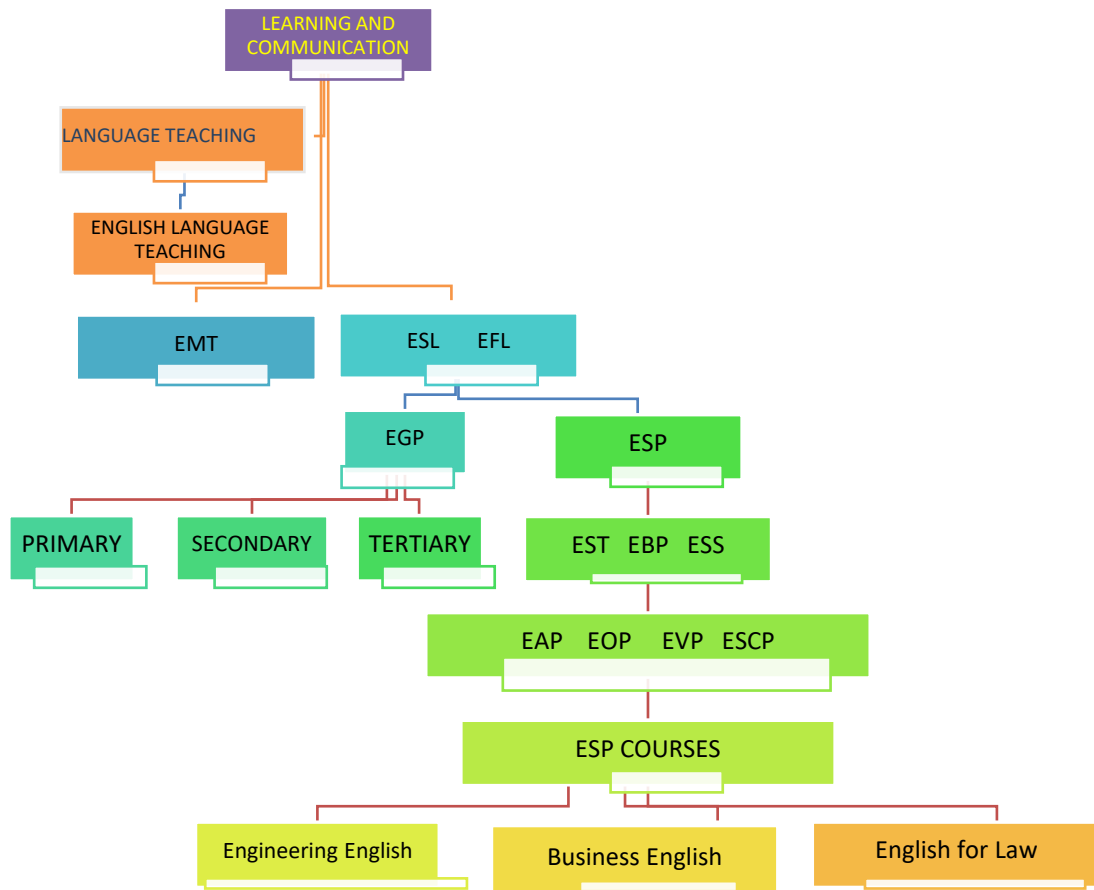
Figure 2.1: The ELT chart (adapted from Hutchinson &Waters (1987:7); Umera Okeke
          (2005:4)

The diagram illustrates ESP as directly linked to ELT and as contrasting to EGP; it is

intended to more specified fields. As a matter of fact, ESP combines English language teaching

and content subject. Engineering learners or business ones, for example, may make use of what

they learn as discipline content to translate it into specific second or foreign language objectives

and need to use it as language tasks and activities. Therefore, being able to combine the basic

language grammar and vocabulary with the main field of interest is highly motivating and

reinforcing the learners' abilities of their field subjects.

ESP teaching, as it emerged, was mostly concerned with the need to communicate across

languages in areas such as science and technology and business (Potocar, 2002). It has today

expanded to cover other areas such as EAP, EOP, English for vocational purposes (EVP),

English for medical purposes (EMP), English for business purposes (EBP), English for social sciences (ESS), and English for sociocultural purposes (ESCP) (Jordan, 1997:4).

A closer look at EGP and ESP is crucial for understanding their mutual relationship. EGP is essentially English language education in primary and subsequent school levels. Learners are introduced to the lexical/grammatical/rhetorical elements that compose spoken and written discourse (Hutchinson and Waters, 1987). Further to this description and according to Potocar (2002), EGP delivers fundamental English language knowledge and abilities at a school level when students' occupational/professional and further educational inclinations are not clearly established.

Additionally, EGP mainly targets language use in general situations. A working definition of both categories may set the difference as:

> ESP learners tend to have more focused goals than EGP learners. For example, an EBP course focuses on the needs of business professionals in terms of specific range of knowledge and skills, whereas an EGP course seeks to cover the whole range of grammar and lexis in the language with the goal of general language proficiency (Woodrow, 2018: 6)

EGP courses may target language competency appropriate to dialogues with restaurant staff, bank officers, shopping, and other different services. Therefore, general English teachers, could focus on how to read and write English typically found in textbooks, newspaper and magazine articles. Other lessons dealing with cultural norms and taboos are also traditionally included in EGP curriculums (Nodoushan, 2020). Pedagogically, a well-assimilated understanding of basic EGP should be prior to ESP instruction. A daring statement about the difference between EGP and ESP may be useful in settling on a final distinction description.

General (language for no purpose) courses at any proficiency level almost always teach too much, e.g., vocabulary, skills, registers or styles some learners do not need, and too little, e.g., omitting lexis and genres that they do. It is more defensible to view every course as involving specific purposes…

(Long, 2005:19)

However, Dudley-Evans and St. Johns (1998) claim that ESP may not always focus on the language of one specific discipline or occupation, such as English for law or English for physics. Some university instruction introduces students to common features of academic discourse in the sciences or humanities. According to them, frequently called EAP is equally ESP. What can be added in this line of thoughts is that some common features to EGP can similarly be joined to ESP lessons in the light of globalization since one cannot imagine international communications in a professional setting as purely subject matter–related, completely free from aspects of GE purposes.

This also makes the inference that ESP is not a product, that is to say, the language of specified materials nor it is a particular kind of language product of language teaching. Rather, ESP is an approach to teaching, as theorized by Hutchinson and Waters (1987). It is in fact, in their view, the analysis of the learners' needs that distinguishes ESP from GE. It is also through NA that the most needed language skills are determined by the learners and that design also the syllabus for their courses.

2.1.3. Types of ESP

Many people are perplexed by the definition of ESP, its division, and the contrast between what distinguishes it and what types are included in the area; nevertheless, a number of researchers have established unambiguous limits (Basturkmen, 2010). ESP types have been

identified according to the purposes they serve. Two main classifications are to be focused on, in the literature; first, David Carter (1983) distinguishes between three types of ESP:

➢ English as a restricted language

➢ English for academic and occupational purposes

➢ English with specific topics

By these three nominations, the classifications seem very close to each other, yet Mackay and Mountford (1978) noticeably explain the difference by starting to illustrate the restricted English as follows:

> The language of international air-traffic control could be regarded as 'special', in the sense that the repertoire required by the controller is strictly limited and can be accurately determined situationally, as might be the linguistic needs of a dining–room waiter or air-hostess…Knowing a restricted 'language' would not allow the speaker to communicate effectively in a novel situation, or in contexts outside the vocational environment (pp.4-5).

By this token, the authors give clearly a first picture to a branch in ESP. Its scope is extremely limited which grants the ESP learners the opportunity to learn English language for very limited purpose with specific expressions that cannot be used in other situations.

Carter (1983) puts at the heart of ESP, the second classification which is the central interest of many researchers in the field; EAP and EOP. Much interest has been devoted to these two branches, for instance Hutchinson and Waters (1987) entirely consecrate the ELT diagram in which both of types are clearly illustrated. However, they do not declare a specific distinction between them, in their view, on the basis of some considerations:

➢ Studies and work can be side by side for an ESP learner.

➢ The study purposes can be the same; since the ESP learner is a future worker or a worker who is studying for his job's sake.

The third and final type of ESP, according to Carter (1983) is English with specific topics; the classification concerns more the concept of 'topic' than that of 'purpose'. The topic, is parallel to the situational language that is determined mainly by the needs analysis of professional settings. English then, concerns given situations such as attending conferences or working in foreign workplaces. By inference, it is a method inspired from the GE situational method.

The majority of other researchers have restricted their classification of ESP to EAP and EOP. Robinson (1991) for instance, also includes the above mentioned two types in his classification of ESP. According to Kennedy and Bolitho (1984), EST is an integral branch of ESP. The recent model of ESP classification (Anthony,2018) is a detailed diagram encompassing both EAP and EOP with very clear illustrations of the sub-branches in each category.

It should be noted that, as a result of the several recommendations of ESP branches and sub-branches made by the aforementioned researchers, ESP has evolved into an umbrella word that encompasses a plethora of sub-categories. EST, EAP, English for business and economics (EBP), English for management, English for finance and banking, English for law, and English for tourism/engineering/accounting are some of them.
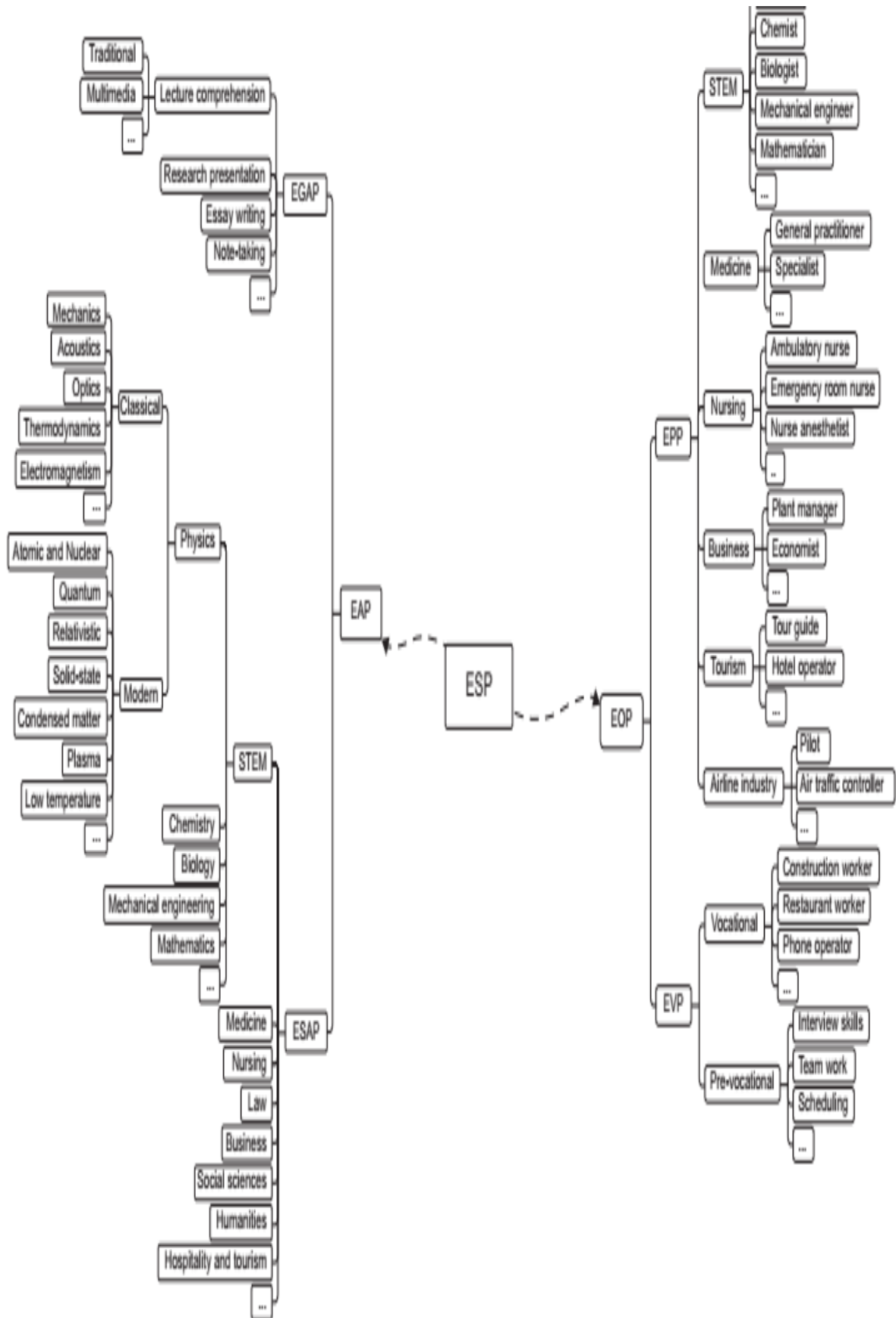
Figure 2.2. Some of the branches and sub-branches of ESP (Anthony, 2018:14)

As shown in the chart above, various contexts where ESP can be used broadly is displayed. EAP, as clearly pictured in the diagram, covers English teaching in academic institutions. It deals mainly with all what is about knowledge and usage to complete university studies in EGAP. EAP concerns also the common core for different disciplines in academic institutions; ESAP focuses on ESP in an academic setting (Anthony, 2018). The sub-branches mentioned in the diagram can go progressively narrow according to the learners' specialties. Learners are likely to need English for writing articles, preparing presentations and participating in seminars and in conferences. Among the disciplines classified under science, technology, engineering and mathematics (STEM); mechanical engineering is placed as one of the prominent disciplines in the field of ESP. To this end, it has been opted for to be the field of investigation in the present research study.

On the right side of the diagram, EOP prepares the learners who are receiving the disciplines instruction in academic institutions for future professional purposes. EOP, in this case, can be considered as either pre-service or in-service preparation of a future workforce (Dudley-Evans and St. John, 1998). EOP is also classified in figure 2.2 as teaching English for vocational purposes, that is to say for job use purposes considered as post-service training. pre-service training after undergraduate study can be a preliminary step of learning English whether before being recruited to find a job and acquire skills for the interview, or before starting service as a training for a specific occupation. Both EAP and EOP, in the model suggested above, are interrelated and cannot be dissociated. However, the language to be used for each sub-branch is definitely to be different according to the learners' needs. (Anthony, 2018)

Likewise, in-service and post-service training can be helpful for urgent purposes and for more enriching and convenient conditions. Professionals in medicine, engineering or business may benefit from workshops and training in-situ where they can participate and be involved to learn, use and communicate with English speakers from different origins and different cultures.

Post-experience training may be in some cases optional or relevant to the will of the job holder, if he is already acquainted with his job and knows what it requires from him, he may learn English to add knowledge of the language he already knows. Some instances of this case are experienced hotel or bank employees.

2.1.4. English for Science and Technology

Due to its historical and strategic relevance in the development of ESP as a subject in ELT, the classification of ESP results in the formation of EST, one of its earliest branches. In fact, EST has also been established as one of the most important sub-fields. Its main focus according to Woodrow (2018) is "on the technical vocabulary of scientific texts, the commonly found grammatical structure in them and their genres-for example, a laboratory report" (p.3). The discipline evolved quickly and has been widely explored in ESP course design as 'a la page' method (Dudley-Evans & St. John, 1998; Basturkmen, 2006).

Many publications dedicated to technology and scientific English practice were therefore available to expanding and demanding university audiences. Some examples of the textbooks devoted to these students include Ewer and Latorre: A Course in Basic Scientific English (1969), Swales' Writing scientific English (1971), Allen and Widdowson's English in Focus Series (1974), Bates and Dudley-Evans Nucleus: English for Science and Technology (1976) and other important series. The reasons why EST has dominated other types was stated by Broughton et al (1980) as the result of the following: "Half of the world's scientific literature is written in English" (p. 3) *and* "… two-thirds of engineering literature appears in English, but more than two-thirds of the world's professional engineers cannot read English*"* (Mackay and Mountford 1978: 6).

Despite the key positions of science and technology, which resulted in the development of ESP, most printed and on-line sources of ESP teaching, nowadays, may sometimes be regarded insufficient to address the problems faced by future specialists in their fields. Today, it is critical

to concentrate emphasis on teaching English in all of its aspects in such essential scientific and technical fields as mechanical engineering, particularly for those sub-specialties that concern the production development and are tightly linked to the industrial business partnership. The subject of study, mechanical engineering, has been chosen on the basis that it represents the core area of the Algerian industry and its foreign partnership.

Similarly, English is embedded in all very specific content subject, and it is of utmost importance to grant high interest and consideration to the teaching of ESP at tertiary level. It is also of a first priority to teach and train future engineers the intricacies of English for a promising field particularly in the Algerian country. However, as reported by (Dudley-Evans and St John, 1991) "The interdisciplinary nature of ESP is both a stimulus and a challenging demand." (p.60). Furthermore, these technical post-graduate specialty programs are relatively new in Algerian universities, and they represent a very rich and highly significant sector of ESP instruction.

2. 2. Background and Origin

With the influence of globalization, the demand for ESP is increasingly expanding, especially in countries where English is taught as a foreign language (Gao, 2007). Dominant areas in ESP, according to (Kaur & Khan, 2010), are now BE and EAP. However, science and technology contributed a lot in using English as a means of communication and had the merit to spread English globally. What stands behind its influence and the power it has succeeded in achieving today is in fact the outcome of World War II in 1945, which engendered a world-wide expansion in scientific, technical, and economic activities influenced mainly by the USA (Hutchinson and Waters, 1987). Another reason according for the creation of ESP was the Oil Crisis in the early 1970's which brought about western culture in terms of language, knowledge and money to the oil-rich countries in the four corners of the world.

Therefore, the demand of people to learn the language in-vogue increased, and teaching was on its learners' demands(ibid). English was then put at the forehand as a currency to international exchanges in technology and commerce. Shortly, motivation was built around English as the language of manuals, textbooks in specialized disciplines and business. The only way to promote it was to intensify advertising through broadcasting and commercialization (Basturkmen, 2003).

The USA, at the front, and the UK behind succeeded to build a parallel power of English to their economic, cultural and technological power. English slowly gained the label of international language of communication and science (Walters, 2002). Within the same line of thoughts Walters adds that with the rapid advance in technology, predominantly computers and internet, people have become closer from all over the world and participated in expanding once again English as the most fitting tool of communication. In parallel, with the effect of globalization and the cultural openness, English has gained its position as the lingua franca of worldwide communication. Woodrow (2018) emphasises ELF influence on science and technology as well as economy and commerce without neglecting others fields of modern life.

Crystal (1997) focuses also on the role of English in the technical disciplines to convey new inventions in the field of industry or to expose the use of machinery to its users. For the purpose of the present study, the more appropriate field which represents Crystal's (1997) instance can be the field of mechanical engineering. This is one of the reasons that has led universities, especially in a country like Algeria, which is in the greatest need of accessing industrial and technological development, to offer particular relevance to teaching ESP in universities. Therefore, it is crucial, for the students' community in such particular disciplines, to acquire wide knowledge in and about English language. By doing so, they would be able to achieve successful communication related to their careers and would learn to avoid communication breakdowns which might result in time and money loss.

2.2.1. Phases of Development

(a) *Register Analysis*

During its emergence in the 1960's, ESP has been referred to as the register analysis phase (Hutchinson and Waters, 1987). It started by its main research focus for EST in academic settings. The central point in language analysis was to categorize different language systems in different registers, electrical engineering in comparison to English of medicine for instance. It went further to distinguish it from one user to another (idiolect) in different registers and uses. Swales (1988) describes this phase as purely descriptive and quantitative and "had little explanatory force" (p.59). He reckons that it was useful, yet it didn't help with providing enough the teachers and learners with specific grammatical forms which fit specific texts structures. The same idea was underlined later by (García Mayo, 2000).

(b) *Rhetorical Analysis*

The second subsequent phase was acknowledged as the rhetorical analysis in the 1970's (Hutchinson and Waters,1987). Further development of ESP was influenced by a number of researchers namely Trimble (1985); Selinker, and Trimble (1973) who generated the rise of rhetorical or discourse analysis. The main focus of the investigation has moved from register analysis to "the relationships between EST grammar and lexicon and the authors' rhetorical purposes" (Johns, 2013: 24). The interest of rhetorical analysis, in this phase, concerned the notion of grammatical characteristics identified in specific contexts and in specific textbook, for instance, then compare them to grammatical features used in textbooks designed for general purposes.

In choosing the grammatical choice, the scientists stressed the power of purpose. Therefore, the ultimate goal of ESP researchers was inspired by the idea that if language in different contexts diverges, then tailoring language teaching to meet the needs of learners in

specific situations is also possible. At this initial stage of ESP (the 1960's and early 1970's), NA consisted in assessing the communicative learners' needs and the techniques of achieving specific teaching objectives (Brown, 2016).

(c) *Notional/Functional Approach*

Preceding the genre analysis theory that is currently dominating the field of ESP, emerged the notional/functional approach with its leaders (Wilkins, 1976; Bates and Dudley-Evans, 1976; Allen and Widdowson, 1974). Proponents of this kind of approach believe that the usage of language for learners is more important than the absorption of an unapplied system of grammatical forms. Therefore, a notional-functional approach directs its interest towards the communicative work of analysis, linking units with some functions including asking question, expressing opinions, expressing wishes, making suggestions, complaining, and apologizing rather than preparing ready-made structures for intended use.

(d) *Genre Analysis Approach*

The most recent view of ESP teaching and learning is the genre analysis which knew its birth with Swales (1990) then with Bathia (1993). The term genre acquired a considerable significance and weight in the field of ESP and became highly prominent in terms of research as expressed by Johns (2013). At the outset, the term genre was used to linguistically decorticate types of texts and analyse the elements that distinguish them from one another in relation to general English texts.

The study of genre analysis results from the understandings of the preceding approaches; they respectively concentrated on lexical and grammatical properties of register then on the communicative values of discourse with a great scrutiny of the language user's purpose(s). Swales (1990), in one of the leading researchers in genre study, defines genres as:

A class of communicative events, the members of which share some set

communicative purposes. These purposes are recognised by the expert

members of the parent discourse community, and thereby constitute the

rationale for the genre… In addition to purpose, exemplars of a genre

exhibit various patterns of similarity in terms of structure, style, content

and intended audience (p.58).

As a fourth stage of development, genre has focused on to how formal (linguistic and

organisational) regular features of texts relate to the textual/discourse practices of disciplinary

communities since the 1980's (Dudley-Evans, 1988; Swales, 1990, 2004; Bhatia, 1993). It is

principally thanks to Swales' work and the research it has inspired over the last decades that

ESP and genre analysis have become in many ways interrelated.

In 1990, Swales modified this analysis of research article introductions and assigned it

a three-move structure called the 'Create a Research Space,' or CARS model. The general aim

of a genre analysis in ESP was 'to identify the moves; a new element in ESP research, which

signifies a unit that meets both the writer's purpose and the content that s/he wishes to

communicate' (Dudley and John, 1998: 89). The principle of move analysis was launched to

become a main approach in ESP genre analysis. The three moves, as labelled by Swales, in

analysing research article introductions are "establishing a territory" (move 1), "establishing a

niche" (move 2), "occupying the niche" (move 3)" Swales, 1990: 141).

The desire to offer adequate models and descriptions of academic and scientific

writings, as well as to improve the capacity of non-native speaker students to comprehend and

produce them, have prompted interest in genre-centred methods to the study of written and

spoken discourse (Holmes,1997). However, some limitations have been reproached to genre

analysis as a pedagogical theory and tool. Further views in ESP developments consider learners'

purposes (Hutchinson and Water, 1987) rather than language features as central characteristics to ESP teaching.

(e) *Corpus-linguistics Analysis*

In keeping with the changes, exploration into ESP and the increasing demand for its development led to a growing interest to corpus-based studies. It has thus become core areas of ESP research to provide a better "empirically based understanding of language used for specific purposes" (Paltridge & Starfield, 2011:106). A corpus is "a collection of texts that has been assembled for the purpose of language study" (Thornbury, 2002:68). The useful information we currently find in dictionaries (frequency of a word, collocations, authentic examples of the word in context) is mainly the outcome of the development of corpus linguistics. Linguists generally see corpus linguistics as a "method of exegesis based on detailed searches for words and phrases in multiple contexts across large amounts of text" (McCarthy & O'Keeffe, 2010:3). They put emphasis on the benefits of corpus linguistics such as to provide the authenticity of examples, frequency information and quantification of collocation. Recording subtle changes in the meaning and usage of a lexical item and improving grammatical descriptions are also part of analysis focus. Woodrow (2018) observes that corpus studies are used to identify grammatical patterns to inform ESP course design. She maintains that "Lee and Swales (2006) developed a course for non-native students based on existing and students generated corpora" (p.22).

The above-stated theories offer an expansion of perspectives to ESP as a teaching approach as well as a field of research. The approach has developed with a rich history in terms of theories and principles that should not be considered as separate entities (Paltridge, 2013). The scope of ESP then has been qualified in the following graph:
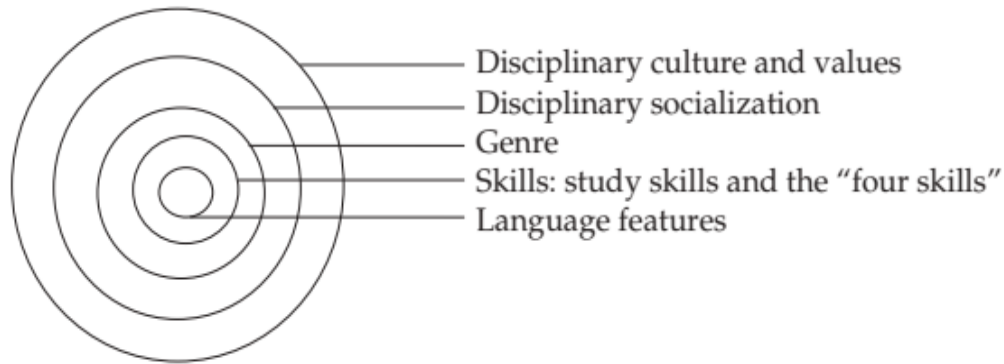
Figure 2.3. The expanding focus of ESP (Parkinson, 2013:156)

It should be noted from the above graph that ESP is not context free, and teaching English entails not only teaching structure and vocabulary, but also the awareness of the distinctions in conventions across disciplines as well as the social context in which it is used.

2.2.2. Theoretical Applications in ESP

Based on the theories stated above, ESP genre analysis first characteristic has become an approach to identify a type of regular trajectory to written and oral text within a discourse community with its communicative purposes (Bhatia, 1993). This means that before the examination of the linguistic aspects (grammar, syntax, tone, voice, style) both written and oral texts are recognized by the study of genre literature organisation (Swales, 2004), which all create the rhetoric "movements" of genre research. This is a rhetorical moves analysis. This general approach to genre analysis within ESP, has participated to a deeper and increasing knowledge about field specific genres. Research articles and abstracts have become a non-native ESP learner's extrinsic motivation to learn English, because their initial academic target is to participate in professional manifestations and be a member of a discourse community.

As its preceding theories, genre analysis has undertaken further studies to be more vigorous and more comprehensible to be applied in ESP classrooms. However, it has been subject to critiques by some who see genre as a classroom approach to teaching and learning.

They view it to be more calling for accommodation rather than for performance and innovation. (Johns & Dudley-Evans, 1991; 1998). However, a common strategy adopted to teaching and learning specific purpose genres has directed classroom pedagogy to raise learners' awareness of the specific field genres, and their consciousness about the rhetorical organization and communicative purposes (Cheng, 2014). The following diagram is proposed by Bathia (1997), it displays some examples of genre texts categorised according to their communicative purposes and that may be valuable pedagogical tools in an ESP class.
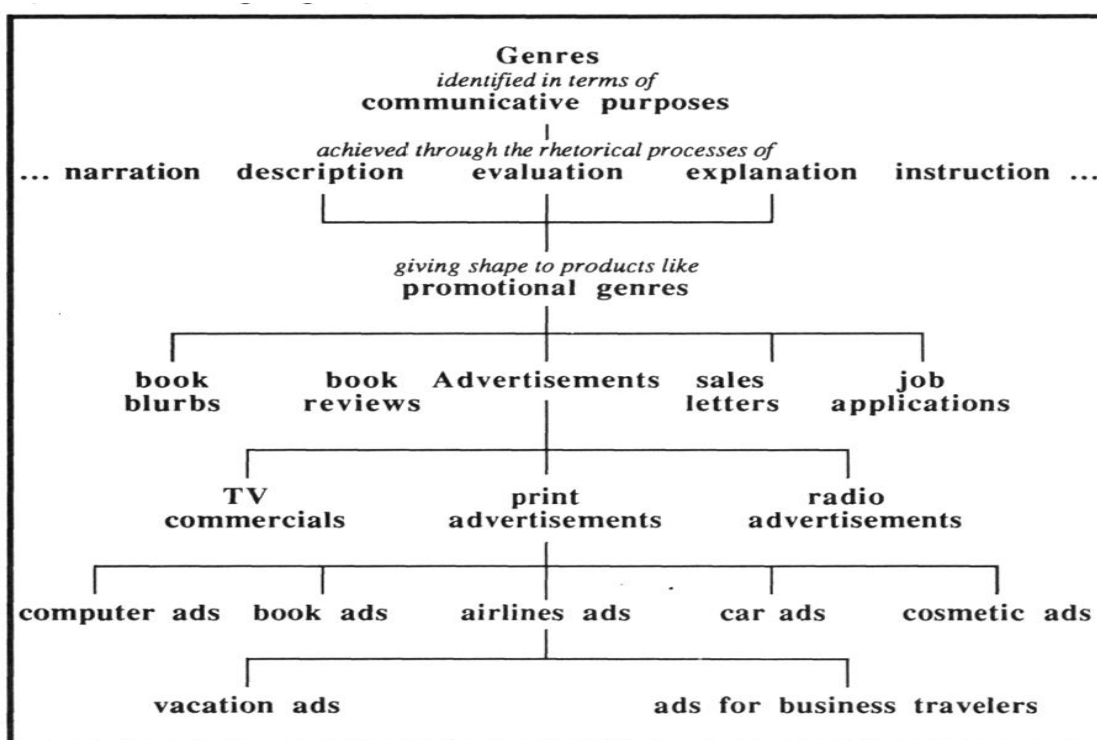
Figure 2.4. Levels of Genre Generic Description (Bathia, 1997:632)

The genres proposed above are part of what is called the promotional genres, and similar subcategorization can work in any type of discipline. Halliday and Matthiessen (2004) very successfully used this genre subcategorization to teach genre in tertiary level and in professional settings. In another framework, the dimension of corpus linguistics in the field of ESP teaching is of a great support in developing syllabi and tailoring materials (Boulton, 2016) This approach is a core element for learners to understand the intricacies existing in both native and non-native

communications. Identifying the frequently used vocabulary, grammatical structures and functions that students may encounter in both professional and real-life situations will offer insights into field-specific English and identifies samples of regularities about professional communication in international contexts (Seildofer, 2011). Some of those instances are found in the British Academic Written English (BAWE Plus and the British Academic Spoken English (BASE Plus) online corpora. However, little investigation has been made in the field of EOP corpus investigation especially in written texts (Flowerdew, 2014). As mentioned in chapter one, the same reproach has been made for the studied corpora devoted for ELF, most of the studies concern mainly spoken interactions. The Cambridge and Nottingham Corpus of Business English Project (McCarthy et al., 2007) is an example of a documented collection of texts from a variety of business meeting scenarios.

Research progress in the field of ESP has considerably contributed to the expansion and far-reaching investigation with the purpose of developing the teaching of ESP. In his work, (Flowerdew, 2014) foresees the significance of the fusion of corpus linguistics with genre analysis and ethnographic approach, all together with software technological progress will offer important input for ESP in future years. It will provide hence insights into larger real-life professional corpora and know more about the language use in such contexts and may be other topics than those already studied. ESP then has witnessed a long and rich history since the early 1960's and it has matured to become one of the outstanding branches in the current English teaching.

2.2.3. The Basic Principles of ESP

The aforementioned description of ESP has to some extent established a link between ELT and ESP. Furthermore, to have a better understanding of what ESP is, a closer examination of what constitutes the major criteria of the approach, needs to be done as a complementary contribution to the concept. The term principle was used by Swale (1990) to mean "enduring

conceptions" he characterised them and was influenced by the ESP real-world use and its pedagogy. A key requirement is to respect the basic principles of successful English teaching and learning in the technical institutions to enhance student's (ESP) competencies and skills. They are as listed subsequently;

- ➢ Authenticity,

- ➢ Research Base,

- ➢ Language/Text,

- ➢ Learning Needs,

It is crucial to discuss these criteria since they are critical to the definition of ESP and providing clearer insights into its evolution.

(a) *Authenticity*

Authenticity has gained a prominent position in teaching and designing ESP programmes, and it is the first element associated with the concept and approach of ESP today (Safont and Esteve, 2004) As from its first appearance, ESP materials design and development were focusing on the four skills, yet the priority was granted to the reading skill. Hence, preparing reading skill course is not an easy task, and what distinguishes it from the other skills is the need to select appropriate texts to suit the studied topic or to meet the learners' needs. In order to provide suitable ESP teaching materials, authentic texts have become a sine qua non condition to course design.

The textbooks were criticized and found to be lacking authenticity (Gilmore, 2007). Therefore, authentic materials taken from different fields with specific characteristics, came to develop the communicative competence of the learners and free the teacher from his dependence to the textbook. Authenticity in ESP teaching refers to both authentic materials collected from real life professional settings and authentic tasks that would be expected to be done in real life by present or future employers (Morrow, 1977).

(b) *Research Base*

The Research Base was a project first established by Halliday et al. (1964). The goal was to call for a study program that concerned the various ESP registers that a number of academics have embraced, such as Herbert (1965) or Ewer and Latorre (1969), whose work consisted of analysing large corpora in different specific fields so as to design the corresponding registers. The study is similar to what has been proposed later in ELF bank known by the VOICE (2009) project. However, in a similar register analysis approach, some constraints were known. For example, the method was criticised for being confined to the sentence and word level, putting aside the communicative features of the language. Another limitation of the project was the counting difficulty and the representativeness of the registers due to the lack of progress in technological devices (Umera-Okeke, 2005).

(c) *Language/Text*

In the late 1980s, there was a popular way to work on ESP and applied linguistics research projects. To this end, a group of researchers created a kind of restricted language to a given community. SEASPEAK (1987-1988) for instance, was the first model of these kinds of linguistic projects, to represent the language of maritime community. Later, it was followed by AIRSPEAK (1988) then POLICESPEAK (1994) and NEWSPEAK all of which knew, at first, a considerable success due to the register-analysis approach (Stevens and Johnson,1988). The projects covered the four-level concept of text: purposes of communication, operational routines, topics of communication, and discourse procedures (Jones,1990). However, what was not reflected in the linguistic model of the given community was the real- life communication and the consideration of the NNSs as part of the specific field community.

Certain materials designed for ESP learners have been seriously criticised for using highly restricted language. Nonetheless, we may find nowadays on-line publications targeted even for single professions (e.g., English for nurses, English for job hunters, English for beauticians or

English for air traffic controllers) because of the great demand for the on-line 'ESP consumers'

materials". This can only be due to the global interest in highly specialized language training.

(c) Learners' Needs

One of the major elements of ESP conception is the notion of needs (Hutchinson and Water,

1987). Learners in each subject have particular demands, and all ESP instructional techniques

and material design are based on what those needs are. That is why a detailed learners' NA is a

sine qua non condition before any implementation of an ESP programme. Further details will

be provided later in the subsequent chapter.

(d) *Learning Methodology*

Based on authenticity and NA which are strongly tied to ESP, a focus has been put on

language learning process and methodology. A truly valid approach to ESP would be based on

an understanding of the processes of language learning (Hutchinson and Waters, 1987). They

refer to this approach as the learning-centred approach that significantly reflects the ESP touch

in tailoring the teaching materials. As a result, ESP approach is reflected in the

curriculum/syllabus developed for learners, which is focused on their requirements and takes

into account the authenticity of professional circumstances. ESP has therefore become a key

vehicle of the communicative method, with a special focus on the learners' needs and what

these learners do with language in various contexts (McDonough, 1984).

2.3. ESP and English as a Lingua Franca

It has been agreed on, according to the studied literature, that ESP refers both to language

research and instruction that takes as foundations; learners' needs and specific communicative

praxes of a specific community. ESP has become a providing strategy for other linguistic

research techniques as a result of its growth in research, despite being inspired by a variety of

other applied linguistic and pedagogic ideas. It is still responding to the increasing demand of

the professional workplaces from where is reflects its distinctive authenticity. In this context ESP is claimed to be:

> Unlike many other research areas in theoretical and applied linguistics, ESP has been, at its core, a practitioners' movement, devoted to establishing, through careful research, the needs and relevant discourse features for a targeted group of students   (Johns, 2013: 6).

ESP researchers, from the outset, cared about the technical language skills, while the communicative skills of the learners are of equal importance (e.g., Barbara et al. 1996; Kaankanranta and Louhiala - Salminen 2010). As English has become the first linguistic device of the global workforce, ESP learners, engineers or technicians as this work puts light on, need to be equipped with necessary tools so as to communicate with their peer across the globe (Wegener, 2008). Nevertheless, these peers may be native or a non- native speaker of English, with different cultural backgrounds. If students have essentially learned the ESP course in SE, then they may encounter circumstances that they have never come across before.

With the rapid advance of technology and the globalized characteristic of today workforce, there is a need to understand the requirements of the professional conditions and to adapt it to ESP teaching pedagogy (Woodrow, 2018). As previously stated, the nature of ESP education offers learners the necessary abilities and linguistic devices to acquire English authentically, i.e., by working with language in a professional real-life setting. As it was discussed in chapter one, workplace English nowadays, especially in the Algerian context, is no longer homogeneous in terms of native-like reference. It is rather a mixed linguistic model within specific professional settings that requires to merge ESP with ELF and to speak about ELF for Specific Purposes (ELFSP) Nickerson (2013). He describes the importance of ELF sources to ESP as follows:

The VOICE corpus is comprised of more than one million words of ELF transactions, mostly involving European ELF speakers. Among the speech events that are included in the corpus are meetings, interviews, service encounters and seminar discussions, suggesting that it should certainly be of interest to researchers looking at discourse from an ESP perspective (p. 448).

In the same way that Business English as a Lingua Franca (BELF) was elaborated (Charles, 2007) English as a Lingua Franca for Specific Purposes (ELFSP) can be defined as a different English version field of research that may consider structural deviations (grammar, syntax, spelling, word order and intercultural considerations) with the goal of facilitating communication within a specific professional context. This is supported by Woodrow (2018) who states: "The level of specificity of ESP and the use of appropriate models of English are determined by the contexts in which communication will occur" (p.13). ELFSP does not neglect the cultural as it is the crucial factor in the successful decoding of certain misunderstandings that might arise in communication at work. Teaching and learning English today in the light of ELFSP would make a balance between the worldwide cultural norms in English with what is related to the British and American English as a referring English culture.

What is most interesting about ELFSP is that there are no clear-cut rules to be taught or learnt. Any kind of deviation can be expected depending on the origin of the foreign job partner. The users have a variety of options when it comes to utilizing their English type, and regardless of how effectively they use English, as long as it achieves communication success and avoids communication breakdown, especially in a context that combines two major goals: diversity and specificity. The university technical classes in Algeria need to be aware that English is used as a global lingua franca in a wide range of domains, from worldwide science and technology, politics to trade and industry. Learners need to be trained so they can be well-prepared to face the real conditions of their future or current jobs that require them to be aware of some

deviations from what has been taught in ESP traditional classes. Some examples of these authentic uses are subsequently quoted:

> In the aviation industry, pilots receive specialized language training so they can communicate effectively with flight controllers, avoiding communication errors that could lead to injury or death. We can also find ESP courses offered as part of vocational training, such as in the Philippines and India, where workers at call-centres are guided on how to respond appropriately to confused or irate customers   (Anthony, 2018:11).

ELF proponents (Jenkins, 2002; Seidlhofer, 2001; Dewey,2012; Martin, 2007) call for placing less emphasis on traditional view of grammatical constructions mastery in both written and oral communication. Yet, teaching a deviated variety from the Standard English is quite unsatisfactory at the level of universities, especially in ESP classes. Regardless of pedagogical advantages of ESP teaching, technical engineering communication characteristically requires the teaching of context-specific communication skills or more precisely communication in the field. This type of communication should cover wider perspectives to prepare engineers for their future jobs and global workplace communications. In light of this, it should be more like raising the learners' awareness by strengthening authentic materials and activities. This not only will make students aware of the English spoken today, but it also will help them avoid breakdown communications with the varieties spoken by the different native and non-native professional partners.

In this sense, what makes teaching any of the ESP sub-branches unique is that it necessitates some caution in terms of material selection as well as pedagogical tools, approaches, and strategies. (Riemer, 2002). In a nutshell, the only medium for the practitioner to be cautious about in order to achieve a balance between an appropriate syllabus and achieving objective goals is the process of NA. McDonough (1984) defines the foundation of ESP

research by stating that "The idea of analysing the language needs of the learner as a basis for course development has become almost synonymous with ESP in recent years and it is difficult to think of one without the other coming to mind" (p.29).

Indeed, throughout ESP history, the concept of NA has been part and parcel of its definition and the focal factor in dividing ESP types into a variety of branches with the NA results determining the ESP course and materials content. Therefore, to offer a deeper insight into the ESP conceptualisation it seems essential to demystify the idea of NA. It will therefore open doors to clarify the key episode of ESP.

2.4. Conclusion

The scope of this chapter has concerned reviewing relevant definitions from diverse viewpoints in the literature in order to build the concept of ESP. However, NA as the distinctive principle in defining ESP must be further developed and discussed. The primary motivation for summarizing major ideas, theories, and principles has been to offer a layout of ESP core characteristics and sub-categories in order to better comprehend what constitutes the subject, which has provoked high interest in applied linguistics, notably in ELT.

The blurring borders between some of the current varieties of English throughout the world were previously explored in chapter one. This has been in line with the current goal of this section, which has been to position ESP within ELF context. It is now room to focus on the application of the reviewed theories and approaches as well as to discover how learners' ESP needs can be determined so as to conceive a field framework for the current research. Finally, while addressing the dynamic ESP feature as a discipline, one essential question must be addressed: how to properly meet the learners' expectations in today's evolving globalised environment?

Chapter Three: Principles and Orientations in Needs Analysis

Chapter Three: Principles and Orientations in Needs Analysis

3. Introduction

The primary concern of a syllabus design is to understand the specific needs of the target learners' group; the more relevant the task is for the learner or the professional, the more efficient the approach is. However, in this scenario, it is essential to determine how the content is designed and how tasks and activities may be customized, especially in the case of EAP class, where the learner group may be heterogeneous in terms of level and motivation. The current section aims at combining what has previously been stated regarding ESP concepts and characteristics with more details focused on needs assessment procedures and their prevailing principles. The following pages also provide a review on some ESP needs assessment philosophies and approaches. A substantial and growing body of literature on this area is developing; for this reason, the present chapter deals mainly with developing understandings of the main instruments and orientations to follow when conducting needs analysis.

3.1. A Brief Overview of the Phenomenon

Within the realm of ESP, NA occupies a considerable research focus. ESP process encompasses identifying the teaching and learning requirements that learners make use of in their academic practices, as well as in their professional field of expertise. Consequently, the quest for proficiency in English is the learning pole that a number of researchers (Rainbird, 2000; Evers et al., 1998) have called for throughout ESP history. It is designated as one of the employability skills, for example, and is attributed the role of "*life skills*" or "*survival skills*' (Đurić, 2013: 61) in the twenty-first century on top of the learner's specific educational and technical proficiencies. In a more contextualised instance, Douglas (2013) claims that engineering students, as adult learners with an English background, are knowledgeable enough to acquire the language abilities needed in their field.

However, in many Algerian university settings, with learners of the same age and graduation level, mastering the relevant language skills, needed for both academic and job-related purposes, is not of so evident prospects. Learners may be aware of their English needs, but because to the nature of the ESP courses they are taking, they may lack the ability to communicate effectively. In some cases, these courses are far from their real professional life needs. Nevertheless, McDonough, (1984); Jordan (1997); Rogers (2000); Belcher (2006) agree that any activity or materials choice, mainly authentic, should have as its sole objective the development of the skills required by the specific and different groups of learners with similar needs.

Engineering students, like other specialities, can categorize their English proficiency needs into two categories: EAP and EOP. Thus, to design and evaluate the English syllabus ensuring that it meets the learners' articulated needs would be appropriate for their unique profiles. The first parameter researchers and syllabus designers emphasise upon, when conducting a need analysis, is to know whose needs we are interested in.

Students may disregard what is specifically relevant to their academic and professional requirements; thus, as Robinson (1991) notes, NA considerations do not only take into account the learners' viewpoints, but they also consult many stakeholders, as referred to in the ESP literature. Learners are of first concern, but their own needs may also concern content teachers, administration staff and more importantly professionals who are conscious about what is happening in the workplace (Brown, 2016). Different learners in the same group may have differing perspectives on the true demands of their studies or work. Therefore, the context, and other stakeholders' views will participate in shaping and bringing to the nearest, the academic learners' needs as well as their requirements of the professional work life (Dudley Evans &St John, 1998).

3.2. Definition of Needs Analysis as a Process

Although the term "need" was first conceptualised in the 1920's (White, 1988; West, 1997), it has grown in prominence parallel to the ESP phenomenon since the 1960s. NA was, in fact, part of GE, but it has flourished significantly and has become a stone step in the ESP course as well as in syllabus design. Schutz and Schutz & Derwing (1981) report that conducting NA was a new concern in the early ESP. They consider that "most language planners in the past have bypassed a logically necessary first step: they have presumed to set about going somewhere without first determining whether or not their planned destination was reasonable or proper." (p. 30). On the other hand, Hutchinson and Waters (1987) make prominent the NA importance in ESP course development;

> 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 (p.54).

Accordingly, Brown (1995) establishes a popular definition of NA in ESP literature. He conceives it as a process of gathering information with respect to different procedures such as considering a number of conditions that participate in examining what the concerned group of learners needs to learn: "the systematic collection and analysis of all relevant information necessary to satisfy the language learning requirements of the students within the context of the particular institutions involved in the learning situation" (p.21).

Hutchinson and Waters (1987) are the pioneers to highlight the notion of learner-centredness in teaching ESP, they advocate more focus on the learner than on the discourse of the target situation. In the course of time, NA is considered to be a fundamental element in the ESP course and syllabus design. Woodrow (2018) defines it as "the first step in the course-

design cycle in ESP and refers to the systematic analysis of what learners need in order to operate in target communicative situation" (p.21).

Brown (2016) illustrates the relevance of NA as an approach d to ESP course design; taking into consideration every single element of the research process. Dudley Evan & St Johns (1998) believe that "needs analysis is the corner stone of ESP and leads to a very focused course" (p.122). This is only a witness to the respect of the learners' aspirations in learning English. From his viewpoint, no ESP instruction is achieved without the respect of all components and from different perspectives that will contribute to ESP teaching situation. In this context, he maintains:

> Teachers, administrators, employers, institutions etc. also have some bearing on the language learning situation, many other types of quantitative and qualitative information of both objective and subjective types must be considered in order to understand both the situation and the language involved as well as information on the linguistic content and the learning process

> (Brown 2006: 102).

This variety in the stakeholders' types in oroder to obtain a wider view about the learners' needs, has not always been adopted by researchers in the field. For example, Benecsh (2001); Jasso-Aguilar (2005) believe that it is impossible for all stakeholders to determine the needs of learners; teachers of content may have inadequate understanding of actual EAP target. Likewise, other administrators may disregard the content of the course because they are not English experts (Woodrow, 2018). The most reliable source of information is the learners themselves who can be relied on to create their own ESP pedagogic resources.

As a process (Nunan, 1988), NA is described to be a series of activities and techniques carried out to collect data and identify the needs of a given group of learners from different parties. According to Basturkmen (2010), there are various techniques for gathering

information such as questionnaires, interviews, observations of interactions and analysis of language use in the target situation. Other techniques (ibid) also include performance tests and observations of both content and ESP classes as well as carrying out tasks replicating those in the target situation with ESP learners. In the same vein, Richards & Schmidt (2010) use the term assessment interchangeably with analysis and claim that "Needs assessment makes use of both subjective and objective information e.g., data from questionnaires, tests, interviews, observations…" (p. 389)

With regard to data collection tools, the best results will most likely be obtained by a mixed methodological approach to NA, which is referred to as data triangulation (Long, 2005) when a combination of quantitative and qualitative techniques is utilized. He explains "when NAs are conducted, their likely validity can be enhanced by careful attention to sources, methods, and source x method interactions" (p.63). Furthermore, before beginning any approach, the investigation primary aim needs to be established; Savage & Storer (2000) believe that if syllabus designers and practitioners want to highlight the learners' needs in their course design, they should primarily focus on the following questions:

- ✓ "What do our groups of learners need to do with English in their work environment?
- ✓ What can they already do?
- ✓ What are the content areas which they need to talk and write about?"

3.2.1. Needs Analysis Purposes

NA in language teaching and more specifically in ESP, can be carried out for a number of reasons (Long, 2005; Harding, 2007; Belcher, 2009). The first motive for the language teacher or researcher is to be acquainted with his learners as persons and as learners too. It is also a process by which the environment, in general, is discovered and specifically the institution and its requirements. Second, it is paramount to find out the needed language skills for the particular job or student tasks and activities that the learners will use in their particular fields (Hutchinson

and Waters,1987). Different learners will help then the practitioner determine what kind of training is most in need. Another reason behind NA data collection is to identify gaps, often deficits between what the learners are able to do and what they need to be able to do (Brindley, 1984). This is then an initial assessment of the learners' level and background in English.

By doing so, the learners can describe some further problems they encounter in their learning or job-related situations as well as the kinds of transactions they are likely to perform and that their teacher may ignore or find it difficult to understand (Royse et al., 2009). These transactions are specified by some language characteristics that need to be ascertained in the process of needs assessment. A different kind of assessment is more concerned with the evaluation of an existing course or textbooks designed for the area of study (Tomlinson, 2003). The teacher will be able to evaluate and compare the books content with the present and actual needs of his future learners, to tailor some extra resources and adapt existing texts and activities to his students' requests using the needs assessment method.

In short, the NA process is a tool that provides simple access to what really occurs in the workplace and in certain content areas classes that the language instructor may overlook. It must be clear that one of the purposes of an ESP learner is to learn English with the perspectives of finding solutions to the problems they are experiencing in their daily study or job-related life. (Blue, 1991; Dudley-Evans & St John, 1998; Jordan, 1997; West, 1994, 1997).

To sum up, NA has a vital role in designing any ESP course and developing suitable materials for the learners' level of proficiency. This preliminary stage provides the practitioner with a clearer representation of his/her English learners in their actual learning situation. He will not only be able to detect his learners' English requirements (language skills, grammar and diverse tasks) but he will also know how the language functions in the academic and professional situations. Richards(1990) approaches NA via the lens of curriculum development, stating that the findings of surveying students, teachers, and administrators will be translated

into the general and specific linguistic content of the program to be designed. It is also a means of evaluating the existing program and resources in order to really assess their suitability for the demands of the learners.

3.2.2. Gathering Information Stages

Much of the NA research has focused on identifying and highlighting three stages in gathering information. As previously said and is discussed, it is the cornerstone of the course, as well as the syllabus, curriculum design, and evaluation. The process of gathering information should not be considered as one-step act but as a continuous process as mentioned by (Dudley-Evans & St John, 1998). They describe the gathering information cycle as happening at different stages of the course development. The practitioner can refer to it at different stages of the course as shown below:

a- **Pre-course NA:** It is the act of collection information prior to the course. It is essential to the teacher to diagnose the environment before he goes into it and to know the status of the learners' level of proficiency. The learners, in this paramount stage, express their language needs as well as how they want to obtain this targe knowledge.

b- **Initial NA:** In the course of the very first days, Allwright (1988) some clarifications may need to be added or explained with regard to the learners' requests and desires. By doing so, the teacher can refine his investigation with further questions.

c- **Ongoing NA:** The process that occurs at any time of the course. (Brown, 1995; Holliday, 1994; Hutchinson & Waters, 1987; Nunan, 1988; Richterich & Chancerel, 1988). The purpose is to collect other additional information or mainly bring any modification to adjust the course programme depending on the learners' level and demands throughout the whole course. Robinson (2001) calls the researchers' attention to note that NA should be recurrent and accounted as the formative process. She also

proposes that the collection data process can be considered as a useful reference not only to the teachers, but also as a databank for the subject-specialists.

To conduct needs assessment for a group of learners or informants, in general, the researcher has to identify his objectives and goals for the course to be designed. Richards (2001) believes that it is not always easy to conduct the gathering data process before the course starts. In certain situations, the practitioner is not able to meet his learners before he starts teaching them; therefore, it is possible to assess his learners' needs while he is teaching them and then update and readapt his programme.

Brown (1995) elucidates that the collection of data is a preliminary step and all the results obtained from this process should be the practitioner's raw materials to prepare a successful course with all its components. He maintains: "the outcome of a needs analysis should serve as the basis for developing tests, materials, teaching activities, and evaluation strategies, as well as for re-evaluating the precision accuracy of the original needs assessment" (p.35). For a successful needs assessment process some components (e.g., setting goals, handling adequate tools, selecting the target population, interpreting results, implementing a framework to make use of the obtained information) must be included as indicate in figure 3.1.

The major process purpose is to gather appropriately the needed data and translate them into course and syllabus objectives. They are crucial steps to follow before undertaking any course/syllabus design. The following diagram is adapted from the views of (Jordan, 1997 and Brown, 2009) about the NA process. The steps displayed in the chart below summarise the stages previously discussed.

Get ready to do needs analysis	•• Establish the purpose of the analysis •• Delimit the student population •• Decide upon approach(es) and syllabus(es) •• Acknowledge constraints/limitations •• Select methods of collecting data
Do the needs analysis research	•• Collect data •• Analyze data •• Interpret results
Use the needs analysis results	•• Determine objectives •• Evaluate and report on the needs analysis project •• Implement decisions upon findings regarding materials, strategies, etc •• Decide on further info for ongoing curriculum evaluation

Figure 3.1: Steps in NA. Adapted from (Jordan, 1997 and Brown, 2009)

3.2.3. Needs Assessment Sources

Collecting information to design an acceptable ESP course and syllabus for students entails more than simply asking them; it also involves other stakeholders. (Brown, 2006, 2009) Therefore, ESP practitioners should collect data from all the different participants that provide detailed views on the learners' needs. In their work, Dudley-Evans & St John (1998) refer to the notion of "outsiders and insiders" to explain how those who are not concerned directly with English teaching-learning process can be valuable sources to the learners who are directly concerned with learning English.

Consulting professionals, ex-students, administrators, employers and sponsors will reveal more about the language needs that the learners themselves may ignore and may not provide the teachers with. Watkins et al. (2012) offer a clear perspective on the needs assessment sources of data collection and classifies them as follows:

a- **Students:** They are the first and direct population that is originally concerned with data collection (Flowerdew & Peacock, 2001). First, during the needs assessment, the learners articulate what they need to do with the language and what they perceive as course requirements. Second, assessing the learners' current proficiency level will help the teacher understand the general level from which he should start preparing his first lessons. If the numbers inhibit research or needs assessment processes in a substantial number of students such as the Algerian university, a focus group may be selected to represent the whole students' needs. The ongoing process plays the role, then to discover other important needs that should be taken into account subsequently.

b- **Content-area instructors**: They are subject experts who give valuable knowledge about their field of study and what the students may need from it. (Richterich & Chancerel, 1980). For example, In the context under investigation, where the technical English survey will be conducted for mechanical engineering the researcher or English practitioner should work closely with the content teachers. They may motivate him in material selection and, more significantly, in adopting the appropriate tasks and activities necessary in the subject field due to their knowledge and experience in the sector.

c- **Administrators**: With no less importance, they are the first that the practitioner meets as soon as he gets access to the new environment. Being acquainted with the working staff will give the researcher and the practitioner precise information about the overall goals of teaching English as an integrated part of the general curriculum. (Flowerdew & Peacock, 2001; Jordan, 1997) It is also an opportunity for the researcher to define the context of ESP teaching and know the institution's requirements.

Preparing a course/syllabus needs more than just language skills preparation; it also necessitates additional factors governed by the institution, such as assessment and grading, time scheduling, and space availability. An example of the evaluation in the Algerian graduation

LMD system requires a test and an exam that occur once a term, this kind of administrative restriction may in some cases not get along with the formative assessment nature of the ESP course. Consequently, one needs to be aware of the nature of the content-areas standards so as to take it into account. Psychologically, some of the learners may not understand other forms of evaluation within the same system and may even fail as a result of the organisation shift.

Other parameters for course/syllabus design necessitate asking the administrators to reveal the facilities and current materials provided for the teacher before joining his ESP class. It is also essential to know if documents and textbooks, in the libraries, are suitable to the learners' needs and proficiencies. Furthermore, knowing how to adapt technology tools to assist ESP instruction is critical for language educators and researchers. In the case of (EOP), the employer and the sponsor are also key members who provide the teacher with information about learners' needs, or more exactly what their technical staff need their technical staff need to do using English. Any individual member, or even a document that may provide the language educator with the information is also of interest. In this line of thoughts, Richards (2001:71) summarizes the collection of information to be obtained from the following sources:

- Samples of student writing.
- Test data on student performance.
- Reports by teachers on typical problems students face.
- Opinions of experts.
- Information from students via interviews and questionnaires.
- Analysis of textbooks teaching academic writing.
- Survey or related literature.
- Examples of writing programs from other institutions.
- Examples of writing assignments given to first-year university students.

3.3. Needs Analysis Tools and Techniques

Approaching stakeholders to determine the learners' requirements and collect all available data would help with the development of the ESP course and syllabus. Therefore, a

number of studies about NA process have identified a range of procedures by which data collection can be carried out (Gilabert, 2005; Hutchinson & Waters, 1987; Jasso-Aguilar, 2005; Richterich & Chancerel, 1988). The types of the main instrumentation in gathering data for needs analysis are questionnaire surveys, analysis of authentic spoken and written texts, discussions, structured interviews, observations and assessments (Dudley-Evans and St. John, 1998). The nature of data and stakeholders determine the instrument to use so as to conduct the NA process. Subsequently, a set of techniques will be defined, for the purpose of clarifying their importance of NA collecting data.

3.3.1. Questionnaires

Questionnaires are undoubtedly the most often used data collection instruments (McDonough, 1994); they are most commonly used in large-scale surveys and when the number of informants, in this example, the learners, is considerable and cannot be interviewed one at a time. The simplicity with which questionnaires may be constructed, especially with improvements in technology, makes them popular in surveys. They can be constructed with a few fingers clicks, and the data can be readily sorted and analysed. Both the researcher and the informants can now complete the questionnaire online or at least provide their e-mail addresses so that they can be contacted if more information is needed.

The teacher, in building his questionnaire, will consider different parts that concern the learners, starting from their personal, professional information and language use (Phillips & Holton, 1995). It is also the space to elicit information about the difficulties encountered in academic settings or in workplace, problems with target language tasks and activities as well as how learners learn English with respect to their learning styles and preferences.

The questions (Gupta, 2007) within the questionnaire can be structured; that is to say built to offer the learners a limited and fixed number of answers to choose, or they can be unstructured, i.e., open-ended constructions to allow the informant to respond more personally.

The questionnaire's questions (Gupta, 2007) can be "*structured*", i.e., constructed to provide learners a restricted and set number of options to pick from, or "*unstructured*" (p.13) that is, open-ended formulations that allow the informants to react more individually. However, the learners' replies may sometimes be biased or insincere, and may not add any help to the implementation of the course. As a result, the time spent delivering the questionnaires should be carefully considered, as should be the time devoted for describing the aims and goals of completing the needs assessment in a few lines.

According to (Brace, 2013), one of the virtues of the questionnaire is its uniform construction and use of the same questions addressed to a large number of respondents and different people to achieve reliable survey findings. The questionnaire is also the remote medium of communication between the researcher who needs to investigate a certain phenomenon with the help of the target population, albeit that they never met. As a result, the researcher must understand how to create questions and, more importantly, what questions he needs to ask, because weak questionnaires will provide poor data. Another instance is an overloaded questionnaire with excessive details that will confuse or tire the respondent too much (Dillman, 2000).

The challenges that every researcher fears to face in administering the questionnaires to a large-scale population is, mainly, how to collect back data and how to avoid obtaining ambiguous answers. This is mostly due to the failure of the researcher to formulate the exact questions and the ways they are thought about and planned. Hence, the organization of the questionnaire is crucial for the researcher to move from what is general then to narrow it down.

The last point to be considered, is that some researchers find some disadvantages to the paper questionnaires, to name a few; the constraint to gather people at once, have them cooperate and accept to answer, then administer the questionnaires (Phillips & Holton, 1995). Collecting them back, however, is another matter, the researcher should consider a certain

percentage that will get lost in the process because of the informants' disregard or lack of cooperation in addition to the difficulty to classify data and analyse it.

The option, to be offered, is the electronic version of the questionnaire; the copies can be delivered by asynchronous mail attachments or could be accesses by a synchronous web page. Attachments is rather demanding for the respondent, because he needs to download the document, fill it in then send forwards it to the sender. In the same line of thought, (Brace, 2013) highlights that this kind of procedure requires a lot of cooperation and has proved a kind of poor results. With the technological advance, there are software that are easier to propose for the respondents and even easier to process the collected data. The nature of the twenty-first centuary learner nature requires mostly the use of the questionnaires hosted on a web site and to which all respondents are connected in, then they are guided and asked to react to the questions and instructions. Tylor (2000) discusses some advantages of the web-questionnaire version as having them answered rapidly and more pleasurable as he highlights it.

3.3.2. Interviews

The interview is a face-to-face exchange (Brown, 2016) between the researcher and the respondent when there are favourable circumstances to meet the target population, especially when the number is feasible. The main advantage of the interview is to obtain results on the spot and be able to reformulate the question in case of misunderstanding by the respondent. It is also the opportunity to probe and ask more unplanned questions if one of the obtained answers is unsatisfying or needs further elucidation. The interview is also the medium through which more complex questions can be asked and delicate details can be elucidated. In his work on data collection tools, (Brace, 2004) indicates that the face to-face interview has been, the most frequently used tool to collect data for decades. Yet, the researchers have recently converted to the electronic version and have found it more practical.

The interview has three important characteristics; it can be structured, semi-structured or unstructured (Fontana & Frey, 1994; Nunan, 1992). The basic concern in categorising the interview is the careful preparation that the researcher must provide while formulating his questions. The three types vacillate between a high degree of control and a flexibility in approaching the interview. Because the goal is not to evaluate the learner's level but to establish a shared understanding, it is critical to allow the respondent to provide the best of what he knows through the language he speaks best and through clear and exact questions. If the respondent does not understand the language of the survey, he can in no way vehicle the right information, as he feels crippled to answer the open-ended questions.

3.3.3. Meetings

Meetings are effective alternative approaches for getting meaningful information from a large number of learners at once, particularly in institutions such as universities in which gathering information individually can be challenging and the learners' time schedule is difficult to consume. One of the most critical prerequisites for good meeting results is effective meeting management and organization. As stated by (McConnell, 2003), there are more than a few types of meetings to collect needs analysis data, but for the nature of the current study, "information-gathering" (p.191) meetings is the type that will be specified.

This is the kind of technique that allows for on-the -spot-information exchange and the collecting of several answers at once by a system of voting. The number of the participants, according to McConnel, may vary from 10 to 16 informants so as to obtain accurate answers. However, a sufficient number of learners may represent the entire group in some cases when the questions cover the same learning conditions for all learners. Some conditions are required for holding such meetings; to name a few, the seating arrangement and the designation of a leader. If, on the basis of interviews or questionnaires, the researcher cannot collect its data for

a particular reason, an "*information gathering meeting*" (p.192) is a genuine good alternative for collecting the necessary data within a record time.

The questions should avoid individual interests and personal information; they should all be prepared beforehand and have a grid where to report data on the spot. In the same line of thoughts, Watkins et al. (2012) offer three interesting techniques to probe information in a meeting for collecting data in their description of a focused group interview.

➢ *Critical Incident Technique:* In a meeting, the members are asked by the researcher to evoke some past experience they see good to witness if suitable. The questions should link the learners' answers with real life events rather than generalizations and speculations as stated by Watkins et al. (2012).

➢ *Brainstorming:* This technique helps introduce the topic and open free –association of ideas. Group answers analysis is allowed to check the suitability with the needs assessment purpose. Classifying data under heading or diagrams are also encouraged.

➢ *Straw Polls:* Watkins (2012) describes this technique as a rapid process of probing information based on informal voting. It is especially beneficial for the researcher in gathering information for "*yes -no*" questions and "*tick appropriate answers*" (p.79) as well. The ESP needs analyst will be able to collect his data more rapidly using this method, especially if the list of activities connected to language skills is large. This approach is helpful to eliminate all sorts of questions that need to count the number of informants in favour or against a given topic, particularly for those who have same opinions in a certain matter.

If the three approaches for organizing an information-gathering meeting with a variety of groups are used correctly, the researcher will almost definitely be able to acquire enough data for his research. The last data collection tool to be considered, for the purpose of the current

research, is the field observations technique that is going to be subsequently utilised in the following chapters.

3.3.4. Observations

The objective of the observation as a data collection tool is to understand what have been answered in both the interview and the questionnaire. It should be noted that observation alone as a technique is insufficient for ESP needs analysis, because the teacher or researcher cannot observe the learners' needs. Yet, by seeing his group of learners in performance, he can explore the teaching context and environment. By doing so, he can especially learn, via observations, the nature of the "alien" content teaching to which he is a kind of outsider.

(Romanowski, 2017) opines that observing the target population may cover various tasks. According to him, the researcher may spend whole days attending all sessions, watching all what may be performed and how teaching English can be inspired by teaching the target content knowledge. However, learners may feel intimidated by this act of observation and may not comprehend why they are being observed; thus, it is the researcher's responsibility to explain his aims and reassure them to behave as naturally as usual.

The most important condition to succeed the observation practise is to have an observation checklist or a concept note with clearly identified elements to observe and detect during the needs assessment process. The obtained results will be summarised in reports and can be added as valuable data to those gathered from other popular tools.

Implementing surveys is not an action that is undertaken overnight, researchers and needs analysts should make a thorough preparation before deciding to realise the needs assessment surveys. The above-mentioned methods are not the unique tools for needs assessment evaluation; many other researchers in the field such as Ellis and Johnson who suggested authentic data analysis in 1994.

3.3.5. Texts-based Analysis

Such an analysis provides a very important chapter in needs assessment results, since it reveals information about the language usage and use for the target population under study. These English texts may be authored by the target population or others and they are of relevant use for their job or study related careers. Some instances of these authentic documents are extracts of the engineer's works, reports, university teachers' written articles, machine manuals and engineering magazine articles. This technique may also be useful for teaching engineers a text written in English and assist them in extracting patterns and making the most of language functions for their specific areas of development. Figure 3.1 below shows some texts analysis tools that may be useful for these types of activities.

1-Genre: Type of text being analysed? E.g. report, letter, memo, etc. Who are the target audience? e.g. bosses, colleagues, etc		
2-Organization: How is the text organized? What is the layout? How many paragraphs/sections? Is there an introduction/conclusion? Is there list of points or cohesive paragraphs?		
3-Sentence structure: Are sentences complete or in note form? Are they correctly punctuated? Are they linked with cohesive devices? Are sentences simple/complex? Are there relative or other clauses?		
4.1 Function	**4.2 Structure**	**4.3 Lexis**
What functions are being expressed? e.g. condition, intention, description, request, order.	What are the most frequent grammatical structures? e.g. active/passive, verb forms complex noun phrases, prepositional phrases, verb tenses.	What type of vocabulary is used? e.g. technical vocabulary, semi-technical. Which lexical items occur most frequently?

Table 3.1: Texts analysis framework. (Suggested by Ellis and Johnson (1994:94)

3.3.6. *Means Analysis*

Means analysis supplement the course preparation with the information on the institution facilities and classroom environment. It enables the practitioner to examine the characteristics of each context since, as Dudley-Evans and St John (1998) state, "Means analysis is an acknowledgement that what works well in one situation may not work in another" (p.124). Teaching a reduced number of EOP learners at a sponsored company, for example, will have more facilities than teaching a whole promotion of university engineering students. Means analysis is then related to the conditions in order to design an ESP course, which should be highly considered.

3.3.7. Language Audit

When it comes to language audit, West (1994) thinks that it is a large-scale survey that mostly concerns countries or geographical regions. He claims that "language audits provide data about the current situation of language needs in the sector and to a certain extent, language audits do help lead the government to develop an integrated policy or strategy which would take months or years to implement." (p.27). He further maintains that it is not much the concern of the ESP/EAP teachers, since their context is rather a small or a medium scale. However, for the sake of this study, language audit is of particular relevance since it reflects a representative sample of mechanical engineering learners' needs at a part of Algeria's western regional tertiary educational institutions.

According to Koster (2004), language auditing primarily entails gathering background information about an institution, administering questionnaires and conducting interviews, and concluding with writing a final report detailing all steps taken by the researcher or practitioner to provide an overview of the situation. Huhta et al. (2013), on their side, regard language audit as a demanding and complex endeavour since it concerns access to "*organizations*' or "institutions' data. The aforementioned approaches may be difficult to implement in an EAP

setting in order to avoid a biased and personalised learners' perspective. Nonetheless, it is feasible in EOP; "the informants' diaries, journals and logs can be used to grant access to personalised, insider knowledge and with very detailed insights." (Long, 2005: 45). A mechanical engineer, for instance, may help the ESP researcher record the problems and difficulties encountered in his working days with additional impressions and comments on the daily needs of English use in his workplace. It will be, to a certain extent, internal data to take into account for the researcher' own perspectives.

Hutchinson and Waters (1987) claim that NA results are relative rather than absolute, they depend on the researchers' questions asked to their informants and on their own interpretation of findings. This is what makes the diversity in the syllabi design and the existing of myriads of teaching materials. It is then the researcher or teacher's responsibility to ask the right questions and to select the essentials. Huhta et al. (2013) outline the major advantages and disadvantages with the important figures in the literature explained by Long (2005) in (table 3.2.).

Method	Advantages	Disadvantages	Example from the literature
Unstructured interviews	exploratory character means that interviews may include aspects the interviewer had not previously considered	• time-consuming • (usually) only a few interview subjects possible • risk of researcher influencing informant's views (interviewer bias) • narrative data can be difficult to analyse and it may be difficult to draw comparisons between informants •limited generalisability	Holme & Chalauisaeng (2006) Jasso-Aguilar (1999)
Structured interviews	• relatively low-cost • relatively low-effort • potential for a large number of informants to be approached • yield standardised data • low risk of interviewer bias • comparisons can be drawn between informants • results may be generalisable	• important aspects may be neglected as a result of standardisation • do not allow informants room to express own ideas and own answers	Matthes & Wordelmann (1995) Hecker (2000) Hall (2007)
	relatively low-cost		

Surveys and questionnaires	• relatively low-effort • potential for a large number of informants to be approached • yield standardised data • low risk of interviewer bias • sizeable amounts of data can increase the reliability and validity of findings • comparisons can be drawn between informants • results may be generalisable • option of informant anonymity	• standardised • may neglect important aspects • response rates tend to be low, ESP especially with questionnaires mailed to subjects • range of responses Limited	Weiß (1992) Schöpper-Grabe & Weiß (1998)
Language audits	• can produce deeper insights into the situation • institution is the unit of analysis, so potential to yield a complete picture (see Koster 2004c) • results are tailor-made to institution under review – provides a good overview of an institution's language needs	• potential difficulty to access data (confidentiality policy of institution) • publication of results may be restricted (confidential to the participating institution) • results specific to a single institution limit Generalisability • time-consuming and requires effort •potentially expensive to Conduct	Glowacz (2004)
Observation	• allows direct, in-depth, contextualised study of participants' actions: valuable source of data	• time-consuming • only case studies possible • potentially difficult to access data	Schröder (1984) Louhiala-Salminen (2002)
Text-based analysis	• might yield important insights into potential materials for the classroom, i.e., relevant text-types, discourse-types	• is restricted to text, does not take into account the contextual and situational factors • neglects the task to be accomplished • tends to result in decontextualized structural items	Basturkmen (1999) Mauranen (2003)
Diaries, journals and logs	• personalised insights into learner and teacher needs • provide access to insider Knowledge	• may be restricted to only one type of informant • time-consuming to write and analyse • potentially yield impressionistic and idiosyncratic data	Sesek (2007)

Table 3.2: Overview of research methods in NA (Huhta et al. 2013:17-19)

3.3.8. Triangulation

The table sums up the main data gathering instrumentations in the literature along with their respective advantages and disadvantages. No single tool can cover the whole researcher's

requirements to obtain the maximum of information and to provide a complete and more accurate picture of learners' language requirements, various techniques should be integrated (Brown, 1995; West, 1994). Triangulation, to some extent, compensate for the weaknesses and deficiencies of any single gathering data method by the strengths of another. Besides it helps increase and clarify both methods' results to obtain data from various standpoints such as students, teachers and administrators. (Richards, 2001; Hales, 2010; Hutha et al., 2013).

What is most interesting in ESP teaching, and therefore with NA, is that it is an ongoing process that does not terminate with the first contact with stakeholders. Different stages are open for other consultations of additional NA and amendments to the syllabus/ course improvement. Basturkmen (2010) considers that students' needs evolve with time and that by doing a NA, practitioners and course developers may have a better understanding about their learners' perceived needs in any specific situation. The evaluation of the program as a result of NA is part of Brown's curriculum approach (1995). The discussed steps are displayed in the chart below as seen in his recommended diagram:
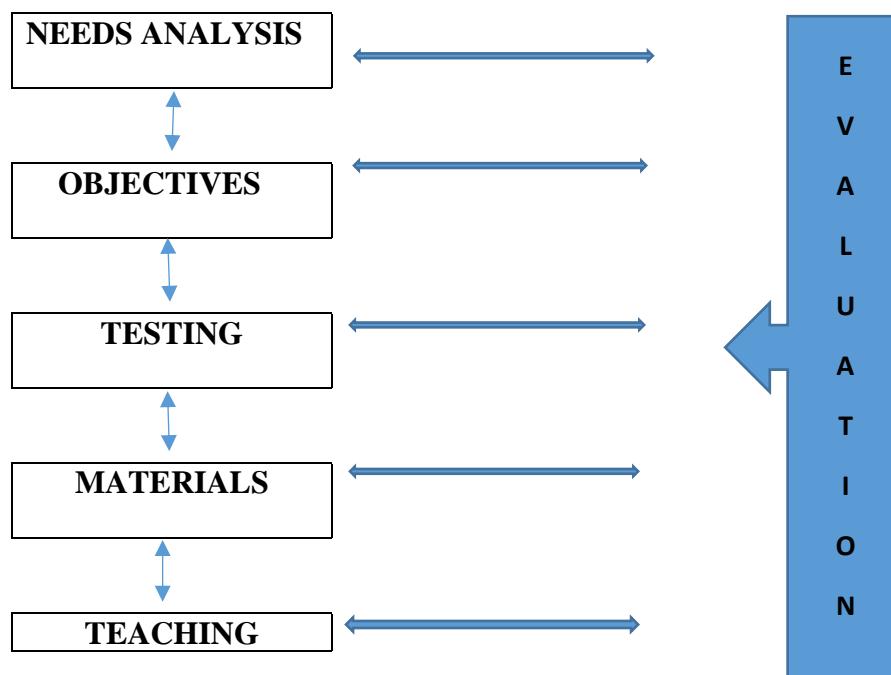
Figure 3.2. Systematic approach to designing and maintaining language curriculum
(Adapted from Brown, 1995)

NA is more effective when it can be realised at any stage of the teaching process; when it is first carried out, it will not only introduce the learners to the syllabus and course content, but it will also provide the course designer /the instructor with the required information to be respected in the course development. When it is performed while teaching, a different goal is to be achieved then; to gather additional needs and wants in order to have an over-all impression of initiating the course. Finally, assessing needs as a final stage offers to the practitioner a possibility to both a self-evaluation and a routine review of the course (tasks, materials and syllabus). It is also an opportunity for the learners' summative assessment.

The goal of NA is to gather information to determine linguistic needs and to define course targets (Richterich, 1983). It should also be noted that the whole NA procedure may not be accomplished without the use of its different constituents for a precise and thorough investigation. Understanding these components is also important in comprehending NA models suggested by a number of scholars who serve as practitioners' road map for investigating and

designing questionnaires, interviews and other sorts of NA instruments. For this principle the next paragraphs deal with a set of models that have been suggested by NA proponents each of which vehicles the designer's vision.

3.4. ESP Needs Analysis Paradigms

In NA literature, there is an array of terms to refer to the concept of needs and NA Dudley Evans & St Johns (1998). The variables that have helped the notion expand and develop into a rich meaning owe a lot to these perspectives. In fact, a number of prominent figures in ESP literature adopt distinctive interpretations of the term "needs" and "needs analysis", but in one's viewpoint, they all converge to the same concept. There may be the same similitude between Hutchinson and Waters' (1987) definition of "wants" (p.56) and Berwick (1994) definition of "felt needs" (p.54). Both Brindley (1989) and Robinson (1991) classify needs in terms of "Objective Needs" and "Subjective Needs" (p.70), they describe the concept as it is the case with the features of "target needs" and "learning needs" (Robinson, 1991) also defines needs as being the "*inadequacies about language to* be fulfilled" (p.8-9) which matches to some extent the example of lacks.

The present work survey adopts the concept of NA as suggested by Hutchinson and Waters (1987) together with the one explained by Dudley Evans and St Johns (1998). Regardless of what needs are labelled, what should be considered is how far the practitioner or syllabus designer respects the output of NA in order to produce an acceptable course and instructional materials. The following paragraphs disclose a number of concept interpretations in its main prevalent paradigms of analysis.

3.4.1. Communication Needs Processor

One of the earliest models for analysing language needs in Munby's Communicative Syllabus Design (1978) is Communication Needs Processor (CNP). The model creates a needs profile by analysing eight criteria (fig.3.4.) the results of which provide us with a thorough

description of specific communication requirements. The goal of Munby's CNP (Robinson, 1991) is to discover the language form of a potential ESP student in all his target working scenarios as thoroughly as possible. The diagram below illustrates the parameters suggested by Munby (1977, 1978).
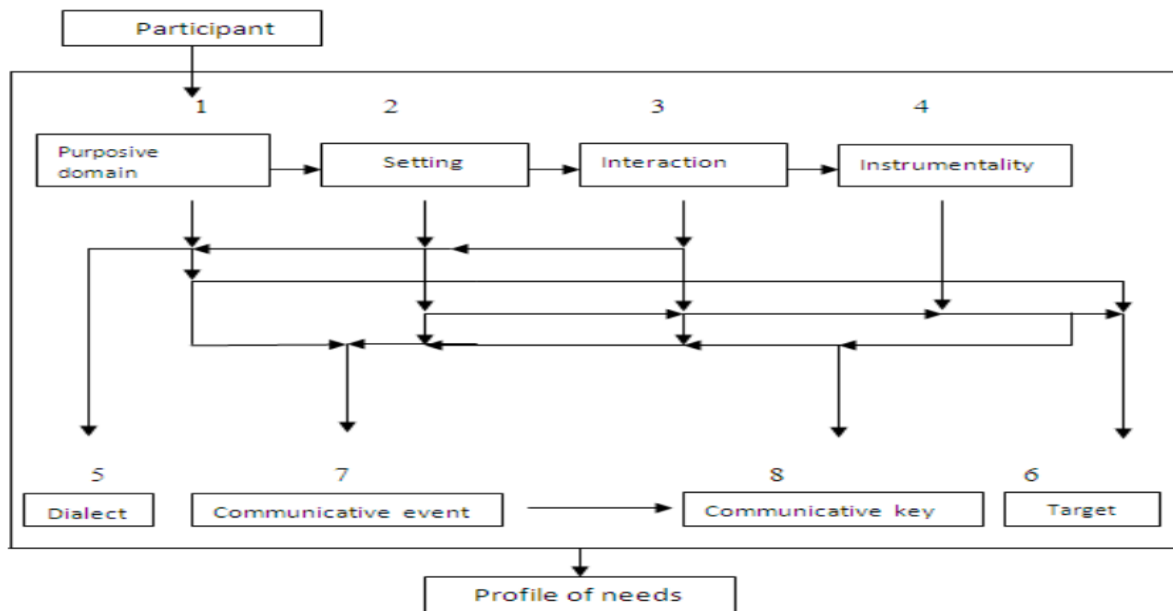
Figure 3.3. Munby's Communication Needs Processor (CNP) (1977: 16)

The above model offers a detailed description of the learner's profile in terms of selected and defined elements to be analysed, such as the purposive domain (the discipline content), "setting" (context), "Interaction" (relationships to be involved), "instrumentality" (medium, mode and channel) and other aspects (Momtazur, 2015). However, the model received high criticism (West, 1994) for the lack of systematization whereby the needs analyst will obtain an unstructured list of data. The vague of criticism concerns also the failure to consider other stakeholders than the learners. Munby's model was also reproached for focusing solely on the target needs and paying little regard to the learners' subjective demands. (Dudley Evans & St Johns, 1998) For this reason, Hutchinson and Waters (1987) improved the aforementioned NA proposal to shift attention on the learning needs (figure 3.5).

3.4.2. ESP Needs as Necessities, Lacks and Wants

Hutchinson & Waters' (1987) utilise three familiar terms: "*necessity*", "*wants*" and "*lacks*" (p.54). They believe, NA is the method used to investigate what the learners have to know(*necessities)*, what they feel they have to know (*wants)* and what is the gap between what they know and what they need to know (*lacks*). The co-authors were the first advocates to put into effect two concepts of needs "*target needs*" and "*learning needs*" (ibid); in their opinion, the demands of the target situation affect the examination of the learners' "necessities." The following diagram shows clearly how Hutchinson and Waters view the division of needs into different components:

Needs

Target Needs:
What the learner needs to do in the target situation

Learning Needs:
What the learner needs to do in order to learn

Necessities

Lacks

Wants

Perspectives

Society, companies, employers

Teachers

Learners

Figure 3.4. Classification of NA based on (Hutchinson & Waters, 1987; Huhta et al., 2013: 11)

By necessities the learner or other stakeholder express what language functions and skills must to be learnt and used effectively in EAP or EOP situations. This information can be collected from different active stakeholders. Another sort of need is referred to as "*lack*." Overlooking what the learner currently knows and what aspects he needs to improve may impede the teacher/researcher from accurately identifying his/her requirements (Hutchinson &

Waters, 1987). The two types mentioned earlier define the learner's profile in terms of objectivity, but the new element that Hutchinson &Waters (1987) introduced and which revolutionised the approach to NA is the notion of "*want*". By identifying his wants, the learner may reveal his motivation and how he conceptualises the learning process. Individual learning styles and personal preferences of learning methods are also crucial elements that must be taken into account.

To apply this to mechanical engineering learners, for example, it can be assumed that they may necessitate to control both oral and written communication skills in order to fulfil the workplace communicative demands. Other skills should be focused on such as; reading technical reports, users' manuals and other documents. The learners will be granted the opportunity to express their wants when they articulate the learning process which should be pleasant, complete and controllable. Moreover, without gathering these required skills and reflecting them in a real-life situation such as holding meetings and practising technical demonstrations, would be a real gap in their syllabus design. Furthermore, there would be a significant gap in the course/syllabus design if learners do not acquire these needed abilities and reflect them in real-life settings, such as conducting meetings, doing technical demos and writing technical documents samples.

3.4.3. Three-dimensional Levels Model

Robinson (1991) adds a different angle to view needs from, taking back the example of mechanical engineering students, their needs can be seen on three different levels according to his suggested framework. Robinson proposes the labels micro-, meso-, and macro-levels for interpreting the notion of need. Figure 3.6 depicts a model modified by Huhta et al. (2013) from Robinson's (1991) proposed version. The model shows with examples how some needs can be collected from the target workplace context.
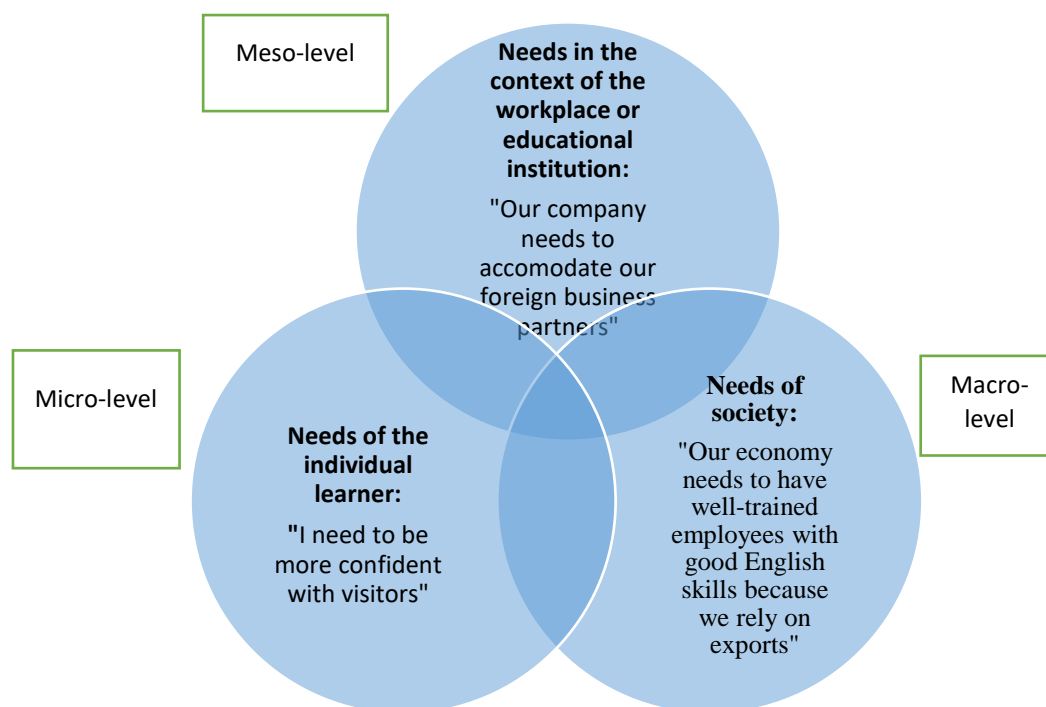
Figure 3.5. Needs in ESP on three different levels based on Robinson (1991) (Huhta et al., 2013:13)

The meso-level cases collected in this paradigm are extremely important since they give the ESP practitioner/syllabus designer with realistic and real-life scenarios for language training. The more in-depth the study at the meso-level, the more genuine the materials and activities used in language education will be. On the micro-level basis, the analysis could be achieved by the process suggested earlier provided by Hutchinson and Waters (1987) through wants and lacks. The macro-level is more or less difficult to guess, since it concerns the overall educational ESP teaching goals.

3.4.4. Environmental Situation Needs Analysis

NA and ESP research evolution has granted much maturity to develop more refined analysis frameworks. For instance, Hutchinson and Waters' (1987) approach excludes some important components namely; means analysis, linguistic analysis, discourse analysis, and genre analysis. These parameters were emphasised by Dudley-Evans and St John (1998) as

shown in figure 3.6 below. The paradigm is one of the most recent models of NA that offers an

exhaustive description for data gathering and analysis.
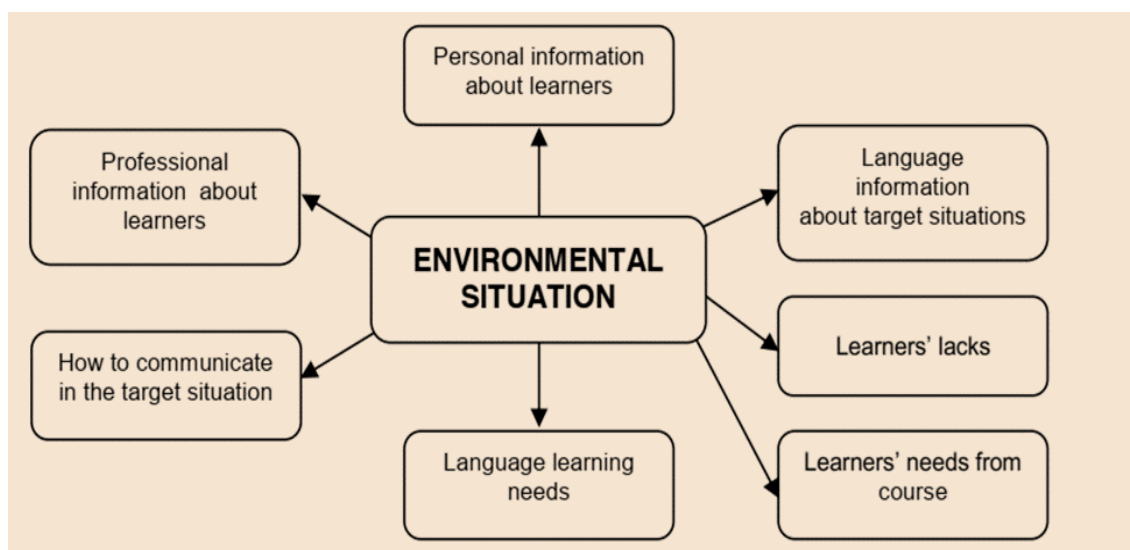
Figure 3.6. What Needs Analysis Establishes (Adapted from Dudley-Evans and St John,

1998:125)

Using prior models proposed by a number of experts in the field of NA (Munby, 1978;

Hutchinson and Waters, 1987, Robinson, 1991) the current framework helps bridge the gap left

by the previous ones by addressing a wide range of linguistic requirements analysis issues.

Eight components characterise this recent and comprehensive model of investigation that will

be further exploited in details in the following chapters.

Within the same framework, Dudley Evans & St Johns (1998) highlight three essential aspects

in needs analysis;

> First, needs analysis aims to know learners as people, as language users and as
>
> language learners. Second, needs analysis study also aims to know how language
>
> learning and skills learning can be maximized for a given learner group. Third,
>
> needs analysis study aims to know the target situations and learning environment
>
> so that data can appropriately be interpreted (p. 126).

(i)   Target Situation Analysis (TSA)

It is a form of NA with the objective of identifying the linguistic requirements for the learner's academic or occupational contexts. Dudley-Evans & St. John (1998) define TSA as "tasks and activities learners are/will be using English for target situations" (p.124). This visualisation of the future English use is the key element that distinguishes TSA from present situation analysis (PSA) which is based on the learners' self-estimation of weaknesses and strengths. Because the learner is often unaware of what he will be using in the target situation, other "outsiders" such as content teachers and administrators or employers, in the case of EOP situation, will allow the needs analyst identify the required language forms and functions. Accordingly, TSA attempts to clarify what the learners will likely be able to do with English at the end of the course (Brindley, 1989). Some of the questions that help define the TSA are as follows:

- What is the content discipline?

- What is the learners' level and context of study?

- Is Language needed for study-related or for occupational purposes?

- What are the most needed skills to focus on? And what is the channel to be used?

- What are the types of text, discourse and genre to be used?

(ii)   Present Situation Analysis (PSA)

As contrasted with the first type, present situation analysis (PSA) refers to procedures whereby the analyst determines the current linguistic understanding that the learner is able to make use of at the beginning of the English course. Hutchinson and Waters (1987) added the notion of discovering weaknesses and strength. In this respect, according to Dudley-Evans (1998) the practitioner can obtain information about the learners' level at this stage of the course by means of placement tests for instance. Questionnaires and informal discussions can also provide background information on their level, resources and linguistic abilities.

(iii) *Learning Situation Analysis (LSA)*

From the "insider's subjective view, it involves the felt and wanted teaching processes to plan and achieve the course goals. In this case, preparing and planning an ESP course involves not only the learners' language demands linked to their field, but also their perceptions of both learners and teachers' roles in the learning environment.

In a nutshell, NA has been interpreted in a plethora of terms that are intended to describe the number of features and standpoints which contributed to the development of the notion of needs. Each word holds a particular ideology or essential relevance and is worth considering. Though it is complex to proceed to the investigation of learners' profiles, the goal of authentic NA is to combine thoughts and reality to conceptualise ESP best practices.

3.5. Conclusion

Every single element in the present chapter has opened debates for various meanings of the notion of needs. Philosophies, orientations and instruments have been provided to define NA as a concept as well as a process to course/syllabus design in real-world contexts. The overall objective of NA has been to identify the learners' needs and, mainly, to design a course or syllabus that would generally suit their requirements. NA triangulates gathered data from all possible sources and potential participants then cross-checks it for an improved course/syllabus design. The models of NA presented and highlighted in this study have demonstrated the diversity of the discipline. Needs analysts, teachers or a syllabus designers have a plethora of methods and tools to use in order to collect and analyse data based on the demands of the specific context. The present chapter has attempted to summarise the methodological procedures in NA in view of setting a general framework for the application of the methodological tools; however, it may be noticed that the environmental situation model developed by Dudley Evans and St. Johns (1998) is the most recent, functional, realistic in nature and encompasses most of NA elements.

Chapter Four: Research Design and Methodology

Chapter Four: Research Design and Methodology

4. Introduction

The primary motive of the present work is to assess the learners' academic and target occupational needs in order to determine both their actual and desired competencies. This chapter provides an overview of the methodology in respect of the research context. It presents an account of the instruments and displays a discretion of the environment situation analysis. The study also seeks to assess what English skills need to be promoted in order to achieve a successful teaching-learning dichotomy in a mechanical engineering context. Another paramount research objective is to reconsider the English course according to the articulated needs from the concerned stakeholders. Within these parameters and in view of achieving the above-mentioned objectives, various tools are utilized to gather relevant information for an appropriate English syllabus.

4.1. Methodology

The present study attempts to reveal what mechanical engineering learners need to learn or update in English. Accordingly, it seeks also to analyse and assess the types of needs that will serve as basis and source of the English syllabus in the light of ESP and ELF context. The research objective is to study the general NA by collecting different polls of the current learners enrolled in different geographical sectors of the university, but with wider perspectives for other future learners' needs. The selected universities are geographically adjacent in a part of the western country, namely; the University of Sidi Bel Abbes, the University of Mostaganem and the University of Mascara.

In compliance with the overall goals of the present work, the study seeks:

1) To determine the general goals and objectives of the mechanical engineering ESP syllabi designed for the Algerian students. It aims also to understand the

programme's content and determine to what extent they respect the students' needs and the professional life requirements.

2) To discover the context in which English is taught in different levels, identify the sorts of materials and tasks and describe the learners' profiles.

3) To identify the content teaching and learning nature as it is essential to collaborate with content teachers and adapt their methodology as claimed by Dudley Evans and St. Johns (1998) in describing the ESP absolute characteristics.

4) To diagnose the learners' previous acquired competencies and check to what extent they are familiar with ELF and at the same time test their degree of tolerance towards such a variety.

5) To assess the learners' necessities related to the target situation, what the linguistic needs learners will be using in their study and will be integrating in professional situations, as perceived by content specialists and ESP academicians.

6) To obtain the learners' wants and desires concerning the strategies, tasks and the materials they would like to use and perform in their study life.

A survey research approach is what describes best the process of the present study. according to Newman (2014) "Survey research uses a written questionnaire or formal interview to gather information on the backgrounds, behaviors, beliefs, or attitudes of a large number of people. Usually, we ask a large number of people (100 to 5,000) dozens of questions in a short time frame." (p.49). Considering the objectives of the present study and the above-mentioned definition, most frequently surveys come in descriptive research, the results are displayed in tables, charts, graphs and data are tabulated via statistics. Accordingly, data from the designed questionnaires, tests, interviews, and observation are the major tools for collecting information. Purposeful population sampling is used, in this research, as its main purpose was to test the serviceability of ELF in English for mechanical engineering syllabus.

Qualitative and quantitative data resulting from this study would redound to the benefit of members shaping the academic world as well as the socio-professional settings in EST field, especially English for mechanical engineering, considering that English plays a crucial role in this field today. The growing demand for adapting the English syllabus to the particular and explicit learners' needs requires and justifies the investigation of more effective teaching approaches and techniques that meet the learners' profiles. Therefore, the findings may be of interests to the following:

- ✓ ESP teachers in mechanical engineering discipline will be able to consider the learners' identifiable needs to better train their students.

- ✓ Course and syllabus designers will be able to use the results of the study and to adapt their own course design according to the current study objectives and relevant information. It will help them also adapt, tailor relevant and up-to date materials for other new learners in the same field.

- ✓ Administrators will be more directed on what should be proposed to and by the team of teachers, to enhance the learners' competencies in English adapted to their learning situations.

- ✓ Researchers will ascertain more data in a new research field in Algeria where information is scarce, precious and needs to be further explored. The study then will constitute literature for other approximate fields in science and technology.

4. 2. The Research Approach

The research has been conducted under the denomination of the case study type of methodology. The design, therefore, is a research field that makes use of a triangulation between qualitative and quantitative research measurements for increasing the value of ESP needs assessment. On the one hand, field study requires gathering primary data and evidence by the researcher him/herself from the field (Greene & Lidinsky, 2012). In fact, the survey has

built evidence directly from the stakeholders' multiple responses and opinions besides the researcher's observations in the field. Obviously, multiple sources of information would certainly give a thoroughness and help the reader in building his own judgement than a single source that limits the researcher's vision. On the other hand, triangulation, as defined by Long (2005) "involves the researchers comparing different sets and sources of data with one another…to increase the credibility of their interpretations of those data" (p.28). Before describing the case study as a whole process in the present work, it is worth mentioning it as a general research design in the literature.

4.2.1. Case Study Design

Case study is categorized, first, under the applied research dimension according to Neuman (2014). For many, case study research methodology is a debatable practice; what can a "case" be for some researchers may not be for others. The concept of "case" is central but can be complex Gerring (2007:17). The scope of case study is far beyond being a study at a restricted level specifies Neuman (2014): "An individual person can be a case as can a family, company, or entire nation." (p.41). Therefore, for studying a certain category of university students' NA (the present case of mechanical engineering learners in three different departments) case study is the most appropriate framework to fulfill this task. Neuman (ibid) explains further the scope as follows: *"Case study examines many features of a few cases. The cases can be individuals, groups, organizations, movements, events, or geographic units."* (p.43) In fact, Brown and Rogers (2002), Creswell (2002), and McKay (2015) identify case study results as qualitative research data. They opine that, in general, case studies have as a purpose to describe the language use or language learning of a specific population (and sometimes classes) within its specific context and settings.

An early definition of case study clarifies the controversy between researchers that may disagree with others when saying that it investigates only restricted number of informants or

learners. Young (1960) describes case study, as "a comprehensive study of a social unit be that unit a person, a group, a social institution, a district or a community" (p.132). Put differently, the case study is a type of qualitative investigation that does not necessarily enquire a small number of individuals; it can be extended to a group or even a class of people. The data and outcome can, frequently, be generalized to a larger population. For Stake (1995), a case study may concern people or programmes, but not with abstract matter such as issues and relationships, as he names them, since they lead the researcher to a loss in limiting the scope of his research. Yin (2000) adds a paramount detail to describe the case study design (CSD) by attributing it three parameters: "It must have data from multiple sources, examine something in a real-life context, and use theory to generalize results" (p.229).

In this respect, the present study has used these parameters amongst others to obtain answers to the study research questions. For this purpose, research methodology tools have been varied and multiple sources have been exploited, as stated earlier. Data have been collected and reported as they have existed in real-life context, and the ultimate goal of NA procedure has been to attempt to generalize conclusions from the preceding theories, in combination with the obtained evidence from the study field.

In this line of thought, research methodology triangulation is often associated with the use of two or more research procedures, and it is often called mixed methods to find answers to research questions. Brown (2016) states that literature categorises triangulation into three to five types; however, he has come up with a list of nine types (stakeholder, method, location, time, perspective, investigator, theory, interdisciplinary, participant-role) (p.141). Considering Brown's definition mentioned below, the type of triangulation used in the present study has been similar to most of the studies in NA, and will be described as follows:

➢ Stakeholder triangulation: Including multiple stakeholders as source of information (students, teachers, librarians and administrators).

➤ Method triangulation (also called overlapping methods) – Analyzing multiple data gathering procedures (for instance, interviews, meetings, and questionnaires, previous research ELF corpus analysis, non-participant observations, group interviews and informal discussions).

➤ Interdisciplinary triangulation: conducting research from different disciplines' perspectives. (e.g., mechanical engineering).

➤ Location triangulation: Considering different geographical sites or different learners' and workers' fields. This particular parameter is in line with the tools and techniques of NA as considered by West (1994).

Moreover, the present study has relied also on previous NA field research outcomes (the case of Oran University, for instance).

4.2.2. Background of the Study

With the aim of obtaining overall and more in-depth evidence of the learners' personal and target needs, various data gathering methods, mentioned above, have been applied in this research. First, the fields of study have been diagnosed to be pointed at, and have been checked if stakeholders were willing to provide data. From the outset, the research under study has been an attempt to assess the learners' needs for studying English for mechanical engineering. It has also been an attempt to introduce the notion of ELF in a purely technical and academic syllabus. This syllabus would be designed for learners in preparation and in anticipation for their Algerian workplace situations.

Obtaining data from any fields is not an easy task, since access to learning places needs the administration approval to gather information from the concerned stakeholders. This requires time, patience and tactics. The first step after pointing the three departments, mentioned earlier, has been to examine the materials and documents available at the level of the administration and in the library, as well as some courses handouts and books.

The access period to mechanical engineering departments has prepared for the research fieldwork. It has provided an extensive exchange with some of the administrators to supply the research with the environmental situation (Dudley Evans and St. Johns, 1998) and to understand the mechanism of the content teaching. After the brief period of exploration, the next phase has been to conduct informal conversations with groups of students chosen at random as well as to build a general student profile, in order to obtain an overview of both English teaching and learning requirements in these departments. The informal conversations with a young community have offered them the opportunity to express themselves freely and share their experiences with the researcher.

The research study brought about in this project has made use of a combination of tools principally embodied in two different questionnaires, a semi-structured interview, informal discussions and university field observation. Since the methodology of any study is dedicated to the procedure to be conducted, the present work has been directed with both qualitative and quantitative research measurements. It has also been a large-scale investigation (audit) because it has included a considerable number of students from three geographical Algerian locations in addition to some previous research results in a fourth university situated in the same region.

The study is a type of immersion, as a classroom observation period has been necessary to understand the content subjects' teaching nature as well as the learning process. During this brief time of exploration, was able to design the survey questionnaires and select relevant interview questions. These tools have been, then, distributed and utilised to report a general needs background of English for mechanical engineering. Finally, samples of course materials and official curricular documents have been collected for the academic setting's means analysis.

4.2.3. Participants

The choice of the population sample was imposed by some impediments encountered in accessing the field of study. Subsequently, many attempts were made to collect data, and once information was gathered, diverse responses from the four institutions were combined as indicative of its unique environment. Thus, an opportunity to shape a sample in the Western part of the country has been offered and a larger NA has been conducted for more research representativeness.

The participants population comprised students majoring in mechanical engineering at the three Algerian universities mentioned earlier. The second sample of the participants included content as well as technical English teachers in the same universities. Finally, administrators and librarians have also been key contributors to the gathering data process.

The reason for using the same profile in other universities, particularly Mostaganem and Mascara, has been to round out the population for the sake of measurement reliability and validity. Moreover, the widening of the sample, in geography, has intensified and has reinforced the NA results. It has correspondingly allowed implying the language audit technique. Therefore, the research findings would not only be applicable to students of the same level, but they would also be beneficial for learners in both under-graduation and graduation cycles in mechanical engineering.

For more accurate analysis, it is worth noting that the present study considers some research results carried out by a couple of researchers (Izidi & Zitouni; 2017) in Oran University of Science and Technology (O.U.T.S.). These facts are taken into account as additional data for the present research requirements. They are considered as raw data to be added as a fourth university field. The results, however, are used at the discussion stage of the learners' NA.

With respect to the students who have participated willingly in this study, the population was divided into three categories. The first section consisted of (144) students enrolled in (2017-2018) first common core academic year and registered in the three universities mentioned earlier (table 4.1). The second group comprised (122) second year students, specialized in mechanical engineering in the three universities. Finally, the last sample of the population concerned (75) students majoring in first-year Master of mechanical production and manufacturing engineering in the same universities. The total students' number was (341) who accepted to be part of the survey. The following table (4.1) shows in details the distribution of the sample in the three universities:

Number of students / Level	University of Sidi Bel Abbes			University of Mostaganem			University of Mascara			Total
	G.1	G.2	G.3	G.1	G.2	G.3	G.1	G.2	G.3	
Year One	15	20	20	11	25	11	13	17	12	**144**
	Total: 55			Total: 47			Total: 42			
Year Two	G.1	G.2	G.3	G.1	G.2	G.3	G.1	G.2	G.3	
	17	15	15	20	20	15	08	12	10	**122**
	Total: 37			Total: 55			Total: 30			
Master One	25			20			30			**75**

Table 4.1. Distribution of the students sample according to levels and locations

The reason for selecting the master option is threefold. First, the subject and content, included in the course programme, is a variety of subjects ranging from mechanics of the continuous mediums, cut of metals, computer design, machine tools, mechanical manufacturing and industrial robotics which would enrich the present research findings and would meet the study purposes. In addition, the objective of the program is to submit to the students, essential competencies and necessary knowledge for production and manufacturing in the industrial

sector. The second motive is related to master syllabus profile which provides the learners with 22.30 hours of technical English in semester one. Finally, master students are from the second educational cycle, they are, for the purpose of the study, a corner stone population because of their maturity in being aware of their needs and in being on the verge of passing to the active life.

The second part of the target population is the one of the teachers. The teachers' number was not fixed, when administering the questionnaire, but they were the teachers who accepted to answer and to be interviewed. What is important is that the gathered data included samples from the three departments and that this represents, in itself, a sample of the western part of the Algerian universities. Regarding the content teachers, they were (18) subject specialists and (03) language teachers from the three selected departments as displayed in the following table.

	University of Sidi Bel Abbes	University of Mostaganem	University of Mascara	Total
Content Teachers	04	09	05	**18**
Technical English Teachers	01	01	01	**03**

Table 4.2. Distribution of the teachers sample according to specialty and locations

The third study population concerned the librarians who played a very important role in elucidating the environment that constituted the teaching-learning setting. Few members of the administrative staff have particularly provided important information for the study. Table (4.3) shows the number of librarians who have participated in the present survey.

	University of Sidi Bel Abbes	University of Mostaganem	University of Mascara	Total
Librarians	05	02	03	**10**

Table 4.3. Distribution of the librarians according to their place of recruitment.

4.2.4. Data Collection Tools

A triangulation process of data collection techniques has been employed to build clearer conclusions from different data perspectives and angles as shown in the following diagram:
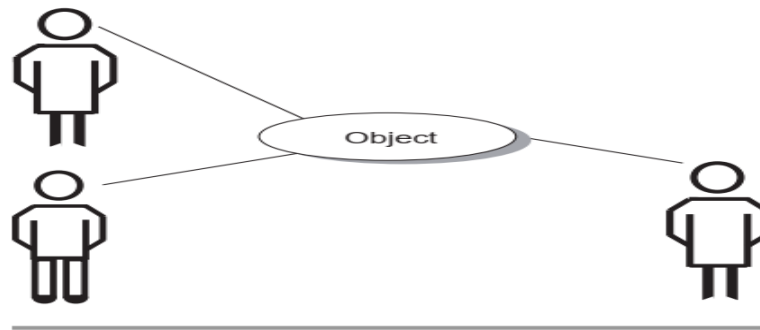
Figure 4.1 Triangulation: observing from different viewpoints. (Neuman, 2014:166)

Two different approaches (quantitative and qualitative) for collecting data have been adopted to better understand the learners' profiles and to identify their needs. The aim has been to investigate English teaching objectives as well as content teaching methodology.

i) The Quantitative Measure

One of the first issues needs analysts face is to collect data. Understanding the nature of this data will help analysis procedure go more smoothly and effectively. The quantitative evaluation method yields numerical data, and the selection of tools includes questionnaires and tests results containing (numbers, frequencies, and percentages) to be calculated. The obtained data reveal much about the learners' expressions of their English needs in their specialty. An additional feature of numerical data analysis is that the numerical code, in general, convince a considerable number of audiences (administrators-teachers-researchers) as mentioned by Brown (2016). However, non-numerical data have been crucial for the consolidation of the current research procedure.

ii) The Qualitative Measure

Linguistic and numerical analysis are two different entities, yet qualitative examination is no less important than the quantitative measurement. Qualitative assessment tools (Brown, 2016) provide soft data (words and sentences). Therefore, some questions parts in the questionnaires provide a ground for qualitative analysis, as they are open-ended questions. Obviously, the documents' examination, interviews, field observations, brief shadowing and casual conversations have been complementary tools of analysis that have shaped the mixed methods described earlier. The most important feature of qualitative data analysis is the realistic and genuine pictures that respondents have brought to the research which frequencies and percentages occasionally fail to achieve.

4.2.5. Field Visits and Observations

In the previous chapter, some NA models were provided. It was also described that the most practical and data-providing frame was Dudley Evans' model (1998). Therefore, the present study takes this model as a template for data gathering tool. For this purpose, the research has involved a number of data collection stages:

> ➢ To identify, within a period of immersion, the environment in which data will be collected in.

> ➢ To examine important materials related to the administration, library, and lecture rooms.

> ➢ To reveal what learners mainly study in content and English courses.

> ➢ To detect what specific methodology and techniques are to be followed in mechanical engineering teaching subjects.

The first step of the environmental analysis, was a brief period of exploration of the department to obtain an overview of the mechanical engineering teaching context as well as to

get a picture of English use in its real-academic context. The access period has been paramount in allowing the researcher elicit preliminary information from the potential stakeholders about the field of investigation as well as setting the scene for the survey.

The Mechanical Engineering Department at Mostaganem University was, first, visited in November 2017 for a short period. Data were gathered with regard to the layout and subdivision of the Science and Technology Faculty. The enquiries included mainly information about EST specialties with their respective content subjects attributed to "license" and "master" degrees. The special focus was on the presence or lack of English in the technical curriculum as well as ESP practitioners' availability in the department.

The data collecting process included a few visits to libraries with the goal of locating and cataloging English literature as well as determining the frequency with which they were borrowed by both content instructors and students. Other visits during the whole academic year 2017/2018, at irregular intervals, were carried out for administrating the questionnaires, conducting informal interviews with learners as well as carrying out the semi-structured interviews with both content and English teachers. This period was beneficial in collecting the informants' answers and attending some courses in pursuit of observing the methodology and the activities of the discipline they serve, as explained by Dudley Evans (1998).

The selection of a multiple research fields was not determined at an early stage. It was, in fact, the access period, with the encountered impediments in gathering enough information that required other complementary fields; namely, the Mechanical Engineering Departments in Sidi Bel Abbes then in Mascara Universities.

i)   **Science and Technology Disciplines in the Algerian University**

The Algerian Faculty of Science and Technology offers ten streams and eleven master courses in the field. The technical subdivision is important to be understood by EST practitioners and researchers. This categorisation provides them with an understanding of English use and purposes for science and technology. The list below displays the faculty subdivisions that ST students may be enrolled in.

- ❖ Architecture
- ❖ Electro-mechanical Engineering
- ❖ Electro-technical Engineering
- ❖ Electronics
- ❖ Civil Engineering
- ❖ Process Engineering
- ❖ Mechanical Engineering
- ❖ Petrochemicals Industry
- ❖ Construction and Field Work Engineering
- ❖ Telecommunication Engineering

ii)   **Mechanical Engineering Department**

This stream receives learners of scientific profile, from the secondary school level, to further their careers in mechanical engineering. They are able to opt for three to four different sub-branches; mechanical construction, materials engineering and energetics, that all give access to master courses in the same disciplines as displayed in diagram (4.2) below. The diagram blends the branches, which can be available in one university and not in another such as aeronautics in the University of Mostaganem. These courses are interdisciplinary within the different science and technology fields. They also offer open- doors to job opportunities in the

industrial sectors at a regional as well as a national scale. It must be mentioned that mechanical

engineering curriculum is national and unique in all the Algerian universities.
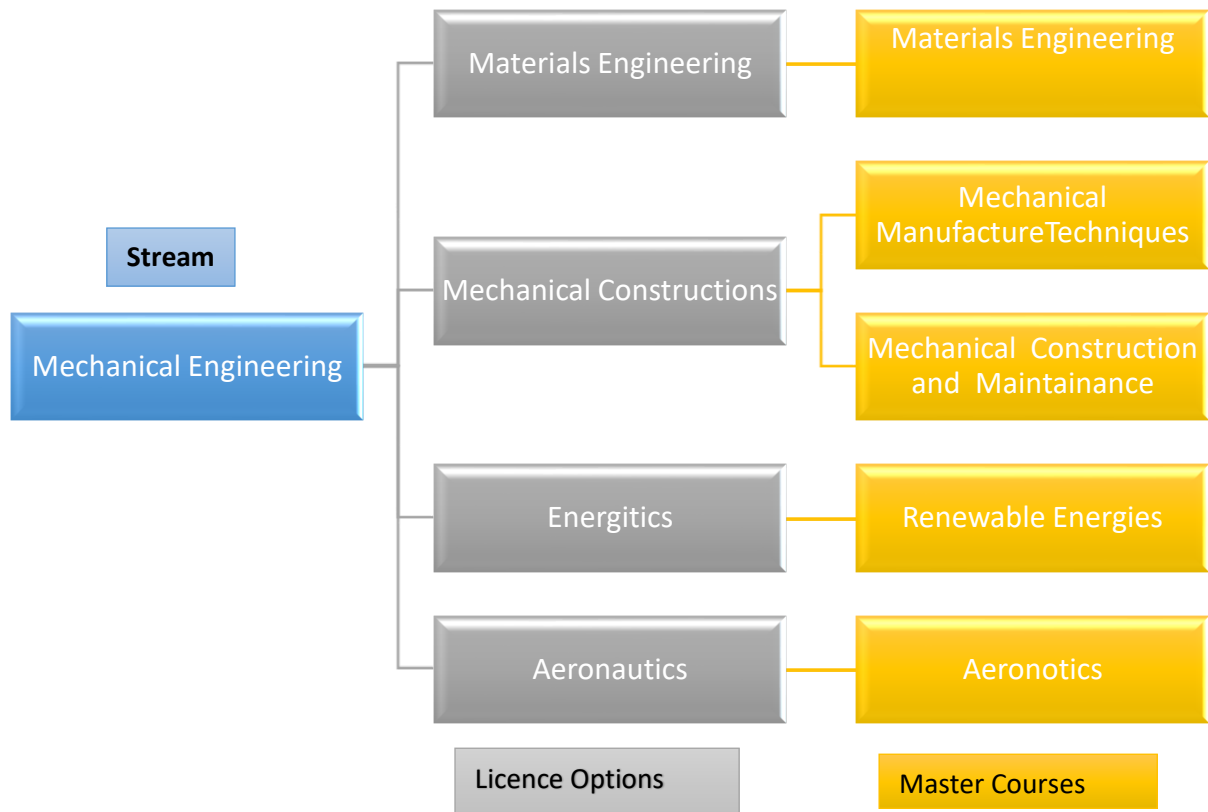
Figure 4.2. Mechanical engineering organization flowchart in the Algerian University

The substantial presence of the industrial activity across the Algerian territory and the

economic requirements, tightly related to the field of mechanical engineering, offer a diversity

in options and specialties. These options can open doors to EST practitioners to learn about

topics and materials relevant to these fields of study, as well as to determine the workforce

target needs.

a) Content Curriculum General Objectives

The general curriculum objectives as reported from the official documents (appendix I) are

to prepare the learners to the following target situations:

- ▪ To complete a maintenance policy relating to the mechanical aspect.

- To track the maintenance of a machinery or equipment plant.

- To undertake mechanical studies on a given product.

- To analyze data and results of a mechanical problem and make appropriate decisions.

b) Potential Areas of Professional Activity

Students who have graduated from mechanical engineering can be:

- Consultants in research and technical studies offices.

- Materials characterization analysis experts.

- Maintenance technicians of machinery in mechanical industries.

- Executives for industrial engineering.

- Executives for public administration such as mining services.

- Technical school teachers (middle, secondary).

c) Mechanical Engineering Skills

Licence and master learners' tasks in mechanical engineering focus on the analysis, design, manufacture and maintenance of objects of all sizes that enhance the physical capabilities of humans and range from nano-machines to huge manufacturing plants. Mechanical engineers have a solid knowledge of (mechanics, kinematics, thermodynamics, fluid mechanics, materials science, control systems and energy) as well as exceptional problem-solving skills necessary to deal with the most difficult modern technical problems. They also need to work as one team and build on their excellent leadership and communication skills. They are found at all levels of industry, civil services and military organizations. The aforementioned features are of top importance to English syllabus design since they reveal the "what" to teach in terms of topics and the type of English the ESP practitioner should focus on, and this was one of the first steps in current environmental NA.

d) English in Mechanical Engineering Curriculum

As far as English is concerned in the curriculum, the official national document reveals in its first pages the need to teach a foreign language, yet the real needs in teaching English per se are not expressed. The general degree semester schedules English and /or French for the three first semesters as follows:

	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
Licence	EFL (100%) 45h 3hours/week	EFL (100%) 45hours 3hours/week	Technical English (100%) 22.30 hours 1.30 hour/ week			
Master	Technical English and terminology (100%) 22.30 hours 1.30hour/week					

Table 4.4. Semester-based English teaching

On the question of English syllabus for each level, the curriculum provides in its official documents a page for each semester to reveal the general objectives with some examples of topics and language functions. English master courses are, generally, described in terms of the four skills requirements. (appendix II). With regard to time scheduling, it has been noticed in the three visited universities that English sessions were planned at the end of the week, notably in the evenings.

iii) Library Visiting

An active involvement in collecting and analysing data for the environmental analysis required a library survey. The field visit started with collecting the necessary data from the administration staff as well as from target universities' official websites. The libraries were also substantial sources of information for detecting the learners' necessities and investigating the

pedagogical materials' availability for both teachers and, most importantly learners. Therefore, several visits to the libraries were granted during the research process.

The overall objective is to be acquainted with the types, genres and content of documentary collections read by teachers and learners. Semi-structured interviews (appendix III) were designed for the librarians to obtain more precisions for the library research operation. The library staff members have been key stakeholders and active members in providing the electronic catalogues and in facilitating the consultation of the required documents and data. Many of them served in the library for more than fifteen years and were knowledgeable about the general needs of the university community.

4.3. Data Gathering Tools

The access period to the libraries was incomplete without preparing few questions to the staff members in order to determine what learners and teachers mostly read and borrow from the library. However, due to the small number of library personnel selected for the research study, the interview was chosen as a technique of investigation in this particular situation. This tool has offered a more flexibility and in-depth responses that would not be obtained through questionnaires, for examples. In this case, it was possible to add questions on the spot based on unexpected and immediate answers. Furthermore, it is worth mentioning that the questions were asked during the data base visits.

4.3.1. The Library Stakeholders' Interview

The primary goal of the interview was to elicit information from the librarians about English use in mechanical engineering, English materials availability, and their relevance as well as their usefulness for the students' academic or job-related careers. The semi-structured interview consists of five questions concerning:

a- The documentary collection, its type and availability.

b- The content and English teachers access frequency and the type of books they

borrow.

c- Mechanical engineering learners' relationship with the library.

4.3.2. Lecture Room Observations

Once familiar with the environment, a deeper investigation was necessary. Another

period of the "lecture room" observations was needed, which took several sessions in different

subjects and at irregular intervals during a couple of months. In this context, it is considered a

kind of shadowing technique; as the researcher spent the whole day, once a week, attending and

living the day with students. There were no criteria in choosing the subjects, and the selection

was at random. Hence, the objective of the classroom observation process was to learn about

the nature of teaching methods and to identify the different types of tasks and activities. The

following grid (table 4.5) is a personal support for reporting the selected observation items

intended for mechanical engineering teaching and its learning methodology.

Lecture Room Observation Checklist			
Date: ……/…… City………/………… Observer's name…………/…………...…..…			
Level: licence/ Master **Timing:** **Type of Course:** ………………………….			
Areas of Observation	**Sufficiently achieved**	**Needs Improvement**	**Descriptions /Comments**
Pedagogical Aspects			
Clear objectives			
Topics			
Types of tasks			
Group work			
Strategies			
Use of digital technologies			
Visual aids/ Authenticity			
Training			
Assessment			
Context and setting			
Type of teaching materials			

Availability of documents			
Class size and arrangement.			
Language Skills			
Learners			
Motivation			
Interaction			
Learner-centeredness			
Teachers			
Teacher-centeredness			
English reference			

Table 4. 5. Content Course Observation Checklist.

The grid displays four essential parameters in building a course (Pedagogical aspects, context and setting, learners and teachers). These features together with its sub-items would help an EST practitioner collaborate with both learners and content teachers in order to use the discipline methodology in teaching English. The observation stage was a transitional step towards asking the research target population. During this stage, classroom observations raised several questions that were jotted down immediately, whereas others were directly related to both the research objectives course design. Moreover, the preliminary findings of the librarians' interviews, in the three universities, as well as the observation initial outcomes helped develop, first, a comprehensive questionnaire to the undergraduate students. Other questionnaires were designed for the content and English teachers to investigate the learners' English needs. Consequently, the next step in collecting NA data was the questionnaires submission.

4.3.3. Questionnaires

Two populations were chosen to be studied: the first was the group of students, and the second concerned the teachers team. The environmental situation analysis allowed an in-depth questionnaires preparation to complete what the interview and observations did not collect. Some answers may not be considered as absolute and irrefutable because of the circumstances

under which the informants answered. For instance, informants sometimes do not understand the questions or do not answer at all. Others may answer to satisfy the researcher or simply copy their peers' statements. For these reasons, the questionnaire as a tool of data collection is paramount in providing an overview of the present and target situation that needed to be identified.

4.3.3.1. Learners' Questionnaire

To get a clearer image of the learners' needs and wants, it was necessary to follow the first steps described earlier, succeeded by data collection procedure. When the respondents' number is significant, the informants can only express themselves to communicate their needs and feelings via questionnaires. The disadvantage of distributing questionnaires to a large number of students, for example, is that some of these students may not complete the survey forms. It is also highly recommended to write the needs analysis questions in the language that the respondents control best. The case of Arabic for Algerian students.

In the present case study, the learners' questionnaire was, initially, written in French, as the researcher has supposed it was the language of their content subject teaching (appendix IV). Nevertheless, not all the students answered the questionnaires because they encountered difficulties in finding their words in French to express themselves. This matter was a real impediment to collect as much data as possible. The total number of undergraduate students indicated in (table 4.1) is the number of the students who accepted to be part of the survey. Only 266 out of 500 hundred copies (for licence students) distributed across the three universities were returned for analysis. As for master students and due to the restricted number of the groups in each specialty, the rate of the informants was rather higher than the one with undergraduates. 75 copies out of 93 of the global number of questionnaires were completed. The questionnaires templates were designed on the basis of what Hutchinson and Waters (1987) recommended for

NA paradigm. The questions mainly survey the necessities, lacks and wants of the target learners. On this basis, the questionnaire layout has been designed as follows:

Part I: Personal Information

The questionnaire consists of 16 questions divided into two sections. The very first questions in section one concern enquiring about learners' general personal and professional information (age, gender, academic level). It is further asked in this section, to state the content subjects' language as a medium of instruction.

To know the language of instruction is important in the process of course design and in selecting the texts and materials in case of translation tasks and activities. It is also significant in terms of further NA process. The last question in part one seeks to know whether there were any students who had a professional life in the same sector. The purpose behind this question is to benefit more from their experience and knowledge of the target needs.

Part II: Pedagogical Information

This section is introduced by asking the learners about time allotment per week. Although this answer could be found in the department time schedule, the enquiry is rather focusing on the learners' attitude toward the amount of time and whether they were satisfied with. In the same line of thoughts, the learners were questioned about their frequency of English course attendance. This would partly elucidate the interest rate granted to English courses in the department.

Question 2 offers the learners certain options to state the reasons why they attended or did not attend English lectures. Motivation is directly linked to the importance that a learner may grant to a subject or another. In this same context, question 3 seeks to discover the English important for learners in their academic life. This is followed by the same formulation for the

professional life. The purpose behind these two questions is to measure and compare the learners' preferences for an EAP or EOP course.

It is paramount to mention that this section puts the learners' PSA in the frame of the learners' linguistic background. Questions (5,6,7 and 8) are designed to pursue this purpose. The questions also specify the activities and tasks as the four different subskills. In the same line of thought, questions 7and 8 seek to depict the ESP course description and to find out any problems encountered during the process of learning English. Question 9, which is at the heart of TSA, provides a detailed list of sub-skills that the learners would select carefully to improve and enhance in their course design. This question takes the form of a four-category list devoted to language skills.

Of a paramount concern, the adopted research strategy in the present study raises the issue of learners' attitude toward ELF. Therefore, questions 10,11 and 12 are oriented to discover the learners' awareness about the types of English(es) they prefer for their future professional communications. At a second level, it is essential to display the informants' orientations toward a standardized professional English or a more globalized form of it. Question 13 closes the globalization approach by evoking whether the notion of culture should be as closely associated with standard or global English.

The last questions enumerated (14, 15 and 16) describe what Hutchinson and Waters (1987) name learners' "wants". Through these questions, the learners were asked about how they would learn more effectively, and more importantly, how they would prefer being evaluated. Finally, it is always beneficial to have knowledge of the target population general suggestions and proposals (question 16) on how to improve, to the best, one's knowledge and ability.

As mentioned earlier, data collection procedures, involved not only asking learners, but also content teachers; as they were valuable and fundamental sources of course design. No matter what the learners, in a given discipline, may expect to be important in their study-life; they are not be as experts as their content teachers. The latter will make it easier to focus on the target topics and methodology by virtue of their expertise and experience.

4.3.3.2. Content Teachers' Questionnaire

The discipline teachers, in the three Mechanical Engineering Departments, were solicited to participate actively in building their learners' English course by answering via an open-ended questionnaire (appendix V) Only 18 out of 48 teachers in the three sites replied and returned their questionnaires. The objective behind asking the teachers is not to obtain answers from all of them; what has been obtained via the questionnaires is rather satisfactory thanks to the answers' quality and diversity they provided the research with.

The content teachers answered 17 questions organized in 5 sections related to the topics, tasks and methodology. The questions are selected on the basis of what their learners would likely to appreciate in their English sessions and on activities and topics that would be useless or difficult for them. The purpose behind dividing the questionnaire into five sections is to gather questions according to key categories in the questionnaire, using the lacks, necessities and wants principles. Their answers were necessary to complete the collected learners' answers from both under-graduation and master levels students. Accordingly, the questionnaire overall goal is to collect quantitative and qualitative data to be translated into academic and professional language needs learners would meet in mechanical engineering contexts.

Section one is an introductory part, devoted to gather information about the content teachers' staff in terms of specialty and experience. A very important point in this section is asking the teachers about their foreign languages' potential. Concerning the instruction

language, it is paramount to identify and use it as a reference in the conception of the English course.

Section two includes six open-ended questions to collect the teachers' answers to be qualitatively analyzed. The questions concern the role of English in the world of mechanical engineering, particularly in some specific specialties that are intrinsically linked to academic and professional English types. In this same section, the last questions are devoted to detect the difficulties that learners and future jobholders may encounter in their respective academic and professional lives. Finally, the instructors were asked if they used to raise their students' awareness of the importance of learning English in their own content courses, and if so, what strategies they used to do so.

Section three consists of two questions (7 and 8) that compiled initially the most important English teaching skill(s) and aspect(s). Question 8 framed, with careful presentation, the tasks in each of the four skills (listening, speaking, reading and writing). Both listening and speaking are categorized under the Oral class. These types of questions are the most important in NA procedures, the outcomes would serve select the precise tasks and topics for the needed academic and professional skills.

Section four addresses the issue about the content teachers' attitudes regarding ELF in science and technology, particularly in mechanical engineering. This question is, directly, linked to the one underlying the importance of integrating and identifying the type of culture(s) in teaching English for mechanical engineering.

Section five embodies the "wants" parameter. It seeks to discover through four questions the teachers' suggestions, first, about their relationship with English documentation in the library and how they handle English sources. Second, the experts were consulted to assist the researcher in identifying learners' English learning methodology. The questionnaire terminates

with questioning the teachers to provide some suggestions on how to evaluate learners' progression and design English for mechanical engineering courses. It is worth mentioning that both questionnaires had a first version that were piloted among three content teachers with the grade of professors, and who modified slightly the questions formulation and avoided some redundancies.

4.3.3.3. English for Science and Technology Teachers' Questionnaire

EST teachers have also their share of the survey, as they are principal stakeholders in the study. Although each participant in the NA activity is important, the ESP instructor is the key to unlocking both the PSA and accessing any type of experiment in terms of syllabus design, course management, and class assessment.

The questionnaire fucus is to obtain as much details as possible with regard to the learners' levels, needs and wants. The questions cover aspects of NA research. Most of the questions in the EST teachers' survey are close-ended and come into an assortment of forms including: multiple-choice, checklists and checkboxes items. The data collection purpose from these forms of questions is to avoid unique answers. The questionnaire is harmonized with some open-ended questions to understand the teachers' opinions, explanations and more specifically their suggestions. The open-ended questions offer a qualitative nature to the survey as well as an exploratory essence to the research (appendix VI).

Section One

The questions, in this part, address the teachers' profiles including their qualifications and English teaching experience as well as their motivation for choosing to be an EST practitioner in this particular field. What is of utmost interest, in this section, is to know whether the teachers received any training in ESP/EST teaching or at the very least in English for engineering. Compared to former questionnaires, some additional questions in the personal

information section are added in the present one. EST teachers were asked to provide class description data in terms of levels of educations, students' number and time allotment.

Section Two

In addition to collecting data from learners, it is very important to know the teachers' opinions about their learners' English level and performance. ESP practitioners are reliable data sources for English NA, and they are the prime characters to care about their learners' aspirations as well as their instruction. It is important for course developers and syllabus designers as well as ESP practitioners to obtain information about their learners' levels and needs by means of NA. By virtue of this, the three initial questions in this section investigate whether teachers in the target departments conduct NA before preparing their course. The succeeding questions (Q4-Q7) in this section further explore the course content and its sources. It is also important for the preparation of the English syllabi, as considered in ESP literature, to bring to light an existing collaboration between language and content instructors.

Section Three

This part of the investigation (Q8-Q10) portrays the core of the survey purpose by exposing the issue of ELF in a set of checkboxes questions. It is very important to discover the learners' awareness degree from the EST teachers' perspectives before investigating the learners' familiarity with the concept. The strength of their opinions would reflect the teachers' ability to integrate or not the type of ELF in EST teaching. It is central to draw special attention that question nine is twofold; it seeks both the teachers' attitudes towards ELF as a type of English and its actual acknowledgement in their EST course.

Section Four

A combination of multiple-choice, checkboxes and checklists questions (Q11-Q14) are devoted in section four to the technical aspect investigation. Details are presented to the teachers

to conceive, through choices, the nearest course profile for the respective classes in terms of skills, subskills and activities. The details concern the four skills teaching in an ESP situation with a prominent emphasis on the insertion of ELF notions and awareness.

Section Five

Similar to the present former questionnaires, this final part of the survey is devoted to the learners' wants. The purpose behind (Q15-19) is to detect some beneficial strategies used by the practitioners in the field to meet their learners' preferences in terms of instruction. Evaluation is another focus of this section. It refers discovering the teachers' techniques in the ongoing process of adjusting and building the teachers' course according to their learners' demands and desires.

4.4. Conclusion

This chapter has described the highlighted methodological considerations within the paradigm of qualitative and quantitative research. The first goal of this work section has been to clarify the variety of techniques and tools used in achieving the research study initial goal, which is to examine the learners' needs for their English syllabus design. These methods have been critical in identifying pertinent themes, language functions, abilities, and stakeholders' attitudes regarding ELF with its possible inclusion in the EST syllabus. The chapter has also displayed detailed descriptions, purposes and layouts of observations grid, interview and questionnaires as the main study instruments. Finally, the steps of sampling and implementing fieldwork have been illustrated with respect to the validity factor by means of triangulation parameters. The following chapter's goal is to display and analyze the data collected by the instruments described earliest in this chapter.

Chapter Five: Findings and Data Analysis

Chapter Five: Findings and Data Analysis

5. Introduction

The preceding chapter has provided a detailed description of the present study methodological consideration. Subsequently, the current chapter looks at the research process in terms of reporting and reviewing data that are analysed and interpreted. The chapter offers then a discussion of the findings and seeks to identify the English needs of a number of learners in a mechanical engineering environment from the stakeholders' perspectives. It is important to note that the description is divided into two chapters, namely chapter five and chapter six, due to the various tools used in the current study as well as the significant number of survey data analyses. This present section is devoted to the results analysis collected from field observations, librarians' interview, content and EST teachers as an important profile for learners' needs analysis. This chapter offers various accounts and interpretations resulting from the deployment of data gathering tools.

5.1. Data Analysis Synthesis

The recorded data obtained from the selected instruments and developed for the purposes of the current study were first collected, read and organized before being analysed. As previously mentioned, a mixed method of qualitative and quantitative data analysis has been followed in the realization of this survey. The approach that has been followed throughout the whole work is the description of the environment analysis as suggested by Dudley-Evan & ST Johns. (1998). This context-based approach analysis, as has been previously described refers to the examination of the background and specific setting where the designed course and syllabus would be implemented. The syllabus and course design would then take into account these parameters for an adequate content.

The first data to be analysed, in this chapter, concern the ones issuing from the University of Science and Technology in Oran in 2017; the fourth university case of mechanical engineering students. These data are, in fact, the results of a couple of researchers who studied learners' English needs. The results they presented in their study meet the same purpose of the present one. Accordingly, their findings will be eventually reported verbatim.

5.2. English for Mechanical Engineering NA: The Case of Oran University

The couple of researchers Izidi & Zitouni (2017) raise some issues to be investigated; the study seeks to:

- ✓ Diagnose learners 'attitudes and study their expectations for a future EST course.
- ✓ Know the learners' level and discover they mostly preferred skills.
- ✓ Discover their favoured types (s) of English in their learning process and identify their aspired target situation.

Their study was quantitatively analysed after assigning a questionnaire to a population of 50 students divided into 33 males and 17 females. The main findings are summarized and displayed in (table 5.1) as follows:

Research questionnaire items	Responses	Frequency
The students' attitude towards English	Interested	86%
The preferred type of English	EGP and ESP	56%
The students' level of English	intermediate	60%
The importance of English for the discipline	Necessary	68%
Areas of interest	Oral communication and materials manipulation	76%
English future perspectives	English is a sine qua non condition for a successful career	90%

Table 5.1. Summary of Oran University learners' most frequent responses

The main results, according to Izidi & Zitouni (2017), reveal that most of mechanical engineering students show positive attitudes towards English, and they estimate it as needed as their content subjects despite its little influence on the students' academic performance. As far as their expectations from a future ESP course, the students express their necessity to use English as future engineers with other experts in the same field, and to be able to handle materials that are useful for them as specialists.

Second, the researchers identify the majority of the students as intermediate, which they deem adequate for the EST teaching prerequisites. The learners acknowledged the speaking and writing skills as the notable areas to deserve emphasis on. Third, seeking for answers on the third research objective mentioned earlier, the two academicians detect the learners' bias towards fostering their level in English for General Purposes (EGP) before receiving ESP instruction. Other learners showed their preference to ESP because they saw it more relevant and more accurate to their field of study and required additional time to be devoted to the ESP course per week. The last point that the study reveals is the learners' visualization of their ESP target situation. They tightly linked ESP to mechanical engineering career. They even attached mastering English ability to the job recruitment conditions.

As far as the current personal research survey is concerned, the first step in the current environment analysis to be analysed is the one completed chronologically and described in the data collection procedure.

5.3. Field Visits and Observations Analysis

The first objective of mechanical engineering departments' visit was to familiarize oneself with the background situation. To meet groups of employees and learners is paramount for the research purpose. The aim is also to learn key terms and have access to materials as well as places that might be relevant for the study. From the outset, the strategy has been to attend

the maximum number of theoretical and practical sessions so as to collect all possible data for the research. However, in application, this was contradictory. Some sessions were difficult to access while others lacked significant data. Because of the difference between hard and human sciences, some of the teachers during the observation sessions were uncomfortable with the idea of having an observer in the classroom. Therefore, some of the outcomes were not really authentic and complete. Despite being told that they would be observed primarily for the course and its environment, rather than their performance in class, only six of the eighteen participating instructors agreed to be observed. This group of content teachers accepted voluntarily to discuss, explain and enrich the observation notes when necessary. Despite the obstacles encountered while observing the content classes, this collecting data method has been very valuable and has provided details that would not have been explicit via other tools. The following grid represents the summary of the detected and gathered data, during the observation period in some content classes.

Lecture Room Observation Checklist

Date: ……/…… City………/…………   Observer's name…………/…………..…..…

Level: licence/ Master   **Timing:**   **Type of Course:** Mechanical construction

Areas of Observation	Sufficiently achieved	Needs Improvement	Descriptions /Comments
Pedagogical Aspects			
Clear objectives	✓		Instructional tasks are mainly determined by aims: Enable students to identify and solve problems Strengthen theories through practical manipulations. Introduce students to the basic concepts of probability and statistics. Acquire the principles of industrial design parts. Be able to represent and read the plans.
Topics			Materials- thermodynamics- industrial drawings- problem-solving.
Types of tasks			Writing reports and minutes- memos-drawing-presentations about tasks

	✓		accomplishments -reading articles- reading instructional materials- translation- description
Group work	✓		The most favoured and recommended strategy
Strategies		✓	Cooperative-interactive- problem solving- reasoning.
Use of digital technologies		✓	Sharing lectures on an e. platform or social groups. The assignments are asked to be done and shared then sent to teachers.
Visual aids/ Authenticity	✓		Video and visual material /youTube
Training			A fundamental principle.
Assessment		✓	Peer feedback and learners' assessment is fostered when necessary.
Context and setting			
Type of teaching materials	✓		Handouts- drawings- videos- books- authentic reports and catalogues- projects.
Availability of documents		✓	Some shortcomings in fulfilling the learners' demands.
Class size and arrangement.	✓		acceptable number- row lines- circle in group work.
Language Skills			Learners read and write a lot –technical writing.
Learners			
Motivation	✓		Highly motivated learners in their field of interest.
Interaction		✓	Teacher-learner and learner-learner interaction is present
Learner-centeredness	✓		Hear views-suggesting solutions-
Teachers			
Teacher-centeredness	✓		Involve learners- projection towards the professional life- elicits the learners 'critical thinking.
English reference		✓	Some teachers use authentic English written articles and material/ teachers incite learners to read the original documents in English / Use of lot of technical words in English

Table 5.2. Summary of content class observations

Table 5.2 above contains four poles showing some sub-parameters that seem prominent

and important in building the context for the syllabus design.

5.3.1. The Pedagogical Aspect

Observing classes under pedagogical perspectives is to consider what learners and teachers do rather than what is supposed to be done in terms of curriculum and official documents. Mechanical engineering licence courses, in Algeria, offers a multidisciplinary programme and teaching cross-sectional units with the other science and technology specialties. This characteristic is offered especially in year one, the fact that unifies the learners' needs and their target objectives in this section.

a) *Objectives*

The learners, from year one, are trained to identify the objectives they target and set out short-term objectives for their performed tasks. It has been observed that the overall objective of the discipline is to develop an understanding of the procedures used in the manufacturing of parts as well as the techniques used in their assembly. Besides the general curriculum objectives, some specific objectives have been detected and reported in the grid above. The EST practitioner would find it easy to develop his/her course and syllabus when understanding these main objectives such as; identifying and solving problems, manipulating materials and defining characteristics as well as designing and reading industrial plans.

b) *Topics*

As far as the topics are concerned, a list of themes and domains are suggested in the official higher education ministry documents. Nevertheless, class observations purposes have been set to detect the real nature of the topics, and to discover how they are approached by both teachers and learners. Myriads of topics exist also in the world of science and technology, more specifically in mechanical engineering, yet the absolute syllabus designer's purpose is to narrow down the domain into real needed topics and necessary for the learners. It should be mentioned that most of novice EST teachers find it difficult to select the adequate topics in their first lessons. For this purpose, most of the main recurrent topics focused on by the discipline teachers

are displayed in (table 5.3). The list is not exhaustive, but it is an accommodating reference to EST practitioners in the field.

Level	Topics
Licence	Types of mathematical functions / dimensions and measures- cinematics (study of different movements) /the world of energy/ structure of materials/ Notions in chemistry (safety data sheets- chemical solutions preparation)/ computing (software and hardware). Manual technical drawing (parts)- metrology (measuring tools and instruments)- technical tools and machines- thermodynamics- communication and presentation methodology. Engineering soft skills (savoir & savoir- faire in the world of ST) / how to prepare job information sheets. (Multiple jobs related to S.T engineering)
Master	Parts- manufacturing / machine-production/ computer-assisted drawing / problem-solving in industry/ strength-resistance of materials (compression & traction) / metrology/ tribology technology/ materials (polymer-steel-composite)/ continuum mechanics / manufacturing and digital control machine/ moulding/ mechanical testing/ (traction-shearing- bending &twisting) resistance /power technology/ robotics / medical assistance robotics / materials structure.

Table: 5.3. The most frequent mechanical engineering topics. (Official curriculum document)

The aim of exposing the array of the topics as mentioned in table 5.3 is to solve one of the first and essential problems of an English for mechanical engineering teacher, when joining a new department and when assigned a group of technical branch students to teach. This problem is to find topics around which to build a course. The second motive is to investigate, throughout the assigned topics, students' most needed areas of interest to be found in their English course and to make the learners feel familiar with the content proposed in their English syllabus. The observation phase has offered a clearer view about what to deal with and helped comprehend the intricate world of mechanical engineering, especially in a language teacher's eyes.

c) *Types of Tasks*

One of currents syllabus principles design is to use the fundamental techniques and practices of the subject it covers (Dudley Evans, 1989) and to focus on the high-frequency tasks and activities in the field to use them as a source in the EST course. Studying mechanical engineering, as a branch of applied sciences, requires a mix of tasks and activities derived from hard and soft areas. The observation period has revealed a number of tasks proper to this field of study that some EST novice practitioners may ignore initially.

It was discerned that mechanical engineering students mainly observe and examine then experiment and explain their ideas to their teachers and peers. In collaboration with their mates, they enhance and expand their capacities to design, manage projects and present them. Therefore, working in groups is one of the most important skills for both educational and professional learning purposes. Other skills noticed while observing students in the different university sites, were calculating, testing and measuring the physical quantities. The learners' arithmetic skills help them in their daily tasks as well as in the design improvement. These skills are mainly used in problem solving which is viewed as a means of fostering innovation and creativity.

Fundamentally, engineering gathers design and problem solving; these two activities are the most focused tasks by teachers and as they used to say "*by professionals too*". Professionals, in different areas, use problem solving as their mode of expert life. The class teaching technique have also revealed that problem solving and design are inextricably connected. A suggested diagram from a content teacher to explain this connection to his learners is reported in diagram 5.1.
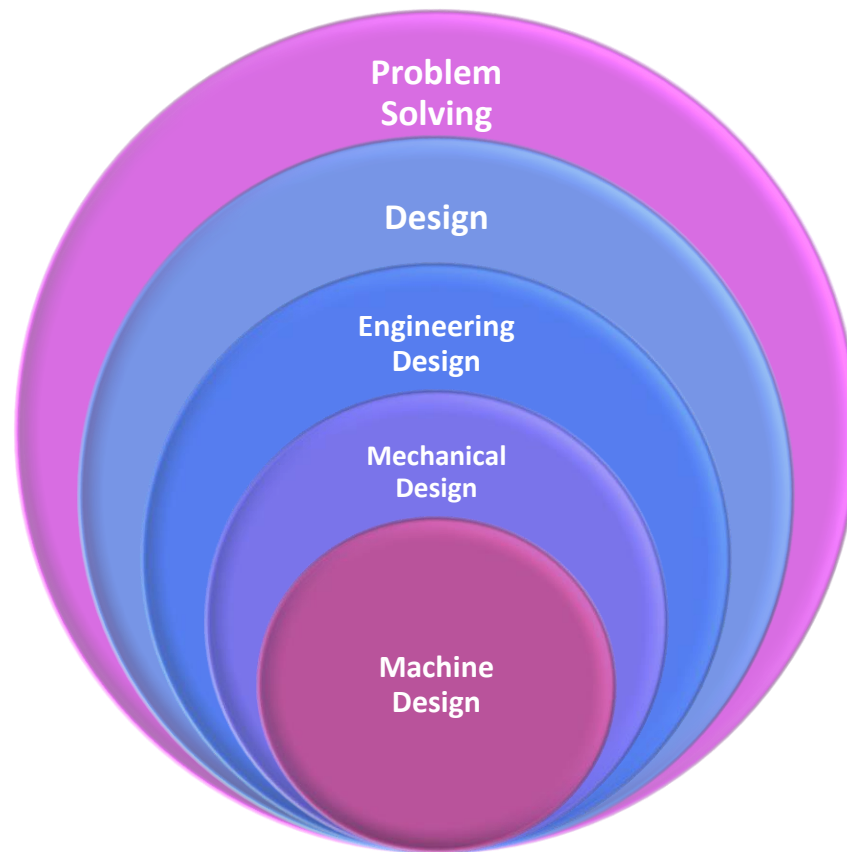
Diagram 5.1. The hierarchy of problem solving

It is clear from the diagram that problem solving in engineering gathers in its area many subfields, all related to design. This diagram is specific to engineering because not all problems solving, in the different disciplines, lead necessarily to design. Art for example or law can also solve problems in their respective fields but they do not induce to design nor to create a product, part, a machine, a system, or a process. However, other disciplines can be similar such as healthcare, electrical and chemical engineering, as explained by the teachers.

In parallel, problem solving is in the heart of task-based language teaching and can be a bridge meant for connecting science and technology to English. Problem solving is the most important skill in mechanical engineering studies, the skill has been overemphasized from the part of the content teachers: "The learner who can cope with problem situations successfully is for no doubt the learner who has solid understanding of mechanical engineering principles."

The second part of the task in problem solving is how learners interpret and discuss the results of the solutions they find. Authenticity in this context is highly required, as the content teachers have continuously connected the skill of finding solutions to the learners 'own problems in real life. In fact, in order to prepare a skilful engineer, the educational programme provides tasks that allows the learners to plan, design and construct the various types of structures and machines. Therefore, field training is one of the fundamental principles of mechanical engineering education considering its interdisciplinary nature with environmental, electrical, civil, biomedical, and power engineering.

In the same line of thoughts, it has been noticed that problem solving foster reasoning which plays a vital role in the technical teaching process. Teaching the learners to analyse, evaluate and conclude carefully has been to teach them develop their critical thinking skills in the engineering field. The learners from the first year are trained to follow appropriate techniques to link science and technology to real life situations. The content teachers have been noticed discouraging their learners from reciting back what they memorized from their lectures.

d) *Use of Digital Technologies*

To realize study projects, learners have been observed to work in groups and tailor a set of materials using computers and software. The learners were bound to achieve technical reports about maintenance and operating systems using different types of digital technologies. Teachers who think about conveying knowledge via technology have shared the idea that it is an encouraging means to provide a dynamic classroom. Content teachers, in the different university sites, expressed how supporting and enhancing technology may be in a science and technology class environment. On the other hand, even though other teachers recognized and expressed their awareness about the crucial role that technology could play in teaching, they declared having no time to prepare new courses using soft devices, while others complained about the lack of materials.

Among teachers, there was a divergence in opinions concerning the concept of technology, some consider the hardware materials in defining it, others regard only the software and online platforms as being the essential element of the word significance. In this context, Brabec et al. (2004) assess in a nine categories chart (table 5.4), the different types of technology and their respective definitions.

Technology Category	Definition	Examples
Word processing applications	Software that enables the user to type and manipulate text	Microsoft Word, OpenOffice.org Writer, Google Docs, MYAccess!
Spreadsheet software	Software that enables the user to type and manipulate numbers	Microsoft Excel, OpenOffice.org Calc, InspireData, Google Spreadsheets
Organizing and brainstorming software	Software that enables the user to create idea maps, KWHL charts, and category maps	Inspiration, Kidspiration, BrainStorm, SMART Ideas, Visual Mind
Multimedia	Software that enables the user to create or access visual images, text, and sound in one product	iMovie, Microsoft Movie Maker, Adobe Photoshop, Microsoft PowerPoint, KidPix Studio, Keynote, OpenOffice.org, Impress
Data collection tools	Hardware and software that enable the user to gather data	Probeware, USB microscopes, classroom response systems
Web resources	Resources available on the Web that enable the user to gather information or apply or practice a concept	Virtual tours, information, applets, movies, pictures, simulations
Communication software	Software that enables the user to communicate via text, presentation, voice, or a combination of the three	Blogs, e-mail, VoIP, podcasts, wikis

Table 5.4. The Seven Categories of Technology. (Marzano; 2007: 12).

The above- mentioned list is not exhaustive; it is a guiding grid as well as valuable reference for teachers who would like to adapt their content to the technological tools.

During the lecture rooms attendance, it has been remarked that most of the teachers encouraged their learners to use the possible digital tools and build lessons around these varied sources. The learners also manifested their high interest to manipulate and integrate technology in performing their assignments. This engaging environment has allowed the learners who do not really master these techniques to be involved in the learning act. In these parameters, it has been clearly remarked that the learners in this field were highly motivated when using visual

aids and videos related to their field of study. More specifically, the learners reacted enthusiastically to the authentic situations taken from the real professional life.

The learners' highly frequent means was "*Google search for images*" used as pictures bank for their daily consultation about materials and instruments. "*YouTube*" was also a favoured providing engine for videos to explain some manufacturing systems and how machines and mechanisms work. It was common among learners that the most interesting and up to date videos in their technical field are in English. This technique created a new genre in the mechanical engineering classrooms.

e) Assessment

There has been a certain curiosity to discover some parameters in teaching core subjects and it is natural to compare it to foreign languages teaching. One of these parameters is assessment; every field is unique in its methods and techniques, and a single evaluation model would not be appropriate for all disciplines. Peer evaluation has been a prominent and an effective technique in mechanical engineering classrooms but limited in scope. The content teachers assessed the cognitive capacities and field activities that learners were able to achieve further to instructional techniques, in order to decide on the next unit to teach. Science and hard sciences are based on scaffolding theories and need deep understanding for the evolution of content knowledge. Therefore, it has been observed that the main assessment techniques were problem-solving and formal testing conducted in a limited time after each realised unit of teaching. Most of the tasked assigned to learners were built around discussions and decision-making meetings. The main concern of these group meetings was solving technical problems.

In some departments, Mascara and Mostaganem for instance, the teachers involved their learners in the continuous assessment, which was based on assigning some tasks in a more flexible time limit and more freedom in using sources and fieldwork. It turned out that this last-mentioned technique was the most preferred one among the learners as it offers them more

freedom to creativity and progress. To confirm this view, Brindley (1989) states that in some researches, teachers showed that they preferred to rely on informal methods of ongoing assessment rather than formal tests and examinations.

As mentioned earlier, science and technology rely mainly on training learners to develop their problem -solving and critical thinking skills. However, assessing these two abilities is not an easy task according to the field instructors. Other teachers express the view that it is impossible to assess the learners' critical thinking skills like solving problems; there must have palpable results to be relatively measured. Some of the teachers, in an informal conversation, suggested:

> **T1**: "*Assessing the learners 'critical thinking skill could only be possible by overtly expressing the wanted abilities to be identified, measured then scored. This should be accomplished in similar manner as when assessing the content and cognitive competencies*".

5.3.2. Context and Setting

As an ESP researcher, the objective behind observing this part of the teaching process, is to discover the elements that help design an appropriate syllabus for this category of learners, respecting their own context of learning. This has been be very interesting when observing the experts in the field dealing with the teaching essentials. One of these remarkable elements is materials development, as its selection is paramount in ESP syllabus design.

a) Types of Teaching Materials

During classroom observation, the resourceful teachers have revealed their creativity in adapting materials when official ones are not available. It is important to signal that materials are essential in NA as they represent the learners' support and reference for autonomy and

creativity. Along with materials design and evaluation, these are also significant teaching activities.

The use of authentic materials has been noticeable among the teachers-learners community, and a constant insistence to borrow books from the library has been perceived. Based on the accessibility and nature of teaching conditions, the used materials were pedagogic as well as authentic. The material selection was based on general and basic learners' needs. It is common that during lectures and seminars, teachers rely mostly on presentation software to expose theories and core subjects. However, it has been clearly observed, that there is a tight link between intellectual and manual work in such types of domains.

The relevant materials where the learners' number exceeds 60 students are articles, technical presentations, descriptive texts and theorems based-texts. It has also been reported that the most used materials in the lecture rooms are reference materials in particular manuals, documentations about instructions and plans. In contrast, when the number of learners is reduced in lecture rooms, other materials are favoured like drawings and plans, video product presentations and written reports. The learners have shown a great interest towards the use of videos; their group as well as peer-interactions level has been noticed higher than with the use of other types of materials. Whereas in board -based classrooms, the teaching style tends to be monotonous, and learners turn passive besides minimising their level of motivation. The last type of context is the practical demonstration classrooms, the students had direct access to materials, such as machine spare parts, shafts, bearings and rolling elements as well as pumps (figures 5.1 and 5.2).

Figure 5.1. Teaching materials for
Rotating shaft

Figure 5.2. Teaching materials for gear
pairs and rolling elements

The learners manually manipulate, recycle, assemble and disassemble such elements to learn its design and study its cutaways. These types of techniques keep the learners' motivation high, generate discussions and allow them to observe and handle what they theoretically learn in abstract seminars.

b) *Class Size and Seating Arrangement*

Much focus is given on classroom layout in foreign language teaching to enhance more activities and foster learners' motivation to learn. In contrast, subject and science classes offer lowered need for specific seating plans. The teaching style in the Algerian universities rely largely on lectured-based classes, exercises and practical demonstrations. In parallel, mechanical engineering departments offer learners techniques and strategies that consist of planning, designing and manufacturing all types of mechanical parts and engines. Much time also is spent on simulation and trials. These techniques are mainly based on solving problem strategies and practical activities that require a reduced number of students and are performed in classrooms or workshops. Therefore, the learners are systematically involved in group-work or at least in pair-work that necessitate adequate circle or face-to-face seating organization.

c) ***Language Skills***

Many mechanical engineering students need to communicate effectively, especially with their peers to explain, report and present their results. However, most of the teachers in the department complain about the lack of writing ability of their students. It is one of the most frequent skills demanded by the teachers whatever the task is proposed to the learners during class. For that purpose, the need for technical writing was the first element to be noticed and recorded. The most recurrent expression heard in most of the classrooms was:

T2: "*An engineer is not successful if he is not able to write and speak effectively*!"

As a matter of fact, in world engineering programs such as Accreditation Board for Engineering and Technology, ABET), Engineering Criteria (2000) takes into account the skills of a good communication within the eleven conditions of engineering evaluation. Accordingly, it is stated that "An engineering project or research activity resulting in a report must demonstrate both mastery of the subject matter and a high level of communication skills" (ABET, 2000). It has often been detected that mechanical engineer need verbal and written communication skills. In simulation, the learners had to be able to convey their ideas clearly and effectively to impart mechanical designs and manufacturing projects. Subsequently, writing is the chief skill to transform figures, specifications, graphics and research records into texts.

In the University of Sidi Bel Abbes, one of the eminent teachers in the department was continuously encouraging his learners to write and speak very well. He was constantly providing them with extra documents to develop his learners' writing culture and professional abilities. One of his resources, this context, is shown in (figure 5.3).
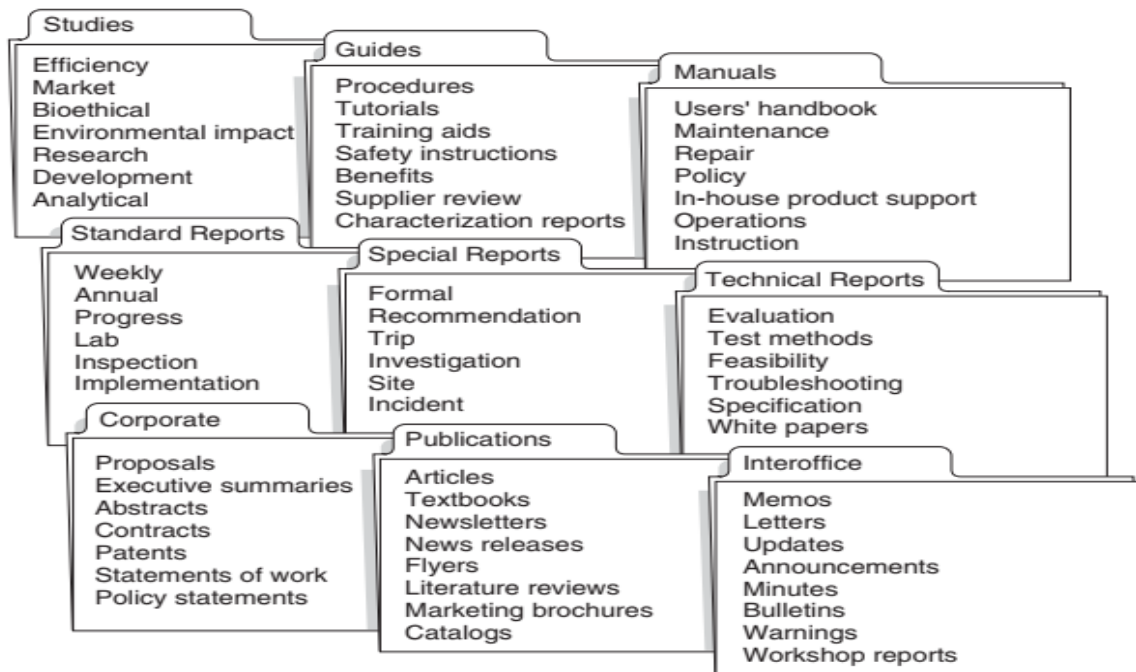
Figure 5.3. The different writing genres in an engineer's life (Beer and MacMurrey 2014:4)

For ESP syllabus designers, knowledge about language and communication is the most important skill to acquire. However, the objective of this part is to demystify what the notion of verbal and communication is for the ESP researcher via what was deduced during the investigation period. It was inferred during the lecture room observation that communication in the mechanical engineering world means to:

- Read and comprehend drawings and plans captions.
- Read and comprehend technical words and scientific style.
- Explain explicitly the design conceptions.
- Have skilful scientific writing techniques.
- Gain mastery in academic language of report and final project introduction, conclusion and analysis.
- Control the report steps and its phraseology.
- Present verbally task results and reports, using notes and plans.
- Write working protocols and guidelines.

In addition to the communication capabilities, other criteria were also discovered to be very important for mechanical engineering students known as soft skills. In engineering, technical

skills are not sufficient; critical thinking, problem solving and interpersonal skills help learners improve their general abilities. When evaluating the learners' presentations and projects, the subject teachers place a high emphasis on interpersonal skills, which they translated as active listening and the willingness to manage feedback and collaboration.

5.3.3. Observing Learners

A typical learner majoring in mechanical engineering studies needs primarily to develop his/her abilities in basic science, core mechanical knowledge and computer skills. However, it was difficult to determine the learners' preferences of those subjects via observations only. In contrast, what was visible was their attendance and engagement, mainly in laboratories and workshops. Using space and materials collaboratively helped considerably the learners be engaged and involved in groups or peer interactions. When the learner was in such contexts, the tasks nature such as solving problems and creating designs stimulated their multiple senses and interpersonal skills. These achievements had positive effects on teachers' performance and created an encouraging learning atmosphere as well as a good training for a real professional life.

Mechanical engineering subjects teaching have demonstrated a more learner-centred approach and less theoretical knowledge classes. Only when learners worked individually on assignments or were requested to listen and watch by the teacher, the focus shifted away from the learner to the teacher's instructions and recommendations. Overall, the type of tasks mentioned earlier for such a discipline, requires a kind of learner-centeredness teaching. Attributing to the learners' authentic roles and granting them more freedom and responsibility is effective to keep them feel motivated.

5.3.4. Observing Teachers

Teaching science and technology consists of communicating a set of ideas that involve mainly conferring, exchanging or putting over thoughts, concepts, aptitudes, values and core

subjects particularly from the instructors to the learners. Furthermore, the mechanical engineering teachers, while being observed, demonstrated their modus operandi, which included verbal and non-verbal modes of communication. They verbally communicated with the learners via transferring ideas, directing, asking questions, expressing feedback, using humour when necessary and sometimes intervening with some interjections to express a wide variety of emotions. The teachers-learners communication was also noted to be especially full of non-verbal strategies such as; facial expressions, eye contact, body postures and movements. These kinds of behaviours, in addition to various strategies in technology of communication (platforms, social means of interaction, audio-visuals) were integral parts of teaching and assessing learners in mechanical engineering studies.

5.3.5. English Reference

The content teachers were of various specialties, but they were largely of a French language background according to the recorded observations in classrooms and in content materials usage. Nevertheless, most of the observed teachers frequently referred to the importance of English in their lectures and informal conversations and used to articulate the following:

- ❖ English is an international language and it is as important as any technical skills.
- ❖ Improved English skills will allow you to keep side by side with the latest improvements in mechanical engineering.
- ❖ Learning English will enable you as future engineers to benefit from new perspectives in international job recruitment offers.
- ❖ The latest academic research and databases are written and published in English.
- ❖ Some theoretical knowledge and technical information are available only in English.
- ❖ Relying on translation is not trustworthy, especially in exact and hard sciences.

❖ By learning English, you will increase understanding of the technical terms in the field.

❖ English learning will raise the engineers' cultural awareness to prepare them for communication with foreign engineers in workplace situations.

❖ Be open to the world- wide variety of English that will be beneficial for both technical and cultural purposes. It serves as link between engineers that speak different mother tongues.

❖ English is the tool to vehicle new inventions and innovations worldwide.

Beyond promoting English learning for engineering studies, the teachers also used some materials written in English such as drawings and designs, while others extracted some theoretical knowledge from documents written in English. The teachers frequently used to ask the learners to translate some passages to French or Arabic to study the exact piece of information. It was noted that the teachers focused mainly on three skills; speaking, writing and reading.

In this experience, the goal via observing the content classes teaching is to gather information about the methodology followed in teaching mechanical engineering. These data would be a solid ground for studying the learners' NA. It should be mentioned that at the end of the observation act, the notes were presented to the content teachers for their feedback and discussion. This act was performed in order to avoid making the teachers feel offended, and it, of course, added positive praise and additional feedback to the remarks. The above-mentioned observations are a combination of what has been generally noted in lecture rooms that were authorized to visit. The remarks encompassed both licence and master levels. Other specific details concerning each level have been avoided for non-usability in the current research.

5.4. Librarians' Interview Analysis

The interview is the second technique used to collect data after observing the teaching environment. These two first instruments have helped shape the trajectory for the present research. The three departments 'libraries visit as well as interviewing librarians have enabled the researcher to identify the availability of English documentations there. It has aimed also to investigate whether teachers or learners had regular borrowings of English materials if provided. The librarians' interview was conducted in the three target departments. Before starting the interview, the researcher informed the participants of the survey identification and carefully described the research study's goal, as well as the significance of their cooperation and feedback.

It was predicted in the interview protocol (appendix III) that the interview would take 60 minutes; yet, the time was underestimated as the interview was preceded by the consultation of the electronic database and some unpredicted discussions with the library officials. It is important to indicate that some questions emanated on the spot, after the informants' responses such as question 3 and 4. The interview has revealed the following information:

5.4.1. Participants' Profile

The participants have been valuable stakeholders for the general NA in course/syllabus designs as they were the people responsible for the faculties database and their answers complemented the responses that would be obtained from both learners and teachers' questionnaires. For this purpose, ten librarians accepted to participate in this survey; four employees from the faculty library of Mostaganem, three assistants from Sidi Bel Abbes and other three members from the library of engineering faculty in Mascara. The following table shows the participants' various professional profiles.

Informants	Characteristics			
	Qualification	**Job position**	**Experience**	**English level**
Informant 1	Master degree in human resources	Library official	11 years	Secondary school level
Informant (2 and 3)	Senior computing technician certificate	Information officers	6 years 4years	Technical terminology (via the web)
Informant (4 and 5)	Archives degree	Reference archivist	10 years 5years	Secondary school level
Informant (6 and 7)	Library research and documentation	Assistant librarian	15 years 8 years	Secondary school level
Informant (8 and 9)	Library and new technologies license degree	Official	3 years 5 years	B 1 Graduation level
Informant 10	Library resources certificate	Assistant librarian	5 years	1 year university

Table 5.5. Participants' academic and professional profiles

As displayed in (table 5.5) section one of the interview reveals the academic and professional profiles of the participants. It is assumed that most of the participants are specialized in the field of library research with the exception of two computing sciences technicians and two from human resources field. The informants occupy key job positions and showed great involvement in working in the database. They also showed a high engagement in participating in the experience.

The staff willingly revealed their level in English and stated that they needed it in their job, when referencing some books and classifying them in genres. Informants (1,4,5,6.7) revealed that they had a long break with English since the secondary school years. Informant (2and 3) reported that they learnt the technical terminology at work via the web, as they found it paramount in their job. Informant 8 described her urgent demand to enrol in extra language

studies and got her B2 level. She stated that English is an indispensable for library research and archiving in modern times. Finally, informant (9 and 10) indicated that they had English course in first year university studies and then they have not used it since then.

5.4.2. English Documentation

This section of the interview consists of five questions mixed between open and close – ended ones. The purpose of the six questions is first to identify the textbooks types in the library and aimed also at discovering if there was a rush to borrow English books in a science and technology library. The questions were asked in French and Algerian Arabic and not in a formal face-to-face strategy; it was rather conducted in a convenient and relaxed atmosphere while being guided to the three libraries visits.

Question One: Are there any library shelves or sections dedicated to English materials? Are they general English books or English for specific purposes ones?

All the informants from the three universities have confirmed that the science and technology libraries allocate a section of English books and materials in its shelves. Regarding the types of books put there, different titles have been detected:

	Books types and titles
Library 1	**General English**: **Advanced Grammar in Use:** A Self-Study Reference and Practice Book for Advanced Learners of English by Martin Hewings (1999) **English Vocabulary in Use** Upper-Intermediate & Advanced by Michael McCarthy & Felicity O'Dell (1994) **A Practical English Grammar** by Audrey Jean Thomson, A.V. Martinet (1986) **Writing Academic English**, Level 4 by Alice Oshima, Ann Hogue (2005) **Harrap's French and English Dictionary** (2010) **ESP** **The Express Series.**

Library2	**General English:** **Sentences to Paragraphs**, Level 1 by Linda Butler (2006) **Grammar in use** series by Raymond Murphy (1990) **ESP:** **Technical English for Civil and Mechanical Engineering** by Ghania Ikhenezen (2002) **Minimum Competence in Scientific English** by Veronique Jans (1994)
Library3	**General English:** **Oxford Word Skills English vocabulary** book series Ruth Gairns and Stuart Redman (2009) **Practical English Usage** Michael Swan's guide to problems in English (2014) **Longman Dictionary of American English** (2008) **ESP** **Technical English:** Vocabulary and Grammar by Nick Brieger, Alison Pohl (2012)

Table 5.6. Samples of books available in science and technology libraries

The table shows some samples of the titles found in the library shelves. Going through the libraries reference catalogues, the assistants have identified some books ranging from general grammar, vocabulary and written expression books that teach English fundamentals for beginners until advanced learners. In addition, the libraries were rich in terms of bilingual and general English dictionaries. However, concerning EST books and materials, the libraries contained only the titles illustrated in (table 5.6). As shown in the three sites, only one single book written for mechanical engineering is available in the three libraries. It was stated by one of the informants that

Informant 1: "*There are a very few English titles, but they belong to the field of mechanical engineering theoretical knowledge. They do not belong to the shelves of foreign languages such as;* **A textbook of Engineering Mechanics** *by R.S.Khurmi (2007), and* **A Dictionary of Mechanical Engineering Terms** *(1997).*"

Most of the informants have revealed that the dominant type of English documents is general. They articulated: "*There is a considerable lack of technical English books in the different domains*". "*Most of the books are dictionaries and grammar books*" another informant added. Two library officials highlighted the importance of English books: "*No matter what is the field of the faculty, its library should be rich in English references*". While the archivists regretted the serious lack of English books "*It is incomprehensible not to find technical English books in the faculty library and if ever there, they are old, and do not meet the learners' needs*". These collected answers from the participating staff, acknowledge the high significance of English for science and technology and it express the urgency to supply the libraries with the most needed titles.

Question two: Who (from the learners and teachers) are likely to borrow these books more frequently? How do you explain this matter?

Further to the first answers, question two seeks to discover / the library uses habits of both students and teachers. All informants described the quasi absence of the learners for this type of request. One assistant stated, "*We hardly ever receive a request to lend English books to students in engineering*" whereas the second assistant in Mostaganem library specified, "*We mainly lend grammar books for learners who study English in year one and two.*" It was also maintained, "*if ever the borrowed book in mechanical engineering was written in English, the students would return the book back*". The reference archivist in Sidi Bel Abbess library observed, "*The only students concerned with borrowing English books are the doctorate students*".

In contrast, as far as the teachers are concerned, the librarians had previously recorded some requests from the part of the teachers, but it was essentially original content books versions. None of the interviewees in the three libraries have denied the good relationship of the teachers with the English books. The computing technician humorously cited, "*Sometimes*

I saw teachers struggling with reading mechanical English books". He maintained, "*They always ask me to translate some sentences using google translation to understand the approximate meaning*".   In response to the reasons for only borrowing English books by teachers and doctoral students, five librarians out of ten (50%) justified this matter by citing the community awareness of English importance as a main reason.

They have expressed it as follows: "*Arriving at a certain level, the student, researcher or teacher realize that the latest research works in the field are published in English and they have no other choice but learning or translating it*". Another has expressed his view by saying "*It is obvious that this category of both learners and researchers are more mature and they seek for the best information no matter in which language it is written*". The third library assistant added, "*Some mathematical theories and theses devoted to the researchers and teachers' communities are only available in Chinese and their unique translation exist in English only*".

Question three: In your opinion, how do you explain (the scarcity) of English books in the library?

The third major question of the interview is to probe into evidence English documentation paucity at the level of the department library. The respondent's answers have been distinguishable. Two assistant librarians being far from the administrative responsibility declare ignoring the real reasons behind the scarcity. The other two computing specialists assert that the lack of documents was due to its availability on the net, "*All types of documents are at one' fingertips nowadays, so the learners don't feel the need to read printed versions*". It has also been speculated, "*The teachers do not really promote the importance of English for the learners' careers, and some of the learners even ignore the existence of an English side in the library*". However, all the respondents agree on the fact that "*the available titles in the library are not attractive; they are either old or irrelevant*".

The last pair of the respondents who represent the library officials have rational answers by the nature of their job positions and they justify the lack of English books by two main reasons. "*The technical universities in Algeria are French language dominant and the books they mainly need are available in both Arabic and French. Therefore, it is rare that we order English books for a bilingual audience*". It was also added, "*most of the experienced, senior teachers had Russian instruction and others received their training in French-speaking countries*".

The library official refers the dominance of French and Arabic books over the English ones to business motives. He asserts, "*the technical universities have business agreements with specific books distributors, and these lasts do not deal with English books editors.*" In the same parameters, he assigns responsibility on teachers saying "*The teachers must raise the administrators' awareness about the urgent need to supply the technical university library with up to date and interesting titles, and at the same time motivate the learners to change their reading habits*".

The next important question in the interview is about suggesting solutions to what could be done for the discussed issue.

Question four: <u>What solutions do you suggest to reconcile mechanical engineering students with English books?</u>

Almost all of the participants are of the opinion that the teachers must play the role of motivating the learners and recommending useful English books. The main ideas suggested by the respondents are summarized as follows:

- o Create reading workshops inside the library with the presence of the teacher.
- o Share pertinent websites and blogs with learners such as **Goodreads** and **our Create reader's** blog.
- o Invite staff from the English department to collaborate with the technical ones.

- o   Invite students to socialize around reading. Create reading groups and share theories around texts.
- o   Choose relevant and engaging titles for stock supply.
- o   Confer strong incentives for reading English documentations.
- o   Encourage reading across the educational modules.
- o   Incite learners connect their projects and designs with what they read.
- o   Allow the technical libraries to have access to international libraries via the official university website for the learners.

The above-mentioned suggestions show the degree of engagement from the part of the librarians to promote English within their library. Finally, the participants were asked to add any other comments before closing the interview; all of the ten informants have expressed their respect and warm approval to such an initiative that was the first, according to what they asserted.

In NA procedures, the librarians are a neglected body of stakeholders. They indeed provided insightful information for the environmental situation analysis in mechanical engineering context. The majority of the books on the library shelves are largely general grammar books and dictionaries, according to this study, which was meant to compile an inventory of accessible English resources and explore the usage habits of both learners and teachers in the mechanical engineering department.

5.5. Content Teachers' Questionnaire Analysis

To obtain a closer result to the needed English course, it is highly recommended to consult the maximum of stakeholders possible. Seeking information, particularly from topic specialists, is the most important source for determining the learners' personal needs for an effective English course/syllabus. Relying on intuitions and personal experience is most of the time challenging for an ESP practitioner to prepare the successful course. Therefore, this part

of NA attaches great importance to the experts' consultation. The students cannot be more aware of their own needs than their teachers can in terms of necessities.

5.5.1. Specialists' General Information

Prior to commencing the study, permission was obtained from the university administration (rectors and heads of departments). The questionnaire was handed to the teachers in (November 2018). The survey could not be achieved without the help of the administration; mainly the head of department and the secretary who established the contact with teachers and were committed to contact them via mails. They regularly reminded them to hand in the answers back to the office before submitting them. However, in the University of Mostaganem as well as in Mascara, it was slightly difficult to be in direct contact with all the teachers to make them participate in the survey. The questionnaire original version is in French; supposing that most of the teachers are of a French instruction in this type of discipline.

The following analysis is predominately quantitative interspersed with some qualitative consideration due to some of the questions' nature. The analysis therefore provides an in-depth findings account obtained from the content teachers' responses. It consists mainly of a descriptive frequency account followed by report and interpretation of the findings.

a) Specialists' Profile

The questionnaires were administered to 48 content teachers in the three departments of study. Only 18 out of 48 experts returned their questionnaires. It is worth mentioning that the total number of the teachers who received the questionnaires does not represent the entire number of the three departments' teachers, as the sampling of the target population is based on purposive sampling. The aim of the purposive sampling, in this research, is to select teachers from the different specialties that would help the survey and would avoid administering the questionnaires to many teachers from the same content specialty.

Hence, the teachers who answered the questionnaires were from the three concerned departments (table 4.2). More teachers (09) accepted to be part of the survey in Sidi Bel Abbes Department comparing to the other ones (5 and 4 teachers), and this result was one of the motivating factors to seek further information in three different settings rather than a unique one. The following table displays the participants' profiles and their specialties:

Quality	MAB/MAA	MCB/MCA	Professor
Number of teachers	08	06	04

Table 5.7. Content teachers' qualifications in mechanical engineering departments

As can be seen in (table 5.7) the survey participants are highly-qualified ranging from first rank in the hierarchy to the highest degree. Reliability in NA research is closely related with the informants' experience and knowledge about the field.

b) **Specialists' Fields of Interest**

The sampling of the participants in this category targets different specialties, considering this type of stakeholders; a very rich source of information in terms of the learners' needs study. The table below displays the teachers' different academic disciplines.

Academic disciplines	Energetics	Mechanical construction and production	Industrial maintenance	Materials engineering	Industrial engineering
Number of teachers	02	06	04	02	04

Table 5.8. Content teachers' academic disciplines

As (table 5.8) shows, there is a diversity in the academic fields that teachers are specialised in, this has offered the survey a more eclectic view on the selection of the most essential topics and competences that need to be included in the English syllabus.

c) Teachers' Experience

The first section in the specialists' questionnaire is devoted to collect the general information about the teachers; therefore, the number of the years spent in the service of teaching learners is very important to be shown in the survey. This parameter reveals the teachers' degree of knowledge about their learners' wants and necessities.

Years of experience	(5-10) years	(10-15) years	(15-28) years
Number of teachers	08	07	03

Table 5.9. Teachers' years of experience

In fact, it is apparent in (table 5.9.) that the teachers who have participated in the survey have a certain amount of experience varying from 05 to 28 years in teaching mechanical engineering. This is principally a promising audience selection for the NA investigation.

d) Teachers' Linguistic Identity

The last constituent of the teachers' general profile to be investigated is to discover the linguistic identity of the participants. They have revealed the language of the content instruction besides their penchant in terms of foreign languages.

	Language of Instruction			Foreign languages proficiency			
	Arabic	French	Fr. + ARA.	French	English	Russian	Spanish
Number of teachers	//	18	14	18/18	06/18	03/18	02/18

Table 5.10. The linguistic context and identity

On the one hand, the above table displays the language that teachers who belong to science and technology domain use in teaching subjects to their learners. The results show that

all the teachers (18) use French in teaching their courses. However, 77.77% of the whole population have revealed that they resort to Arabic to explain the French instructions or they use it as the classroom discourse mainly. Therefore, French remains the language of the content itself but not as the means of communication. This has also been noticed during the observation immersion period. On the other hand, mechanical engineering specialists were asked to communicate the number and what foreign languages they speak. The majority of teachers have shown a strong bias towards French. Interestingly, 61.11% of the respondents mentioned other foreign languages. English takes the share of 33.33% as an additional foreign language Furthermore, the teachers have described their English level from average to fluent.

The other foreign language mentioned by the participants is Russian with a percentage of 16.66% of the whole population' responses. Some of them have explained their knowledge of this language after their graduation in the European Eastern countries. Finally, 11.11% of the participants have also mentioned Spanish as another foreign language and have described their competence as being appreciable. These results indicate the importance granted to the foreign linguistic competence by teachers in the field of science and technology. The results indicate the high English position among the appreciated foreign languages in the Algerian content teachers' community.

5.5.2. Pedagogical Information

This second section concerns collecting the possible information about English teaching conditions from the content teachers' perspectives. It was previously stated that content teachers typify a very reliable source of information in terms of learners' NA.

a) English Importance for Learners

Three adjectives describing the nuances of English importance are suggested to the content teachers in the first question to define their learners' needs. The three words are of upmost significance for the syllabus development.

The Importance of English for Learners

Category	number of teachers
not much important	0
Essential	3
Necessary	11
Important	4
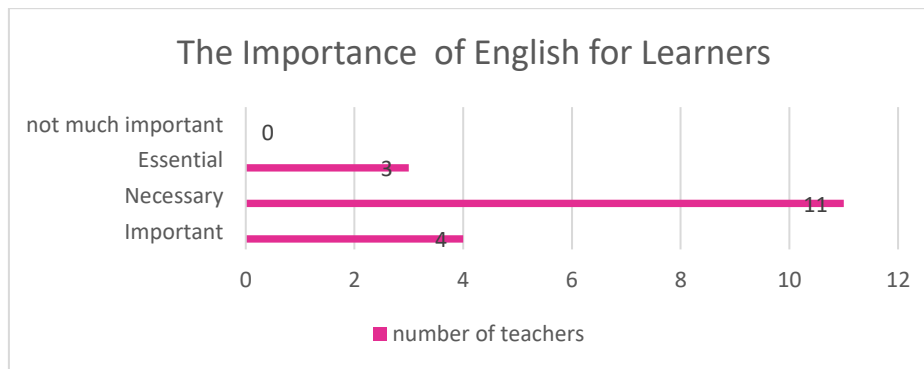
Graph 5.1. The importance of English for the mechanical engineering learners

As it can be seen in the above graph, there is a specialists' bias towards the necessity of English for their learners in mechanical engineering. Both adjectives "essential and important" mark lower score than the attribute "necessary". Through their highest score (61.11%), the teachers then express that English is a sine qua non condition for success. The choice of the two adjectives; "important and essential" undeniably did not invalidate English for this discipline. On the contrary, it added more value to the consideration of English for mechanical engineering. As was expected, no respondents agreed on describing learning English as "not much important".

b) English Importance for Content Teachers

Since NA is a useful tool to understand learners' needs, asking the stakeholders' opinions is also part of this process. It is very important to evaluate the specialists' views on the question of English importance, as the teachers play a crucial role in motivating their

learners to learn English. Therefore, the second question in this section intendS to probe this issue. Accordingly, in answering the question:

"How important is English to you in the field of mechanical engineering?"

The teachers have expressed almost the same opinion but with different words. The results show that among the 18 teachers, 38.88 % have not shown their opinions in this part of the questionnaire, 27.77% answered it was necessary and 33.33% wrote different answers as put subsequently:

T1: "I attach great importance to English through my readings. It is a tool for

communication as well, in my field, with other foreign teachers and engineers."

T2: "Great emphasis is placed on technical English in science and technology to explain

diagrams, sketches, and designs."

T3: "I am studying English to learn how to write my articles in English."

T4: "English is necessary for many modules in engineering to understand many

concepts and to be up to date with the most recent findings."

T5: English language fluency is imperative in both academia and professional career.

T6: "For me, English is important to use in platforms which gather engineers from

the world to exchange ideas and to share the greatest inventions."

From the above respondents' replies, it is clear that specialists around the three departments find English more than necessary in mechanical engineering, and they opine that it is a source of knowledge and digital communication. Consequently, the tenet of preparing ESP courses and materials should reflect the learners 'needs as well as the real-life situations of both teachers and professionals' English use and activities.

c) English Enhancing Strategies for Mechanical Engineering Students

Question 3 attempts to uncover the techniques that experts employ to enhance their learners' understanding of the relevance of English for their educational and professional careers, based on the previous question's goal. The number of content instructors who utilized to enhance their students' awareness of the importance of English in mechanical engineering in their classrooms is shown in the table below:

Raising learner's awareness	Yes	No	No answer	Total
Number of teachers	09	03	06	18

Table 5.11. Number of teachers promoting English in their content classes

Table 5.11 shows a positive implication from the part of the teachers in their fields of interest to draw attention to the importance that English may have on their learners' success for both their studies and careers. The total percentage of the participants who did not share their opinions and those who answered negatively to this question (50%) equals the amount of the teachers who answered, "Yes" (50%). Despite this fact, the existence of a number of teachers who voiced the necessity of English in science and technology departments is a matter of positive English promotion.

The following table displays the results of the second part of the question addressed to the participants who answered positively, and it sought to discover their enhancing strategies to promote English. The informants used the space devoted to their answers in describing the arguments they used to state in order to motivate their learners in class. The statements are reported as follows:

Teachers	Items
T1	"I always repeat that the most up-to date findings in the most recent articles are published in English" "By telling them anecdotes about some international conferences and how people feel crippled when they do not speak English well."
T2	"I'm trying to motivate my learners by explaining that research in French is restricted and limited; it isn't generous in terms of publications. English written ones are published to diffuse more their language through science."
T3	"I constantly indicate the private foreign languages schools addresses as well as the most important websites for English learning and level improvement."
T4	"Many materials (books and exercises) are available only in English, and the students must understand them to have knowledge of their discipline."
T5	"My simple strategy is to speak from time to time in English. Although it provokes some laughs, it is sometimes effective and influential."
T6	"I personally encourage my learners to do some research about the most recent articles in some specific points in the syllabus."
T7	"There's an obvious lack of textbooks in French and the most interesting are written in English." "There is constantly some new developments in this area and we need to master English to be continually up-to- date."
T8	"I motivate my learners by selecting some content activities in English and bring them to the classroom; the students will hence be prepared to be part of a community of practice."

Table 5.12. English enhancing strategies for mechanical engineering students

Some very interesting strategies have been collected and proposed by the content specialists, and that were employed to enhance the mechanical engineering students' English awareness about the wide perspectives that English may have on their careers. Such strategies

were, according to the informants, very effective in raising the learners' engagement and participation. It is of vital importance to emphasise, at this point of the survey, that the degree of consciousness raising from the part of the teachers has certainly to raise the alarm bell for language planners and material designers. By this act, they need to shed more light on technical fields and accord more acknowledgment to ESP status in the technical departments.

d) Areas of Interests Requiring English

Knowing that there is an English awareness in the field of science and technology requires explicit description. The questionnaire then includes two other items to be clarified that will be displayed in the following graphs.
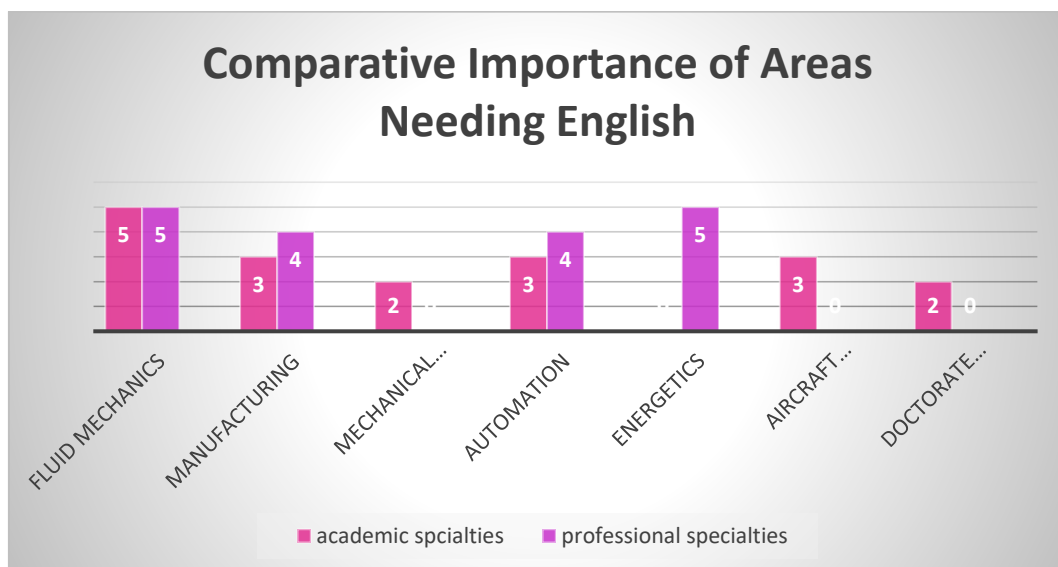
Graph 5.2. Comparative importance of mechanical engineering areas needing

English

To make a clear distinction between the importance of English in academic spheres and professional ones, the content teachers have specified, by answering questions 4 and 5, the areas which they classify more important to raise learners' consciousness of using English. Their answers were guides to distinguish between the EAP and EOP content. The respondents have identified six different areas in the academic as compared to the professional sphere.

It is clear from the graph that (27.77 %) of the respondents confirm that fluid mechanics occupy the same position of importance for both academic and occupational areas of interest. Whereas for the remaining specialties the participants have mixed opinions. The second highest rate is granted to the specialty of Energetics in the working world with (27.77%) of the teachers' answers. None of the teachers have selected it for the academic domain. This may be due to its high importance in both industrial and economic spheres. Other two important disciplines are revealed by the respondents with the same percentage (22.22%) for automation and manufacturing in the professional world, and (16.66%) for the same academic specialties which require English for studies and publications. No other respondents have mentioned other disciplines as needing English for the professional life. On the other part, the same teachers recommend English for three other fields of study namely; aircraft manufacturing (16.66%), mechanical numerical simulations (11.11%) and doctorate preparation studies (11.11%). Some of the respondents added:

T1: "*English is the language of publications*; *disciplines need English equally when it comes to academia especially in research publications.*

T2: "*English was the language of publications in all fields*".

T3: "Because of its global status, many lecturers devote much of their time to learn English."

It is interesting to illustrate the teachers' comparative answers to see that teachers are aware of the privileged status that English has in their field of interest, and that they have a crucial role in raising their learners' awareness. The answers to this particular question prove once more that English is the lingua franca of science and technology and mechanical engineering in particular. Its international status is also a valuable factor to make teachers and learners learn it because of its importance.

5.5.3. Linguistic Information

A very important part of the questionnaire is devoted to collect some useful information about the linguistic needs. The aim of this part is to discover the learners 'needs from the teachers and experts' perspectives.

a) Mechanical Engineering English Skills

The multiple-choice question consists of (08) items to be selected and a blank space to be filled with other suggested items. The teachers' answers have been collected and recorded as follows:

What are the most important areas to be developed by your learners?

2	14	16	15			17	4
LISTENING	SPEAKING	READING	WRITING	GRAMMAR	GENERAL...	TECHNICAL...	PRONOUNCIATIO...

■ Required Areas for Learinng
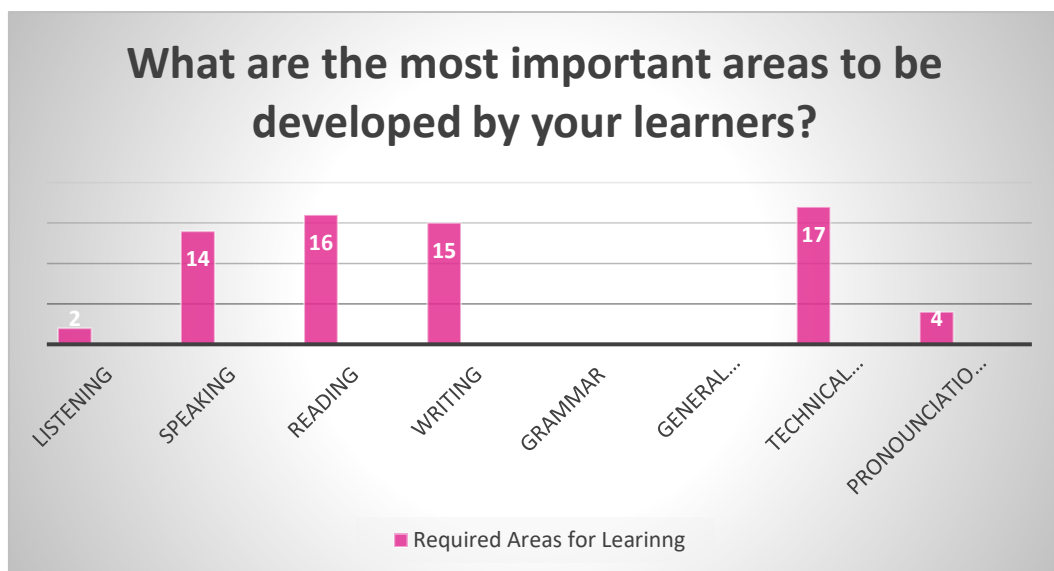
Graph 5.3. Required English learning areas for engineering students

The content teachers select in question 6 what should be learnt first by their mechanical engineering learners. As it is expected, the first option that the teachers select most with a rate of (94.44%) is the technical vocabulary. In English, the specialists note that the most important areas to be developed by the learners are principally the four skills though with slight proportions. These are reading (88%), writing (83.33%), speaking (77.77%) and listening with the lowest rate of (11.11%). They also believe that pronunciation and phonetics should be given some consideration with an amount of (22.22%) of the teachers' opinions.

The respondents were asked to add other linguistic skills according to what they felt necessary for their learners. They essentially indicate three further competencies, such as communication (72.22%), translation (66.66%), and presentation (55.55%).

It should be highlighted that grammar (0%) and general vocabulary (0%) teaching are not part of the teachers' most important skills list to focus on for their learners. This strongly suggests that grammar is not of primary importance for mechanical engineering teachers in the three selected departments and the priority goes rather to communication and comprehension. This would be a very favourable ground to introduce ELF to the learners in this department and explore with them further aspects in English teaching.

b) Current Learning Challenges

A number of informative issues, affecting English learning situation, have been suggested by the content teachers when answering question 7 and 8. They have outlined some possible challenges and obstacles that learners face in English classes. Other important problems have been raised for future engineers in their professional carriers. Table 5.13 summarises the respondents' critical propositions.

(A) Class Challenges	(B) Workplace Challenges
*Heterogeneity in levels and ages. *Lack of motivation *General English teachers in the technical departments have very little training and the students are demotivated. *Unconformity of the programmes with the learners' needs. *The university course is similar to the secondary school one. * Monotony in the content of English courses with harmonised topics for different levels.	*To write clearly and coherently. *To be obliged to use written manuals and catalogues in English. *To communicate spontaneously and solely in English with foreign partners. *Language use is purely occupational and not literal or academic as learnt in class. * Different origins of English speakers would create communication breakdown.

*A different approach from what the learner wants. *Change of teaching methodology. * Focus on random skills. * Many students pay for private courses to learn how to communicate in English because they do not do it in class. * Very limited scope of language use. * Lack of appropriate materials. *Limited/absence of context exposure. (Lack of authenticity in language use) *Lack of authentic materials. * Absence of critical reading and thinking skills *Inadequate tasks and activities that do not reflect the authentic working environment.	* Disorientation and culture shock in verbal and body language when working with foreign partners. * The inability to transfer the academic and technical vocabulary into technical jargon in a particular professional circle. * Lack of confidence in speaking and difficulty of understanding extended speech. * Some engineers might be employed in a management or commercial sectors dealing with customers in the sector. They need to have a good command of English.

Table 5.13. Current academic and professional English challenges

Table 5.13 gathers the possible difficulties that might be encountered by learners in both academic and professional environments. The experts' propositions represent the starting point in designing the EST course that may be translated into objectives then into tasks. One of the primary and essential objectives of the NA is to help learners overcome the real- life challenges in a sort of class activities. Considering the substantial sixteen problems depicted by the content experts, which range from problems in the nature of the learners age and level to the application of methodology and use of materials in class. In fact, the list is representative as it raises the course designer's awareness about a set of requirements and needs to take into account before designing and selecting the course objectives.

In the case of teaching English for mechanical engineering students, the course designer needs to consider, first, the learners' disparity in English levels. The learners, in such technical branches are not selected for their English grades; they may even not have basic notions in writing and formulating correct sentences. Consequently, the major challenge is to prepare an

initial course for students who are not ready for technical English, and to be careful not to fall in the basic notions' repetition. Some teachers have shared their opinions on the raised issue:

"*English teaching in our department doesn't meet the level nor the expectations of our branch; we have the impression to do the same thing as in the secondary school*." (T1.T5)

Unquestionably, NA helps the course designer discover such learners' weaknesses and can also reveal the unexpected before any course design. Such early decisions would undoubtedly solve some important problems of the learners' motivation as well.

"*Most of the time, students don't go to class, it's not motivating enough*!"

Furthermore, the EST lack of training is another source of learners' demotivation to attend the language course though it is one of the careers and academic requirements. English teachers in the technical branches are not only expected to be language teachers, but they are also supposed to be trained in what is called the five ESP practitioners' roles (Swales, 1988). This training would allow the practitioner avoid the challenges proposed in column (A) such as meeting the learners' needs in terms of materials content, tasks and activities in addition to the required methodology to be implemented.

The EST practitioner has also to take into account the employment conditions and expectations in designing and selecting the materials. Column (B) embodies these challenges besides the academic ones. The content experts have expressed their worry about their students who would not be able to participate fluently in oral and written professional conversations, as displayed in the table. The engineers in occupational contexts need to make presentations about projects and to describe processes and products. The teachers' main apprehension concern also their communication control with non-native speakers coming from different cultures and using English differently and with different accents.

Even though experts are specialised in their respective disciplines, they provided the research with valuable insights about the workplace situation and how can the course designer figure out the context of English use. In addition to that, they raised an interesting issue where the working engineers could be recruited in the commercial services of the industrial sector and they might need some business English communication notions in the engineering field to investigate problems, look for solutions and implement new ideas. Questions 7 and 8 generated much critical sense by experts who mapped out the first broad lines of the syllabus outline.

c) Required English- related Four Skills Tasks

After diagnosing the major challenges, though the list was not exhaustive, question 9 explores further the different uses of English tasks in both academic and professional contexts. A list of tasks was put forward for the experts to be selected. The gathered data were carefully studied and were classified into academic and occupational tasks.

➢ *Speaking Skill*

After providing a list of tasks that could be included within the speaking subskills activities, the subject specialists showed positive commitment to help promote the needed skills to be considered in teaching English. The results will be subsequently displayed in table 5.14.

Speaking items	Number	Total	Percentage
Negotiating meaning in a conversation	9	18	50%
Adjusting pronunciation and intonation	14	18	77.77%
Developing fluency via conversations	05	18	27.77%
Using academic and technical vocabulary	18	18	100%
Communicating with native partners	10	18	55.55%
Communicating with non-native partners	16	18	88.88%
Knowing the anglophone speakers' culture	13	18	72.22%
Participating in class conversation	08	18	44.44%
Communicating with teacher in or out the class	07	18	38.88%

Presenting in a conference	15	18	83.33%
Reporting and summarizing information	16	18	88.88%
Interpreting graphs and tables	17	18	94.44%
Translating	12	18	66.66%
Using phone tactics	03	18	16.66%
Describing mechanical manufacturing process	18	18	100%

Table 5.14. Most needed English-speaking activities for mechanical engineering learners

From table 5.14 above, it can be seen that the subject specialists recommended the speaking skills and strategies the mechanical engineering students often need. Results indicate equally a 100% rate for two main activities "using academic and technical vocabulary" and "describing mechanical manufacturing process". "Interpreting graphs and tables" accumulated 94.44%, and "reporting and summarizing information" along with "communicating with non-native partners" were classified as most preferred oral tasks 88.88%, followed by "presenting in a conference" with 83.33%. Concerning the other speaking activities, "adjusting the speakers' pronunciation and intonation" together with "knowing the anglophone speakers' culture" were not neglected despite the scientific and technical context of the learners, and recorded high rates of 77.77% and 72.22%.

In addition to that one subject specialist mentioned a statement near learning the others' culture item as "This is the top". The content teachers attributed then different rates to the other suggested items in the list, but the least selected activities were "developing fluency via conversations" 27.77% and "using phone tactics"16.66%. It is important to indicate that the teachers showed strong interest in answering this particular question by adding extra activities that were not mentioned in the submitted list and were added to the learners' needs as shown in table 5.14.

➤ *Listening Skill*

In contrast to the results shown in graph 5.3. where listening was attributed a very low rate comparing to the other skills, content teachers showed higher relevance to the listening activities with regard to their learners' needs. Table 5.15. displays the teachers' requirements and suggestions.

Listening Items	Number	Total	Percentage
Understanding an oral presentation	8	18	44.44%
Understanding class instructions	3	18	16.66%
Understanding videos and podcasts	16	18	88.88%
Listening to technical explanations and instructions	17	18	94.44%
Predicting, inferring, and guessing from context	12	18	66.66%
Listening for specific information	10	18	55.55%
Understanding conversations with native partners	7	18	38.88%
Understanding conversations with non- native partners	13	18	72.22%

Table 5.15. Most needed English-listening activities for mechanical engineering learners

Before discussing the recorded results, collected from the content teachers' reactions to question nine, it can be noted that there is a close relationship between speaking and listening activities since they both belong to the oral/aural communicative skills. The table above shows that the teachers opted mostly for "listening to technical explanations and instructions" with a percentage of 94.99% followed by "understanding videos and podcasts" with 88.88% and "understanding conversations with non-native partners with a rate of 72.22%. It is interesting to notice that understanding and communicating with non-native speakers have become part of the technical team's priorities in learning English. As for the least needed skills for the engineering students, according to their teachers' opinions, it has been revealed that only 16.66% was attached to "understanding class instructions", 38.33% to "understanding conversations with native partners" and 48.88% to "understanding oral presentation".

> ➤ *Reading Skill*

The third sub-skills activities that the teachers were submitted to are the English reading activities that the learners might need to do. Table 5.16. provides the data collected from the teachers' answers.

Reading items	Number	Total	Percentage
Skimming for main content and meaning	11	18	61.11%
Scanning for specific information	13	18	72.22%
Identifying main ideas, supporting ideas, and examples	04	18	22.22%
Reading articles published in journals	14	18	77.77%
Reading textbooks and texts on computer	10	18	55.55%
Reading and understanding technical manuals	18	18	100%
Reading and understanding drawings and diagrams	18	18	100%
Identifying different types of texts (academic and professional features)	09	18	50%
transferring or using the information obtained while or after reading	11	18	61.11%
Guessing technical words in a text	15	18	83.33%

Table 5.16. Most needed English-reading activities for mechanical engineering learners

The above table reveals the most required subskill activities in an English reading class. All informants estimated that the learners mostly need to "read and understand technical manuals" equally with "reading and understanding drawings and diagrams" 100%, and they also need primarily "to guess technical words in a text" 83.33% preparing them to "read published articles in journals" 77.77%. It is interesting to know that 50% of the respondents opted for "identifying different types of texts (academic and professional features)" as quasi-important for the engineering learners to master as to distinguish the texts genres in the field.

Different rates were attributed to the other reading subskills granting the lowest rate to "identifying main ideas, supporting ideas and details" with 22.22%.

➢ *Writing Skill*

Considered as one of the most important areas of interest according to the subject specialists' answers to question 6, writing in English is broad in terms of teaching English for science and technology. Consequently, a list of other writing subskills was suggested to narrow down and focus on the course tasks according the learners' needs. The following table describes the teachers' answers in this concern.

Writing items	Number	Total	Percentage
Writing a scientific text summary	07	18	38%
Building knowledge of written general, academic, and technical text patterns	12	18	66.66%
Citing and paraphrasing conventions	12	18	66.66%
Reporting data and results	12	18	66.66%
Using cohesive and discourse markers between sentences, paragraphs, and sections	13	18	72.22%
Writing technical reports	16	18	88.88%
Writing minutes	15	18	83.33%
Writing emails	16	18	88.88%
Translating a text	09	18	50%
Writing an explain problem task	14	18	77.77%
Creating user manuals	14	18	77.77%

Table 5.17. Most needed English-writing activities for mechanical engineering learners

As a general observation, it is clear from table (5.17) that this part of the question has recorded the highest number of the teachers' responses comparing to the other subskills' activities. In this section, three activities are considered to be most needed for the learners. The informants rank "writing technical reports" equally with "writing emails" 88.88%, followed by "writing minutes" with a rate of 83.33%. Furthermore, the teachers select "creating user

manuals", "writing an explain problem task" along with "using cohesive and discourse markers between sentences, paragraphs, and sections" as other major writing subskills.   The least considered item "writing a scientific text summary" is not negligeable, it amasses 38 % of the teachers' opinions. Overall, all the suggested writing activities have received a positive echo among the specialists' community.

5.5.4. English as a Lingua Franca

This questionnaire section estimates the subject specialists' attitudes towards ELF and surveys their degree of awareness about its importance in the EST course for their learners. The aim of this questionnaire is also to assess if teachers for their learners' future study, professional and personal life prefer to introduce ELF in the classical EST courses. The group of questions (10, 11,12,13) target this particular purpose. There is a special mention inviting teachers to read the definition of ELF before answering the four questions.

a)   Types of English at Work

Question 10 intends to examine to what extent teachers are aware of the existence of ELF at work, as it is currently known that the most frequent Algerian partners in the industrial and commercial sectors are mainly non-native speakers of English.
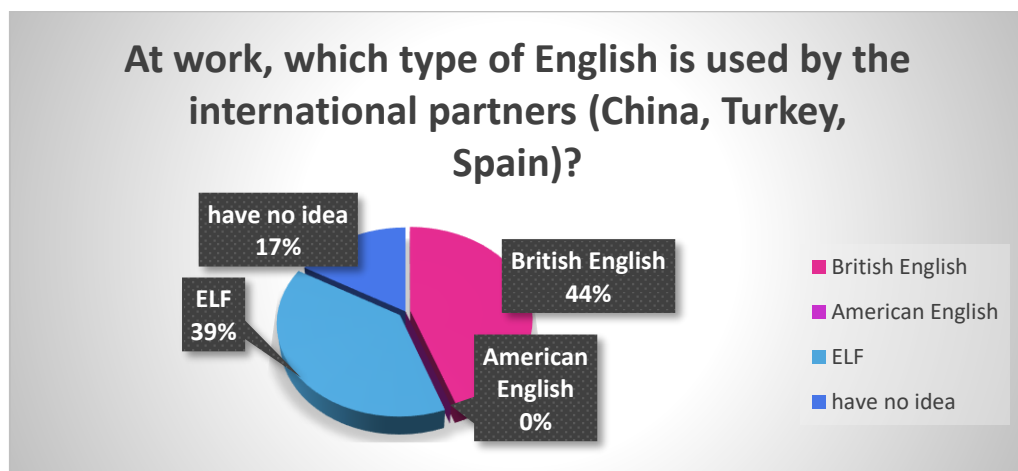
Graph 5.4. Specialists' knowledge of workplace English types

The graph shows clearly that 44% of the informants opine that British English is the dominant variety of English used at the Algerian workplace. ELF is also thought to be present in the industrial and the business communication. A percentage equivalent to 17% of the population have replied that they had no idea about the real variety of English that covers the workplace. Finally, no respondents think that American English is present in the Algerian-(Chinese/Turkish/Spanish) conversations.

b) Specialists' Attitudes towards ELF

Question 11 of this part focuses on identifying the content teachers' opinions about the importance of learning the basics of ELF in an EST course for the future engineers. Graph 5.5. displays the respondents' answers in this concern.

Is it important to know the ELF basics to be used with foreign partners?

No, 44%   Yes, 56%

■ Yes
■ No

Graph 5.5. Specialists' opinions about the importance of ELF in communication.

Interestingly, (56%) of the respondents find it advantageous to introduce the variety of ELF in preparing the future engineers for their professional communications after reading the provided definition in this section of the questionnaire: "ELF is a 'contact language' between persons who share neither a common native tongue nor a common national culture, and for whom English is the chosen foreign language of communication*."* (Firth, 1996: 240). The rest

of the respondents (44%) did not find it necessary to devote parts of the EST course to a different type of English from the classical ones.

c) Purposes for Learning English

To gather more information about the main goals of teaching English to engineering students, three purposes are proposed to the teachers to be identified. Their answers are presented in the following graph.
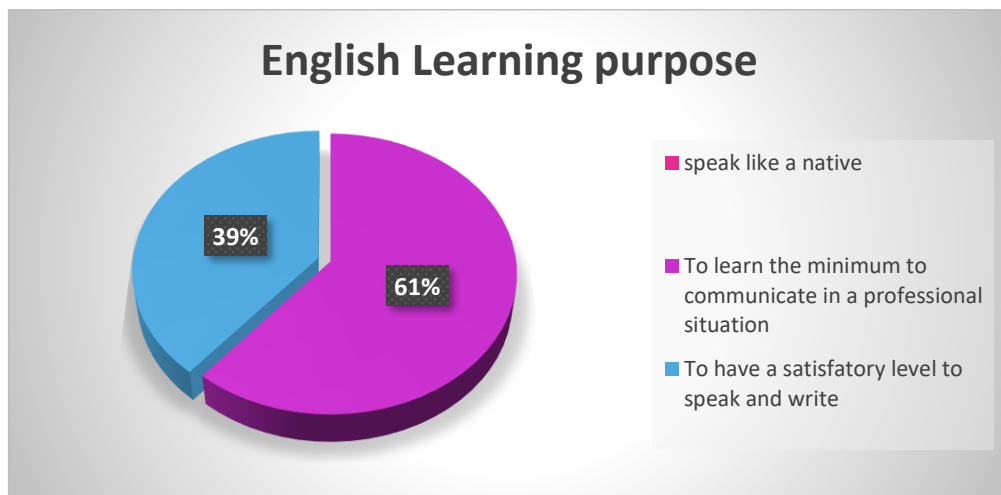
Graph 5.6. Purpose for learning English

Speaking like a native is not at all selected (0%) by the subject specialists. Rather, most of them need their learners to have a satisfactory level in speaking and writing English (61%), as compared to learning the minimum to communicate in a professional situation (39%).

d) Awareness-raising Aspects

Based on teachers' answers expectations about the previous question, it is interesting to investigate what would be the possible types of ELF aspects to raise the engineering students' awareness of, in the EST class, especially from the filed specialists' points of view. The content teachers' responses are depicted in table 5.18.

Item	Number	Total	Percentage
Grammar of ELF	05	18	27.77%
Lexis, concepts and meaning	12	18	66.66%
Pronunciation and intonation	04	18	22.22%
Cultural and intercultural issues	13	18	72.22%
Activities involving negotiating meaning strategies	15	18	83.33%

Table 5.18. Key features of ELF awareness-raising

The last question of this survey part allows the respondents, as in other previous questions, to mark multiple choices. The most frequently chosen features by mechanical engineering specialists focus on the "activities involving negotiating meaning strategies" (83.33%) and the "cultural and intercultural issues" (72.22%). More than half of the population select learning "lexis, concepts and meaning" as displayed in the table. The remaining aspects, namely "grammar of ELF" and "pronunciation and intonation" are the least chosen items in the teachers' lists. The last part of the content specialists survey concerns the learners' wants in learning English. The results of this part are not negligeable as they embody one of the pillars in NA conceptions, considering Hutchinson and Waters' definition (1987).

5.5.5. Learners' Wants

This last section consists of three questions around the learners' psychological and pedagogical wants in learning English.

a) EST Learning Techniques

Question 14 seeks to orient the EST teacher to have a preliminary idea about the mechanical engineering students' learning styles and preferences. It is considered that the teachers can provide the researcher with an overall view about the learning preferences in the

field of mechanical engineering. A potential list of techniques is suggested for this purpose as shown in the table below. The list is terminated by an open space for additional suggestions.

Learning Techniques	Number	Total	Percentage
Reading handouts	08	18	44.44 %
Using lists of technical terms in communication	07	18	38.88 %
Pictures and diagrams	07	18	38.88%
Videos	15	18	83.33%
Working with authentic materials	15	18	83.33%
Learning online	08	18	44.44%
Individual learning	03	18	22.22%
Doing tasks	12	18	66.66%
Small groups discussion	07	18	38.88%

Table 5.19. EST learning preferences

Data show that teachers 'suggestions about their learners' preferences, according to their experience in the field about the learning preferences and most effective teaching techniques that the learners in their discipline have different styles. They identify two learning techniques as being the most preferred amongst their students i.e., learning by videos and working with authentic materials (83.33%). Doing tasks in classroom is expressed by more than half the population to be an important learning preference (66.66%).

They also reveal three other important tasks to be considered in the teaching process with equal percentages; using lists of technical terms in communication, pictures and diagrams and small group discussions (38.88%). Unexpectedly learning online (44.44%) is as unsuccessful as reading handouts (44.44%)**,** and this might be due to the learning conditions and the poor access to the online learning technology by the learners. Accordingly, the above-mentioned preferences are key techniques to a successful EST course as most of the suggested tasks were successfully selected by the teachers and with interesting percentages.

b) Progress Assessment Modes

The interest to discover the assessment modes in a different field from that of teaching foreign languages is the first motive for asking question 15. The suggested list requires from the experts to participate in shaping a common ground between the two natures of disciplines and create an appropriate mode of learning evaluation. Table 5.20 compiles some popular modes of assessment and the content teachers' attitudes about them.

Evaluation mode	Number	Total	Percentage
Formal test at the end of the term	05	18	27.77%
A unique and individual project presentation	00	18	00%
A group presentation	10	18	55.55%
A series of periodic activities (progress tests)	12	18	66.66%
No particular method	06	18	33.33%

Table 5.20. Teachers' attitudes on learners' evaluation modes

The type of respondents in this stage are the best to provide the best methods for evaluation, though they are of a different discipline but their view on the issue must be taken into consideration. Most of the informants (66.66%) have agreed on assigning the learners to do small activities periodically to assess what has been acquired. Some of them have even suggested under the proposed boxes in the questionnaire a method of dividing the test into four parts as shown in the diagram below:
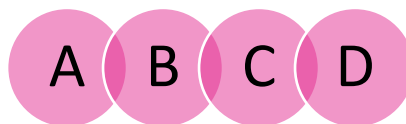
Diagram 5.7. EST Periodic progress test

More than half of the asked population (55.55%) have suggested group presentation as an efficient method of evaluation. The last method which is the least favoured method among

the four items is the formal test at the end of the term with a rate of (27.77%). It is also important to mention that (33.33%) of the respondents have no particular mode to propose or they may prefer none of them.

c) Suggestions from Experts for a Motivating EST Course

Question (16) is the last question of the content teachers' questionnaire, in the light of what is asked in the previous questions, the focal point is to reveal motivational learning recommendations of a successful English course for the future engineers. The obtained findings from the open-ended question are translated and reported as mentioned by the experts' answers in the questionnaire. There are interesting points emphasized by them. They mainly shed light on the following issues:

"*The best task for the "scientific type of learner" nowadays is the "problem solving", they need to escape from the monotonous spirit of numbers and graphs*". (Teacher 1) This teacher provides a pedagogical material to illustrate his/her proposition, which shows how committed were the teachers in answering the survey. The picture below is a sample of problem-solving situation that the teacher uses to enhance his learners' critical thinking skills.

nom :

1. Dans l'habitat, les "ponts thermiques", concernant l'isolation :
   ☐ ils la favorisent   ☐ ils la défavorisent

2. On met dans un frigo : a) Une boisson dans une canette ⎫ même
                          b) Une boisson dans une bouteille de verre ⎭ géométrie
   Laquelle va se refroidir rapidement ☐ a   ☐ b

3. En les sortant du frigo, laquelle va se réchauffer rapidement
   ☐ la canette   ☐ la bouteille

4. Lorsque deux corps mis en contact, l'équilibre thermique est atteint qd :
   ☐ les conductivités thermiques des 2 corps deviennent égales
   ☐ La T° des 2 corps est la même .

5. Lorsqu'on marche pieds nus dans le salon, sur la moquette et sur le
   carrelage on peut affirmer que :
   ☐ la T° du carrelage est la + faible
   ☐ la moquette et le carrelage ont la m̂ T°

6. Lorsque la poule couve ses œufs :
   ☐ elle les réchauffe   ☐ elle les isole

7. La plupart des êtres vivants se blottissent pour lutter contre le froid
   Pourquoi ? . . . .

   . . . .

8. Le watt-heure est une unité de ☐ puissance ☐ énergie ☐ ni l'une ni l'autre

9. Par temps froid, on voit les oiseaux sur les fils électriques gonfler leur plumage.
   Expliquer : . . . .

10. . Sur la figure, les deux maisons dont les toitures sont notées A (encerclées d'un trait
    plein) et B (encerclées d'un trait pointillé) sont conçues et occupées de manière identique
    Néanmoins, le propriétaire d'une des maisons
    a effectué des travaux d'isolation thermique
    supplémentaires sur sa toiture. Lequel ?

    a - Celui de la maison A ☐
    b - Celui de la maison B ☒ .

Figure 5.4. Problem Solving Activities in the Content Area. (teacher's material)

Other highlighted points by the teachers are of utmost importance such as:

"*An advantageous English course would be the one which involves the learners in doing tasks*

in English" (Teacher 2)

"In my opinion, English class should be uniquely prepared via watching videos in the learners' field of interest. The teacher then asks them to comment on what they watch. This is more approximate to what young learners like nowadays". (Teacher 3)

"A motivating course needs to be in connection with the content course and with what they would find in real professional life." (Teacher3)

"If I were an English teacher, I would focus only on communicative activities and avoid dry structures." (Teacher4)

"By taking into account the very low level of the learners in French." "Introduce more authentic technical documentations to be read and comprehended such as machine manuals, safety measures and mending devices guides." (Teacher 5)

"Connect the technical vocabulary to the one taught and used in the content lectures."

"Translate small paragraphs from the learners' own lectures in French." (Teacher6)

"Conduct some sessions rich with debates and discussions and with interactive videos, motivating the learners with recurring and varied activities."

The other respondents have not answered this question. However, the last item collected answers are really significant for the building of the ESP course from the perspectives of the mechanical engineering experts.

5.6. English for Mechanical Engineering Teachers' Questionnaire Analysis

Most of science and technology curricular, in the Algerian university, grant an average of one hour and a half technical English session per week. Due to this fact, the number of the recruited EST instructors in these non-English specialty departments is reduced to two or three teachers at most in each department and they are most of the time of a GE background. Three EST teachers in the three respective departments have been solicited to participate in the survey.

Only one of the three have agreed to answer despite numerous attempts to request the other two instructors' cooperation. Two of them were working as part-time instructors in the departments and were holding master degrees according to what has been revealed from the administrators.

Considering the valuable comments and recommendations offered by the one-of-a-kind informant who has accepted to participate in the survey, it is inconvenient to ignore the questionnaire findings and be unwilling to discuss the major results. The English for mechanical engineering teacher's answers account for 33.33% of this part of the survey findings. This can be representative of the present case study.

5.6.1. The Teacher's Profile

The instructor is revealed to be 63 years old, with 30 years of mechanical engineering as well as technical and scientific English teaching experience, including 25 years in the mechanical engineering department. The informant graduated from Boston University with a doctorate degree in engineering studies and received a six-months special intensive English course. To know about the instructor's profile is critical for the survey, since data collection for a good NA necessitates the expertise of stakeholders. There is certainly no lack of experience regarding the present informant background, as spending 25 years teaching both subject specialty and English language grants him a thorough understanding of the target and subjective mechanical engineering learners' English needs.

5.6.2. Pedagogical Data Analysis

Section two findings encompass all the relevant information about English teaching and learning practices within the mechanical engineering classroom. By virtue of the teacher's high academic profile, he has been in charge of both low and high proficiency students' levels. The informant believes that 1.30 hour of technical English is not sufficient, compared to the EFL 3 hours granted to the first-year level in mechanical engineering. He consequently suggests 3

hours per week or two sessions of 1.30 hour each, devoted completely to technical English. The teacher describes his learners as being heterogeneous with an important lack of grammar and vocabulary control.

Answers to questions 2 and 3 indicates that NA is conducted with learners before tailoring materials and preparing courses by means of placement tests, quizzes, questionnaires, formal interviews, and informal discussions. This finding is the evidence for the right attitude to follow when the teacher is of a specialised profile. It helps him target his learners' needs from the course first days. Moreover, the course is described as being more EST than GE, particularly English for mechanical engineering. The informant also highlights the presence of EAP but disregards EOP from his course. However, the EOP course is critical in EST, particularly for the sub-branches that prepare future workforce for industrial life and international cooperation. In the same vein, the informant portrays English teaching materials as tailored from different sources such as pedagogical documents and technical manuals. He also adds that each level requires specific authentic materials that are adapted to their own purpose.

The issue of ELF and culture teaching are also raised in questions (7, 8, 9 and 12) with the results indicating that mixed sources are favoured by the teacher when selecting texts. It is interesting to learn that there is a possibility to meet Algerian ESP teachers who are open to new English varieties in technical English courses. Some of the revealed techniques to raise the learners' awareness, in this regard, are the selection of authentic spoken and written examples related to the field of study as well as class discussions activities.

The stakeholder also highlights his objectives in teaching English, which include preparing students to communicate effectively in both academic and professional situations. The course, according to the informant, embraces British and American cultures as well as other

English-speaking nations, with a concentration on essential vocabulary and grammar linked to the topic.

Concerning the challenges encountered while teaching English, the findings show issues in learners' levels heterogeneity, as well as a discrepancy in their motivation to learn English. The instructor highlights in several occasions the lack of both general and specialised grammar and vocabulary. Finally, the teacher proposes a reform in adapting the most required English lessons for the appropriate level. The question of time allotment is raised again by the teacher, when asked about some further suggestions to improve the course; stating that a run session of 1.30 hour of technical English is insufficient for tertiary level students and for such important branches that need English. Adequate pedagogical tools, materials and English laboratories are considered important to consolidate the course content and to increase learners' motivation.

All in all, despite the difficulty in obtaining data from all the selected survey locations, the above-mentioned findings portray a sample of teaching English for engineering context with much outcomes to be considered in the present research. To summarize, EST teachers must be knowledgeable in the technical subject in which they teach English in order to prepare students for the future workplace. It is also paramount to build a solid technical English course/syllabus out of the NA results. A specialised well-trained instructor can easily identify his learners' different levels, lacks and target needs. He can then respect his learners' styles and can prescribe the relevant ESP course for the required ESP learners' specialisation as it was demonstrated in the questionnaire answers.

5.7. Conclusion

The chapter has presented a NA process aiming to provide EST practitioners with the possible detailed information before developing English for mechanical engineering course/syllabus. A three-steps needs assessment procedure, ranging from field observation and data collection to involving multiple stakeholders has been followed. The principal participants

have been librarians, EST and content teachers responding to an interview and a written survey. The findings have revealed significant data to be taken into account. The results of both language and content teachers' questionnaires have revealed an understanding of the importance of English in studying mechanical engineering, as evidenced by data obtained through field visits and observations. Problem-solving and managing projects design have been identified as being the most needed skills in terms of content knowledge. The learners need to examine, describe and report results to peers or groups of individuals as a preparation for work life. Calculating, designing and reading industrial plans have been parts of the most recurrent skills observed in classrooms.

The libraries visit as well as the staff's interview responses have indicated an important paucity in English for science and technology materials particularly in mechanical engineering textbooks. The GE type dominates the few textbooks that are available. This category of stakeholders has been crucial in supplementing the study with significant data regarding special recommendations to raise learners' incentives to read English in the library. They have mainly suggested the creation of special workshops with the presence of content and English teachers to encourage students to handle English materials in their fields and share some interesting blogs and forums in this sense.

Concerning the third data collection instrument's findings, content teachers have discussed the main challenges that students or engineers may face when communicating in English, such as the ability to write and speak clearly due to the learners' difficulty transitioning from an academic to a professional style. Other mentioned impediments in the academic setting have been the students' demotivation and the inadequacy of the EPT programmes with learners' needs. Accordingly, content instructors believe that reading, speaking, and writing are the most important skills to focus on. Teachers primarily require proficiency in these abilities in order to utilize academic and technical language in communicating (report and interpret results, describe

a mechanical manufacturing process, read and understand technical manuals/ industrial diagrams, write technical reports and emails). ELF has taken its share of importance in the survey results that coincide with the research expectations, experts have shown their awareness of the market demands in respect with international communication. They have expressed the importance of being aware of ELF basics as well the non-native cultural intricacies in order to face the professional communications challenges.

Finally, the EST questionnaire has been responded by one participant out of three solicited. The results have revealed that EST learners are of a heterogenous level, lacking mastery of grammar and vocabulary. The EST practitioner conducts NA with his students by means of questionnaires, interviews and informal discussions. The nature of the EST course is mainly academic English for mechanical engineering which enhances various subskills in class. The EST teacher's beliefs have converged with the content instructors' opinions about learners' most needed skills, such as speaking, reading, and writing. Referring to further suggestions to improve the EST course, the teacher has suggested additional sessions in time allotment besides readapting materials in accordance to learners' needs. The chapter has shown the learners' needs from different angles and they reveal the urgent need to learn speaking and writing skills to be ready for an international academic and professional life.

Chapter Six: Learners' NA for Mechanical Engineering Syllabus Design

Chapter Six: Learners' NA for Mechanical Engineering Syllabus Design

6.   Introduction

This section presents the learners' questionnaire findings. It is devoted to gather the demographic and pedagogical information about the learner's population majoring from year one to master one level. It is important to remind that the followed NA technique is a type of auditing as the samples are taken from three apart universities. Based on the collected data that has been gathered and analysed in chapter five, this part of the study compiles the learners' questionnaire answers to build a helpful framework for the preliminary learners' demands. Thus, the learners' needs serve as a springboard for designing the EST syllabus, which is distinguished by addressing the learners' needs, desires, and learning profiles.

6. 1. Learners' Personal Information

The first part of the questionnaire aims at eliciting general information about the target population. Following this approach, personal information, as defined by Dudley-Evans & St. John (1198), are all the information about the "learners' factors which may affect the way they learn, such as previous learning experiences, cultural information, reasons for attending, attitude to English." (p.125). The obtained results from the survey are categorized according to Dudley Evans and St. John model (1998) to fulfil the recommended information for maximizing the use of course design. Table 6.1. summarizes the collected personal information about learners.

Year of Study		Year One		Year Two		Master One	
Personal Information		Number	Percentage	Number	percentage	Number	Percentage
Gender	Males	97/**144**	67.36%	87/**122**	71.31%	45/**75**	60%
	Females	47/**144**	32.63%	35/**122**	28.68%	30/**75**	40%
Age		19 to 21		20 to 23		23 to 28	
Profession & years of experience						01 hospital laboratory assistant (02 years) 01 industrial technician (03 years)	
Master speciality						Mechanical Construction and maintenance Materials engineering Renewable energies	
Language of study		French		French		French	

Table 6.1. Learners' personal information

The results displayed in table 6.1. describe the population total number (144 students) majoring in year one divided into (67.36%) males and (32.63%) females. Year two students group comprises 122 students mainly males (71.31%). The third population concerns 75 master one students dominated by male learners as well. It should be emphasised that the male gender is dominating in such technical fields in the Algerian society. However, it should be also focused that the presence of the feminine gender in such a field is not to be neglected and needs to be applauded in the recent decades.

With regard to the variable of age, the population in general is aged between 19 and 27 years old. The population in master studies is over the 23 years old as some workers have been detected to be majoring to further their studies. Two students manifest themselves to be working

in the industrial and renewable energy sectors and another as being employed in a hospital laboratory. All the students answered that the dominating language of learning was French and Arabic was used as the classroom language.

6.2. Attitudes to English

This part of the questionnaire gathers a number of questions that seek to portray the learners' experience with English and to obtain their subjective needs. In order to determine these attitudes, the first question in this needs analysis survey aims at knowing whether learners are satisfied with English time allotment each week, their answers are reported as follows.
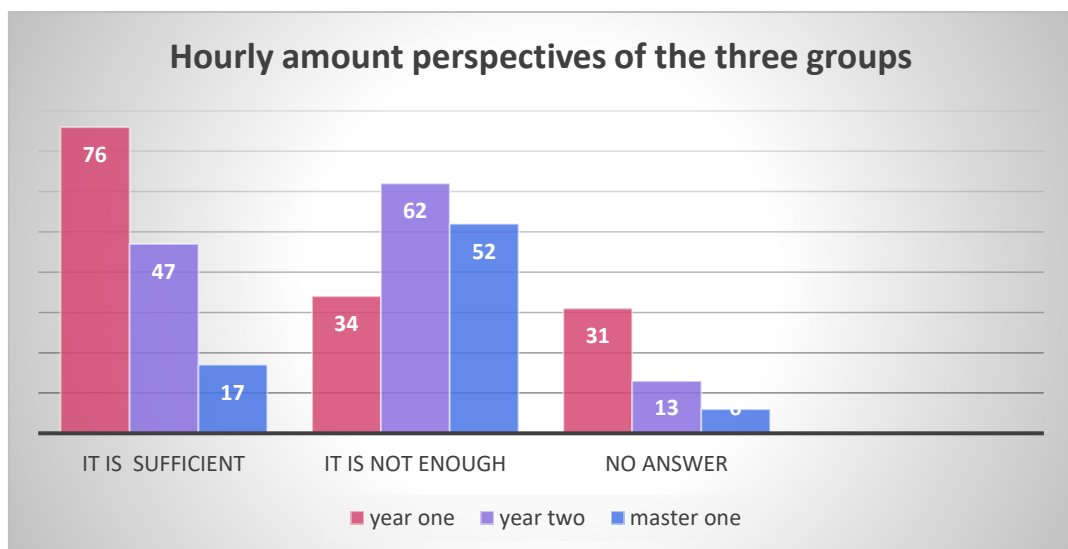
Graph.6.1. Learners' hourly amount attitudes

From this comparative diagram, it is shown that the three levels have different attitudes when asked if one session is enough to learn English for mechanical engineering. It is remarkable that the number of students who believe that one unique session of 1.30 hour of technical English per week is enough, decreases gradually from year one to year two from 76 to 47. Then the number declines rapidly from year two to master one from 47 to 17 respondents who opine it is sufficient. Obviously, the opposite is indicated with the second variable. One possible reason to explain this decline in students' answers is the time allotment in their general curriculum (appendix I). Learners in year one study English classes that run for three hours a

week. In contrast, students in year two and master one attend only weekly sessions of 1.30 hour. The informants' number raises comparing to the previous results and indicate an awareness raising about the importance of devoting much time to English sessions. The higher level the learners they reach, the more conscious they become about the importance of English in their field. As shown in (graph 6.1.) an important number of students, among the asked population in the three levels, have not stated their opinions.

6.2.1 Students' English Course Attendance

Two questions are put forward to investigate the mechanical engineering students' attendance level. Another reason for asking these two questions is to diagnose and uncover the true motivations for learners' attendance in the ESP course in order to anticipate future course motivation. The next graph shows the attendance rate difference among the mechanical engineering students in the three levels.
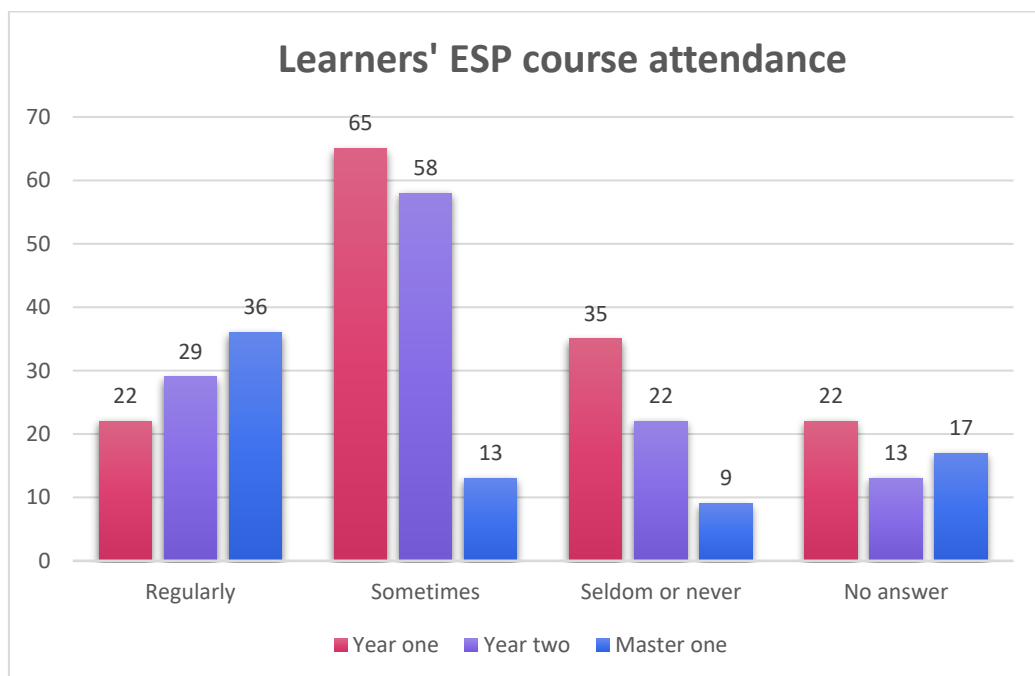
Graph 6.2. Relative rates of students' ESP course attendance

The graph exposes variations in attendance rates among the three demographics. The results show that the highest number of the students majoring in year one and year two declare

attending "sometimes" English courses, compared to master one students who most of them "regularly" attend the ESP classes as shown in the graph. 24.30% of first year population and 18.03% of second year learners do not attend the courses and this is a significant rate to be investigated and solved. The variable of "seldom or never" has created the element of surprise in data description while a significant rate of 24.30% of year one learners almost do not attend the English course. This rate decreases in year two and becomes less remarkable in master one. For this purpose, it is more than required to discover the reasons behind such behaviour especially in the first years of the curriculum. Question two in section one seeks the different motives that push the learners attend or not the classes devoted to English lessons.

6.2.2. Motivation Factors Analysis

A list of potential reasons and purposes related to the intrinsic and extrinsic learners' motivation to attend the ESP course, containing 09 items to be selected, has been proposed to the learners. The learners had the possibility to tick more than one box and a free space was also provided to explain the reasons for never attending. The factor structure is shown in table 6.2.

Items	Year one		Year two		Master one	
	N/144	**(%)**	**N/122**	**(%)**	**N/75**	**(%)**
-The attendance is compulsory	10	06.94%	08	6.55%	10	13.33%
-The course is interesting	41	28.47%	60	49.18%	35	46.66%
-I like the materials we use in class because they are related to my field	13	09.02%	55	45.08%	25	33.33%
-English will help me in my job	43	29.68%	38	31.14%	42	56%
-English is important for mechanical engineering	58	40.27%	48	39.34%	42	56%
-The course is easy and the obtained mark helps me in my total average	00	00%	12	9.83%	00	00

-Knowing English will allow me to communicate with people all over the world.	62	43.05%	58	47.54%	32	42.66%
-English develops my knowledge of other cultures	48	33.33%	42	34.42%	29	38.66%
- I like the teacher's teaching method	08	5.55%	63	51.63%	39	52%
-I enjoy the discussions we have in class	15	10.41%	25	20.49%	29	38.66%

Table 6.2. Attendance factors' structure

The table displays a nine-item list, five of which are suggested and four of which are added to the "others" category. These various factors represent why learners attend the English course. The items cover attitudes toward the language course, materials and the teacher's teaching method. The collected responses from year one informants demonstrate that the first reason (43.05%) to motivate them to attend the English course is to be able to communicate with people all over the world, followed by the significance that English represents for their field of study (40.27%). Another important reason which stimulates the learners to join the English course is the learners' interest to discover other cultures through English with a rate of (33.33%). The lowest rates are attributed downward to three factors; "the attendance is compulsory" (06.94%), "I like the teacher' way of teaching" (5.55%) and "the course is easy and the obtained mark helps me in my total average" (00%).

As far as year two students' answers are concerned, there is a considerable increase in the rates attributed to the different attendance motives. There is a remarkable shift in the highest rates for some reasons that are very low in year one students' answers such as "I like the teachers' way of teaching" which suddenly increased from a rate of (5.55%) to (51.63%) and which is scored as the highest percentage for year two students. The next observed factor is "the course is interesting" with (49.18%) tightly linked to "I like the materials used in class" with a rate of (45.08%). These two options have raised the researcher's attention to discover the

reasons for selecting them. After further investigation, it has been discovered that the majority of the learners who participated in answering this question were members of the department where the ESP teacher was a 63-year-old content teacher who had graduated from Boston University of Engineering and had received a special intensive English course at an American university. The lowest rates in the attendance motives are almost the same as year one answers with almost the same percentage range.

High proficiency students in master one show more maturity in selecting their personal motivation factors to attend the English course They highlight three key factors that motivate them to attend their English course for the majority of the time; "English help me in my job" (56%) along with "English is important for mechanical engineering" (56%) and "I like the teacher's teaching method" with (52%). Other importance was granted to "communicating with people all over the world and learning other cultures" with important percentages as displayed in the table. The lowest considerations in this category of respondents' answers are for "the attendance is compulsory" (13.33%) and "the course is easy and the obtained mark helps me in my total average" with no answers.

Some students have negative attitudes toward English class by selecting the factor "I rarely or never attend" with a total rate of (19.58%) from the whole asked population. They have added some personal factors to the suggested list and some of them are subsequently translated and reported as follows:

St1. "*The English courses do not help me in my studies in mechanical engineering.*"

St2. "*It is mainly based on grammar and this does not really help me, I prefer studying English in private school.*"

St3. *The teacher does not seem to be specialised in the field and I don't like her/his method.*"

St.4. "*Because I feel that it is not at all necessary neither for my studies nor for my career.*"

St.5. "*I don't like the evaluation method which is not in the same nature as the course content.*"

St.6. "*There is no link between what we do in class and what we need in real life.*"

St. 7. "*Memorising technical words only doesn't help me to communicate with others.*"

An interesting analysis could be assumed from the collected results stated above. Although students show low perceptions toward the English course, they manifest their wish to change the situation into a more comfortable one. It can be assumed that their absence in English does not signify a negative attitude toward English per se, their negligence is rather of the course conditions.

6.2.3. English Importance

To be more convinced about their regards to English, question 3 and 4 in this category seek to confirm the learners' standpoints on the importance of English for both mechanical engineering studies and career. Learners' answers are considered in the whole population of 341 respondents displayed as follows:
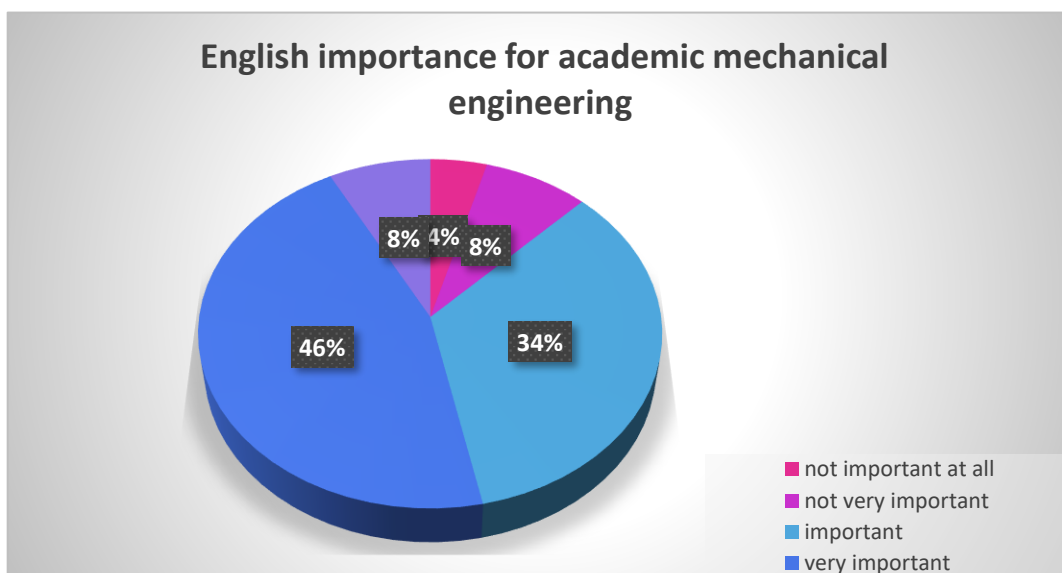
Graph 6.3. Learners' standpoints on the English importance for mechanical engineering studies

Pie chart titled "English importance for mechanical engineering career" with segments: very important 77%, no answer 6%, not important at all 2%, not very important 9%, important 6%. Legend: not important at all, not very important, important, very important, no answer.
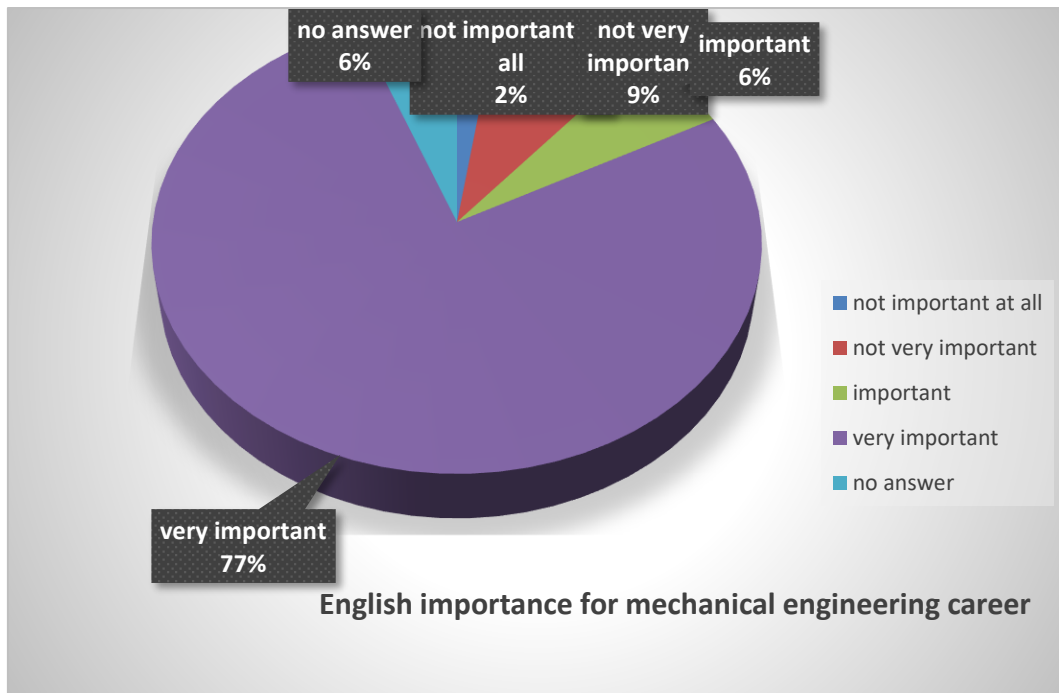
Graph 6.4. Learners' standpoints on the English importance for mechanical engineering

profession

The respondents on the whole demonstrate that English is deemed by the students. It is clear from both charts that the majority of learners believe that English is of utmost significance. 46% of the respondents consider English as very important for their study life as compared to 77% of them in responding to English importance for their careers. The other 34% believe that it is important, while 6% considered it only important for their career. Yet, a very small minority considers that introducing English in their curriculum is not very important or not important at all with almost equal answers in the second graph. The results demonstrate that most of the whole population attach great importance to mechanical engineering as a field of study with more focus on the role it can play in vocation. Together, these results presented so far have provided important understandings into the learners' personal information; their subjective needs, attitudes, and intrinsic motivations. In what follows the set of questions are to depicted the learners' English language information.

6.3. Present Situation Analysis

In the Dudley-Evans and St Jhon (1989) approach to perceived NA, the present situation analysis (PSA) examines what learners' existing abilities and language use are. Due to the difficulties in collecting information and the inaccessibility of study space, it has been determined that measuring the students' real level via abilities and aptitudes grid is a promising alternative to a placement exam.

6.3.1. Students' English Proficiency

Although it is too idealistic to measure the learners' skills via real placement tests such as the Common European Framework of Reference for Languages (CEFR) model, it has been proposed de facto to be taken and tried. The informants were asked to put the results on the top of the questionnaire's sheet. Figure 6.3. was dispatched to the learners to invite them to test their proficiency levels online via the following link:
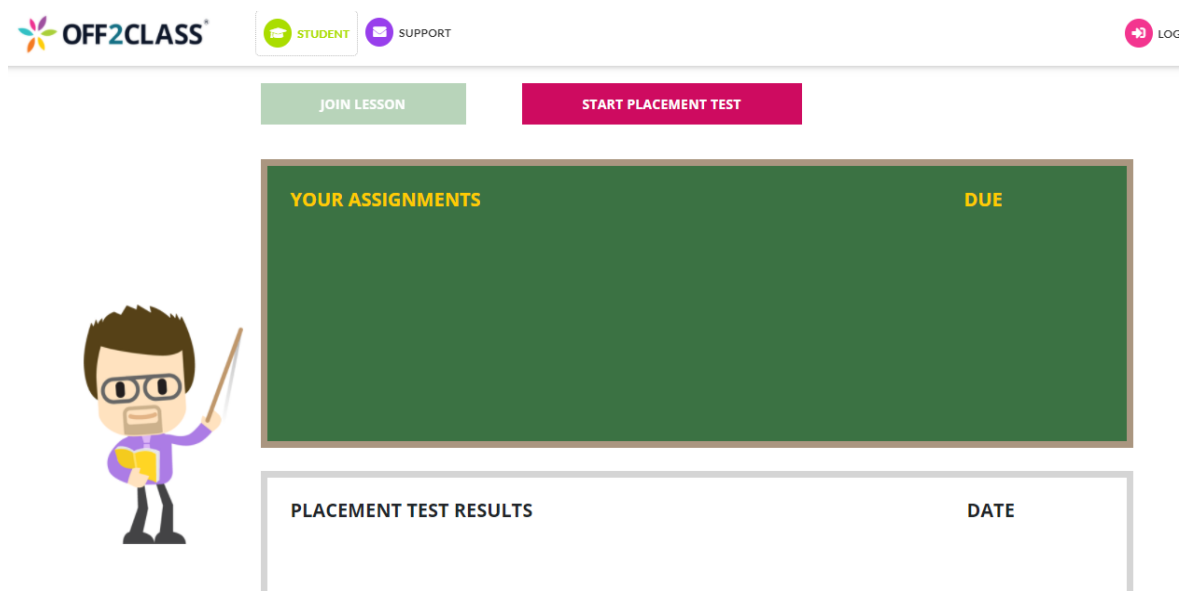
Figure 6.1. Placement Test Website Screenshot

https://app.off2class.com/student/placement/158205

Proficient User	C2	Can understand with ease virtually everything heard or read. Can summarise information from different spoken and written sources, reconstructing arguments and accounts in a coherent presentation. Can express him/herself spontaneously, very fluently and precisely, differentiating finer shades of meaning even in more complex situations.
	C1	Can understand a wide range of demanding, longer texts, and recognise implicit meaning. Can express him/herself fluently and spontaneously without much obvious searching for expressions. Can use language flexibly and effectively for social, academic and professional purposes. Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organisational patterns, connectors and cohesive devices.
Independent User	B2	Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialisation. Can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.
	B1	Can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc. Can deal with most situations likely to arise whilst travelling in an area where the language is spoken. Can produce simple connected text on topics which are familiar or of personal interest. Can describe experiences and events, dreams, hopes & ambitions and briefly give reasons and explanations for opinions and plans.
Basic User	A2	Can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. very basic personal and family information, shopping, local geography, employment). Can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. Can describe in simple terms aspects of his/her background, immediate environment and matters in areas of immediate need.
	A1	Can understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type. Can introduce him/herself and others and can ask and answer questions about personal details such as where he/she lives, people he/she knows and things he/she has. Can interact in a simple way provided the other person talks slowly and clearly and is prepared to help.

Figure 6.2. Summary of the development of the CEFR (Council of Europe, 2011)

It has been one of the research limitations to test students and place them according to their English level. This is due to the difficulty of attending English classes as well as being granted a whole session in their time schedule to be able to test their abilities. However, the above-mentioned distant technique has been an alternative to drawing a picture of the overall picture of their level. The next graph shows the students' responses with regard to their English level.
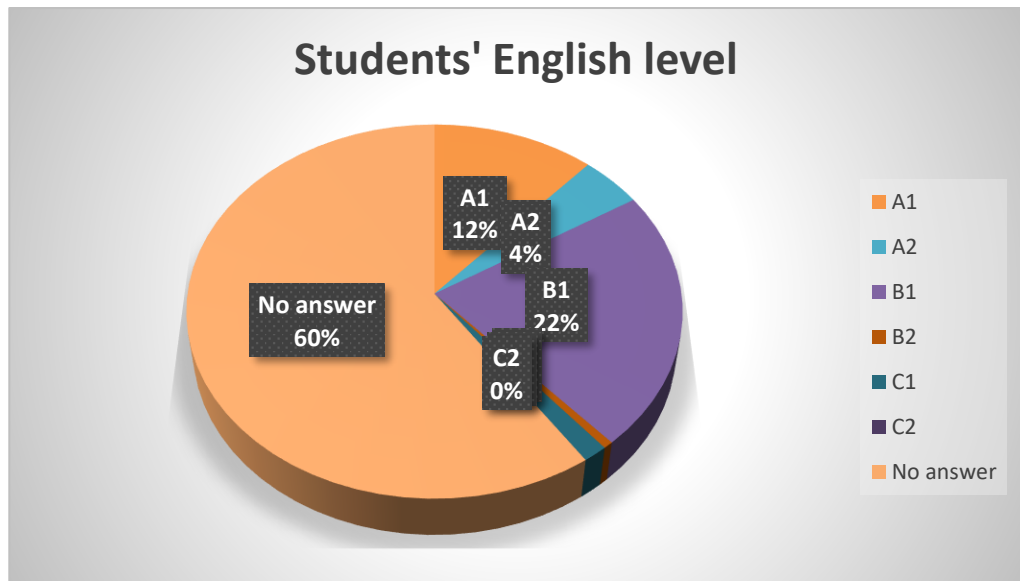
Graph 6.5. Students' personal evaluation using CEFR language tests

Over half of the population did not return their answers as requested from them. However, 40% of the participants have been able to portray themselves as heterogenous with an average level ranging from B1 to A1. This may grant them the position to be considered intermediate in general.

In the same vein, students are asked to rank the significance of developing language abilities for their studies and jobs, and they have provided the following responses, as shown in graph (6.6.).
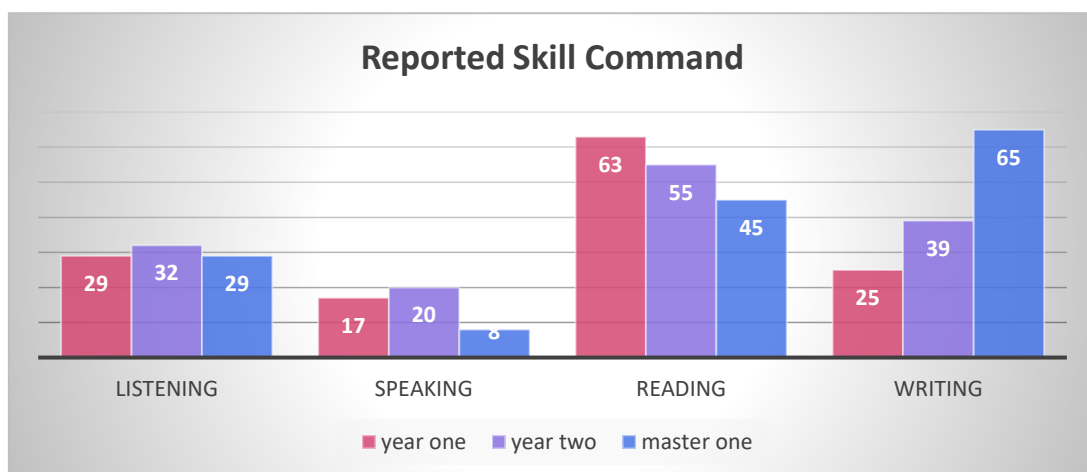
Graph 6.6. Identified mastered skills by learners' category

As graph 6.6 shows, there is a significant difference between receptive and productive skills. It is apparent that the students evaluate their high proficiency in both reading and writing at various rates as highly significant. Almost half of the first-year population (43.75%) state that they master the reading skill more than any other one. The same remark is for the second-year population, whereas master one students identify themselves as being more skilful in writing than in reading, as shown in the above graph. It is important to mention that in each category of respondents, there are students who have not answered this question.
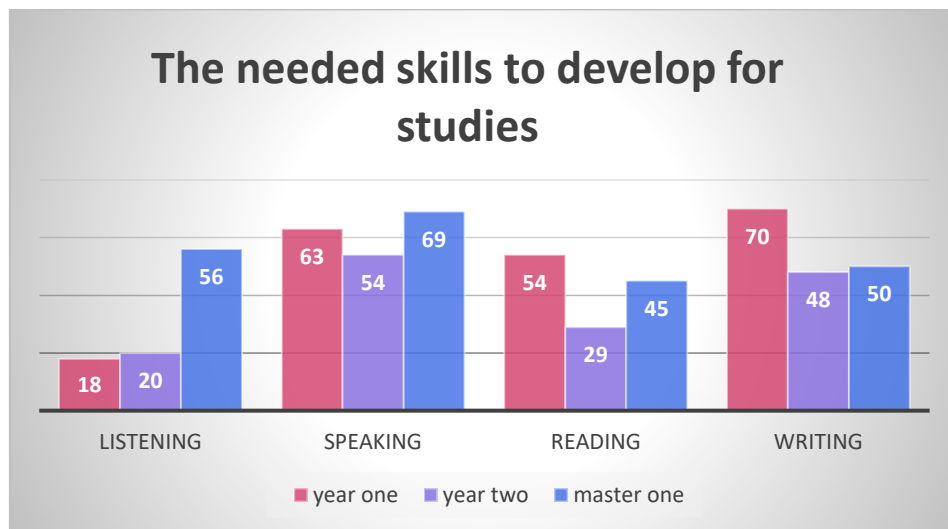
Graph 6.7. The most important skills to develop for educational purposes

It is noteworthy from the data shown in figure 6.7 that the students devote almost equal importance to the four skills for their educational careers with less emphasis on the listening skill in both years one and two.
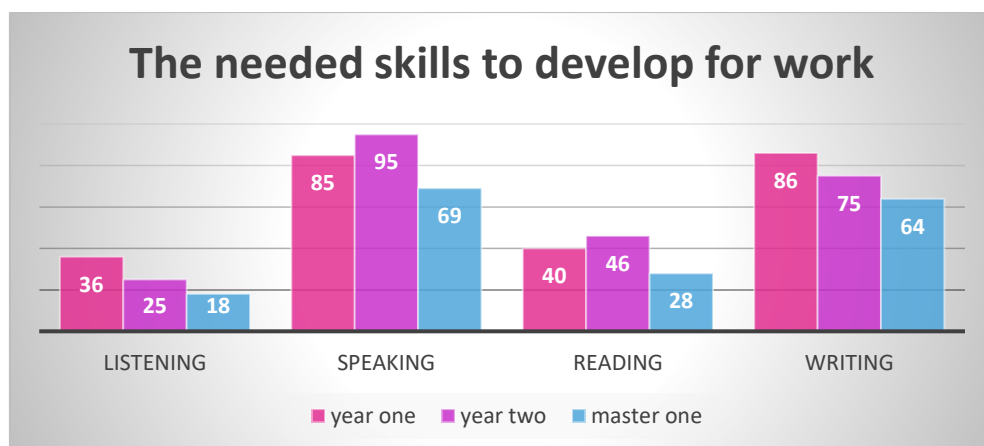
Graph 6.8. The most important skills to develop for professional purposes

The graph above shows a contrast in the emphasis given to the skills by the participants as compared to graph 6.7. The respondents identify this narrowing in focus on the productive skills in this part of the question. Speaking and writing take the highest share of what is needed to be developed in the three levels for their professional lives. By their answers, the students witnessed a maturity in identifying their target needs for both educational and professional careers.

Question six involve measuring the learners' competence in the language four skills, in which 12 items are proposed to investigate what students can currently achieve with language. The grid displayed in table 6.4. explores what skills learners mostly need in both their study life and professional career. In terms of the third area of abilities and proficiencies, learners are given 08 items to evaluate what their real ESP course provide them with. Finally, an open-ended question interrogated the learners about the challenges and constraints that they usually meet while learning English in class. Results are dealt with in the tables below.

		Year one		Year two		Master one	
Skills	**Micro-skills**	**N/144**	**%**	**N/122**	**%**	**N/75**	**%**
I understand when I listen to	- My teacher's talk - Videos or podcasts - People on the phone or on social media	35 39 27	24.30% 27.08% 18.75%	47 35 27	38.52% 28.68% 22.13%	63 51 49	84% 68% 65.33%
I speak fluently	-In class -with my friends -with foreign speakers on social media	10 00 28	6.94% 00% 19.44%	17 00 23	13.93% 00% 18.85%	22 00 08	29.33% 00% 10.66%
I understand when I read	-course handouts -scientific articles -Personal messages	62 00 40	43.05% 00% 27.77%	71 00 35	58.19% 00% 28.68%	68 45 12	90.66% 60% 16%

I write	-In exams	80	55.55%	76	62.29%	62	82.66%
	-to make scientific research on the net	19	13.19%	15	12.29%	48	64%
	-personal asynchronous messages	12	8.33%	22	18.03%	13	17.33%

Table 6.3. Results of learners' capacities in the four language skills

The table gathers sample activities in the four competencies that the learners can accomplish, taking into account that a proper syllabus design develops its units on the general level of learners who get it. The list is not exhaustive; rather, it is a diagnostic assessment of the learners' overall abilities.

Most of those surveyed learners in year one, indicate that they are able to listen and understand videos and podcast with a percentage of 24.30%. The rate decreases in year two and is attributed to understanding the teacher's talk 38.52%. As far as master one population is concerned, the highest rate goes to listening to the teacher's talk (84%), yet the two other activities are not neglected in terms of abilities. Listening in the ESP class, according to the obtained results is restricted to the teachers' talk and this may be due to the lack of materials and the sessions time limit to be more exploited in full listening sessions. The speaking skill collects no answers with regard to "*speaking with friends*" in the three respective populations. The majority of those who have responded to this item used to "*speak in class*" or "*with friends in social media*", but with modest rates of 29.33% in master one and 18.85% as the highest percentage in year two.

What stands out in table 6.3. is that there is a clear trend of increase in the collected answers rates. It is apparent that mechanical engineering students are more skilled at reading and writing than at listening to and speaking English. The table shows that most of the students with highest rates amongst the three populations (90.66%, 58.19% and 43.05%) say that they "*can understand when they read course handouts*". "*Reading scientific articles*" is limited to

master one group with an important rate of 60% and this is an indication to the respondents' interest to research for their final year projects. While the same item scores 00% in both year one and two.

Finally, three items are suggested in writing to be evaluated by the students, it is apparent from the table that "*writing in English*" is mainly "*in exams*" with a percentage of 82.66% in master one, 62.29% in year two and 55.55% in year one students. "*Writing to make scientific research on the net*" concerned more master (one) students (64%) than the two other populations, compared to "*writing asynchronous messages*" with the highest percentage of (18.03%) among year two population.

This table is quite revealing in several ways. First, the students, by their selection of the four skills items, suggest their strongest points and where they practice English more. Second, the table suggests what the students lack as defined by Hutchinson and Waters (1987), and they are mainly revealed by the lowest rates in the table. Together, these results provide important insights into the focus that the syllabus designer must regard in terms of the four skills. In this case, more emphasis should generally be on receptive listening and speaking skills. Whereas in productive reading and writing competence, further attention needs to be given to other subskills such as reading and responding to emails, reading technical posts in forums and blogs, and then commenting on and participating in what is suggested as topics.

6.3.2. Learners' Lacks

Two questions are devoted to this part of the NA in order to discover the learners' identified lacks. First, a list of 8 skills and sub-skills are proposed to the learners to describe their current course general objectives. It has been expected to diagnose what aspects are focused on in the ESP class. The second question attempts to elicit the most challenging

scenarios encountered in learning English according to the learners' own opinions. Table 6.4

below gathers the collected answers concerning the developed sub-skills in the ESP course.

Items	Year one		Year two		Master one	
	N /144	%	N/122	%	N/75	%
Listening	11	7.63%	03	2.42%	19	15.57%
Writing	18	12.5%	15	12.29%	32	42.66%
Speaking	15	10.41%	11	9.08%	35	46.66%
Reading	38	26.38%	71	58.19%	42	56%
Grammar	87	60.41%	64	52.45%	23	30.66%
General vocabulary	12	8.33%	10	8.19%	12	16%
Technical Vocabulary	78	54.16%	75	61.47%	59	78.66%
Pronunciation	14	9.72%	09	7.37%	14	18.66%

Table 6.4. Most focused sub-skills in English for mechanical engineering course

The data displayed in the table above bring out the sub-skills that EST teacher in the

consulted department focuses on. It is visible from the results that two main sub-skills are

prominent in EST year one course, namely *grammar* with 60.41% and *technical vocabulary*

(54.16%). The least focused skill appears to be listening proficiency, and this may be due to

the lack of materials needed for this specific teaching technique, as well as the number of

students in one single large room. Two out of three populations report that their EST teachers

concentrate more on technical vocabulary (61.47 percent), reading (58.19 percent), and

grammar (52.45 percent) than the other specified elements during the course of a half-year

study. Listening, pronunciation and speaking receive the least attention according to the

surveyed respondents. Finally, it is also apparent from the results dedicated to master one

respondents' answers that there is a balance of emphasis over the sub-skills suggested in the list

with little emphasis on; listening (15.75%), general vocabulary (16%) and pronunciation

(18.66%). This might refer to the student's' level and their reduced number besides their

closeness to the world of employment. As a general remark, grammar, vocabulary and reading

occupy the first rank with highest rates.

The second step in determining the learners' deficiencies is to ask, "*What are the challenges you face when studying English in class*?" The most common responses are reported in the following chart:

Lack of general vocabulary	Limited link to our field of study	Communicating using the learnt grammar rules	I can't unerstand the teacher's talk.
Finding appropriate words to express my ideas.	The content is insufficient and limited	Being fluent	The teacher's method is not suitable for me.
retaining the amount of new scientific terms	Very limited materials	Lack of English basics	Same techniques as the secondary school.
Formulating sentences using technical vocabulary		Pronouncing well	Absence of digital tools.

Chart 6.1. Students' encountered problems in EST class.

The above chart displays the most frequent obstacles as stated by the surveyed students and classified in terms of types. As it can be seen, the students suffer clearly from the lack of general vocabulary to express themselves and communicate with other people. It is clear that the focus is on technical and scientific terms, yet the students also encounter a major problem of vocabulary retention. Another prominent problem is to place the grammatical structures learnt in class into meaningful sentences. With regard to teaching methodologies, learners complain mostly about the appropriate methodology that needs to be implemented in an EST course besides the insufficiency of the content selected in the course. The most common impediment in technical departments, which has been confirmed by the learners is the deficiency of language sources and materials.

This issue may be explained by the lack of specialised ESP teachers in Science and Technology faculty in general. This field needs intensive training in English because of its high technicity and its different methodology from humanities and social sciences. It is noteworthy to say that most of newly graduated master students are recruited as part-time teachers in different departments in the university and their profile as general English teachers does not match with the ESP teaching requirements.

6.4. Target Situation Analysis

The group of questions in this section reveals the learners' target needs that can be translated into the necessities as defined by Hutchinson and Waters (1987). The results display the most needed subskills in the four language competencies from the learners' perspectives. Question 9 is divided into four categories, including a list of necessary target subskills to be selected and considered in the ESP course.

6.4.1. Mechanical Engineering Year One Most Needed Subskills

Learners have been asked to recommend activities in the four language skills that they find most interesting and needed for their field of studies and work. Collected answers from this particular question is the cornerstone to build the mechanical future engineers' communication profile.

Listening / I like to develop my ability to	year one (N /144)	(%)
understand others in conversation	49	34.02%
understand when I watch industrial videos	65	45.13%
understand academic presentations	23	15.97%
understand the teachers' talk	32	22.22%
understand British & American English	46	31.94%
understand different English accents	56	38.88%
predicting lecture content	12	8.33%
understand phone/skype conversation	29	20.13%
understand machine instructions, description of materials and metal processes	78	54.16%
recognize specific information from a listening passage	19	13.19%

Speaking / I like to develop my ability to	**N/144**	**%**
report results and data analysis	00	00%
speak to British /American engineers or engineering students	29	20.13%
speak to engineers from other countries using international English	69	47.91%
translate	45	31.25%
formulate questions	32	22.22%
make effective contributions to a conference presentation	05	3.47%
agree/disagree/make effective contributions to a seminar	04	2.77%
speak on the phone/social media	51	35.41%
give a presentation (describing a project/process)	60	41.66%
speak in social situations (small talk, airport hotel, restaurant)	48	33.33%
job interview skills	19	13.19%
Reading / I like to develop my ability to	**N/144**	**%**
read technical manuals, instructions, professional literature	78	54.16%
read effectively academic search results on the web	49	34.02%
locate information in a text	37	25.69%
interpret charts, tables and graphs	10	6.94%
read about companies' websites and workplace policies	19	13.19%
label a diagram/drawing	78	54.16%
infer implicit ideas	53	36.80%
Writing / I like to develop my ability to	**N/144**	**%**
write memos, reports, technical documents	60	41.66%
write emails messages,	48	33.33%
fill out forms, writing CVs, and job applications	14	9.72%
report findings from charts, graphs and tables	19	13.19%
write text summaries	69	47.91%
write research abstracts and introductions	08	5.55%
write citations and academic references/bibliography	07	4.86%
write paragraphs/essays	12	8.33%
write simple and complex types of sentences	79	54.86%
write research article steps.	29	20.13%

Table 6.5. First year learners' most needed sub-skills from ESP course

The table above summarises the range of activities recognised in the four language skills, the key strength of such activities includes a variety in propositions and in offering the ability to use the identified skills in numerous contexts and multiple purposes. Data are

organised according to the natural human acquisition of the four skills during his life. First, it is observable from table 6.5. that over half of the surveyed population (54.16%) opts for the ability to "*understand machine instructions, description of materials and metal processes*" followed by their will to develop their skill "*to understand industrial videos*" with a rate of (15.13%). This choice may be justified by two reasons; the eagerness of the learners to use English in their field of study, especially at their young age and level, besides the young character to follow the new technologies and trends existing on the web. It is important to highlight the significant result (38.88%) obtained by the respondents in being curious to discover "the different accents of English" at their young age. This might be a positive indicator for the research to their predisposition to receive some considerations of ELF in their technical branch.

Second, two favourite activities are revealed by the surveyed students; they view that "giving a presentation" i.e., using English in class and "speaking with their peers on social media" are part of their most needed target needs. Unexpectedly, speaking with engineers/students using a different English from the native variety, is in the learners' top options with almost 48% of the answers.

In addition to the previous activities, year one students add other reading needs to their list of target situation inventory. Both "reading technical manuals, instructions, professional literature" and "labelling a diagram/drawing" are positioned in the first rank (54.16%) of the learners' priorities while the least selected ones are "*interpreting charts, tables and graphs*" and "*reading about companies' websites and workplace policies*" with low rates of (6.94%) and (13.19%).

The last target skill to be consulted is the writing activities and tasks. Once again, the learners' choice is at some extent revealing their age and level; the majority (54.86%) of the informants express their will to learn "*how to write simple and complex types of sentences*",

"summarising text" (47.91%) than "*writing memos, reports, technical documents*" with

(41.66%) of the students. First year students are not really attracted by writing academically for

research works. This reveals their necessity in learning English for communication at this stage

of graduation. All in all, the students' choices are at some extent coherent with their previous

answers since they opt more for the productive skills. Nevertheless, the proposition of a variety

of activities within the neglected skills is raising their motivation to propose those skills as their

target ones. The aforementioned results are subsequently compared to those collected from the

second category of the population.

6.4.2. Mechanical Engineering Year Two Most Needed Subskills

Table 6.6. below compiles the collected answers from the students majoring in

mechanical engineering year two; they learn English for the last year before re-meeting it in

master graduation.

Listening / I like to develop my ability to	**year one (N /122)**	**(%)**
understand others in conversation	85	69.67%
understand when I watch industrial videos	70	57.37%
understand academic presentations	40	32.78%
understand the teachers' talk	40	32.78%
understand British & American English	38	31.14%
understand different English accents	65	53.27%
predicting lecture content	38	31.14%
understand phone/skype conversation	35	28.68%
understand machine instructions, description of materials and metal processes	86	70.49%
recognizing specific information from a listening passage	15	12.29%
Speaking / I like to develop my ability to	**N/122**	**%**

	N	%
report results and data analysis	38	31.14%
speak to British /American engineers or engineering students	50	40.98%
speak to engineers from other countries using international English	55	45.08%
translate	48	39.34%
formulate questions	15	12.29%
make effective contributions to a conference presentation	25	20.49%
agree/disagree/make effective contributions to a seminar	25	20.49%
speak on the phone/social media	69	56.55%
give a presentation (describing a project/process)	68	55.73%
speak in social situations (small talk, airport hotel, restaurant)	52	42.62%
job interview skills	43	35.24%
Reading / I like to develop my ability to	**N/122**	**%**
read technical manuals, instructions, professional literature	69	56.55%
read effectively academic search results on the web	35	28.68%
locate information in a text	29	23.77%
interpret charts, tables and graphs	44	36.06%
read about companies' websites and workplace policies	35	28.68%
label a diagram/drawing	62	50.81%
infer implicit ideas	12	9.83%
Writing / I like to develop my ability to	**N/122**	**%**
write memos, reports, technical documents	56	45.90%
write emails messages,	59	48.36%
fill out forms, writing CVs, and job applications	39	31.96%
report findings from charts, graphs and tables	32	26.22%
write text summaries	15	12.29%
write research abstracts and introductions	45	36.88%
write citations and academic references/bibliography	53	43.44%
write paragraphs/essays	10	8.19%
write simple and complex types of sentences	60	49.18%
write research article steps.	41	33.60%

Table 6.6. Second year learners' most needed sub-skills from ESP course

From a general reading, it can be clearly noticed that there is a general increase in the rates of the whole suggested activities in the four skills from this population. It should be noted that learners in both categories are interested in both general and academic needs than on professional ones. They identify the following tasks as being the most needed for an appropriate EST listening course: "*understand machine instructions, description of materials and metal*

processes" (70.49%), "*understand others in conversation*" (69.67%), "*understand when I watch industrial videos*" (57.37%) and "*understand different English accents*" (53.27%). The least selected task is "*recognizing specific information from a listening passage*" with a rate of 19.29% as compared to the first year who only 8.33% for predicting lecture content. It is shown that more than half the population majoring in year two express the additional task of understanding others in a conversation" as they have gained maturity and unsatisfaction of listening solely to their teacher in class.

As far as the speaking skill is concerned, the learners spread their positive answers over all the suggested tasks with proportions that cannot be ignored, as compared to first year learners who make prominent only four activities. The least chosen item is to formulate question (12.29%). In reading, similar needs as first year students' ones are collected with (56.55%) who emphasise the need to learn "*reading technical manuals, instructions, professional literature*" succeeded by "labelling a diagram/drawing" (50.81%)

Finally, four writing activities are among the most needed tasks to be focused on by the surveyed learners. These activities are classified according to the percentage collected: "*writing simple and complex types of sentences*" (49.18%), "*writing emails messages*" (48.36%), "writing citations and academic references/bibliography" (43.44%). The least popular need among that population's answers is "*writing paragraphs and essays*" (8.19%). Both populations opt for almost the same sub-skills with some slight differences in rates and one additional important task such as writing text summaries for the first-year population.

6.4.3. Mechanical Engineering Master One Most Needed Subskills

The last group to be asked for their target needs have been (master one) students and their answers are gathered in the same table with their own rates.

Listening / I like to develop my ability to	M.1. (N /75)	(%)
understand others in conversation	62	82.66%
understand when I watch industrial videos	65	86.66%
understand academic presentations	68	90.66%
understand the teachers' talk	42	56%
understand British & American English	53	70.66%
understand different English accents	67	89.33%
predicting lecture content	49	65.33%
understand phone/skype conversation	61	81.33%
understand machine instructions, description of materials and metal processes	64	85.33%
recognizing specific information from a listening passage	47	62.66%
Speaking / I like to develop my ability to	**N/75**	**%**
report results and data analysis	59	78.66%
speak to British /American engineers or engineering students	49	65.33%
speak to engineers from other countries using international English	49	65.33%
translate	23	30.66%
formulate questions	48	64%
make effective contributions to a conference presentation	61	81.33%
agree/disagree/make effective contributions to a seminar	58	77.33%
speak on the phone/social media	19	25.33%
give a presentation (describing a project/process)	70	93.33%
speak in social situations (small talk, airport hotel, restaurant)	33	44%
job interview skills	65	85.33%
Reading / I like to develop my ability to	**N/75**	**%**
reading technical manuals, instructions, professional literature	69	92%
reading effectively academic search results on the web	51	68%
locating information in a text	42	56%
interpreting charts, tables and graphs	64	85.33%
reading about companies' websites and workplace policies	14	18.66%
labelling a diagram/drawing	23	30.66%
inferring implicit ideas	23	30.66%
Writing / I like to develop my ability to	**N/75**	**%**

writing memos, reports, technical documents	71	94.66%
writing emails messages,	39	52%
filling out forms, writing CVs, and job applications	70	93.33%
reporting findings from charts, graphs and tables	62	82.66%
writing text summaries	29	38.66%
writing research abstracts and introductions	70	93.33%
writing citations and academic references/bibliography	65	86.66%
writing paragraphs/essays	15	20%
writing simple and complex types of sentences	41	54.66%
writing research article steps.	50	66.66%

Table 6.7. (M.1.) Learners' most needed sub-skills from ESP course

From an overall perspective, it is evident that this question has captured the lion's share of the respondents' answers, as it represents the heart of the EST course analysis. It is also remarkable that the learners' estimations about their target needs are balanced with some slight differences in some proportions compared to the previous two populations. Results in the listening section indicate a high interest to all the proposed activities, when the least chosen one "*understand the teacher's talk*" recorded a percentage (56%) over half of the informants' number.

In the same vein, the students do not exclude any tasks from the reading activities list. The students express their preference of the academic tasks with "*giving a presentation and describing a project/process*" (93.33%), "*making effective contributions to a conference presentation*" (81.33%) and "*reporting results and data analysis*" (78.66%) above the social ones such as "*speaking on the phone/social media" (25.33%) and "speaking in social situations /small talk, airport hotel, restaurant/*" (44%). This preference may be, once more, explained by the high interest to research and to projects presentations that master students are concerned with.

Four reading activities out of seven obtain more than 50% of the students' answers are classified from the most interesting to the least as follows: "*reading technical manuals, instructions, professional literature*" (92%), "*interpreting charts, tables and graphs*" (85.33%)

"Reading effectively academic search results on the web" (68%) and "locating information in a text" (56%). The items which receive less amounts are mainly part of the basic skills in the learning stage, the fact that makes the students' choices coherent and confirmed from a question to another.

Finally, according to the results displayed in the last part of table 6.7., it is perceptible that teaching English for mechanical engineering, according to the learners, needs to be written-oriented. Results show that a high majority of the students intensively opt for *"writing memos, reports, technical documents", "filling out forms, writing CVs, and job applications", "writing research abstracts and introductions", "writing citations and academic references/bibliography" and "reporting findings from charts, graphs and tables" with no less than (82.66%).* Due to the students' lack of interest in "writing paragraphs and essays," it is ranked last on the list with a rate of (20 %).

6. 5. ELF Needs for Mechanical Engineering Purposes

This questionnaire category is introduced by the language necessities in order to determine whether ELF may be part of their needs, particularly after defining it and having an informal conversation with learners about the issue. It should be highlighted that the informal conversation has not been intended to influence the learners, it has rather been to clarify it for those who were unfamiliar with it. Although many questions throughout the questionnaire do not exclude the use of ELF, (questions10,11,12.13) evoke overtly the students' needs in that sense.

Question 10 aims at discerning the students' culture about the use of ELF in the Algerian actual professional life. After asking them "*According to you, what type of English do international partners use in business and industrial life (ex. Chinese, Turkish, Spanish)?* The three nationalities have been chosen because they are part of the Algerian authentic commercial and industrial picture. The learners' collected answers are displayed in the following graph.
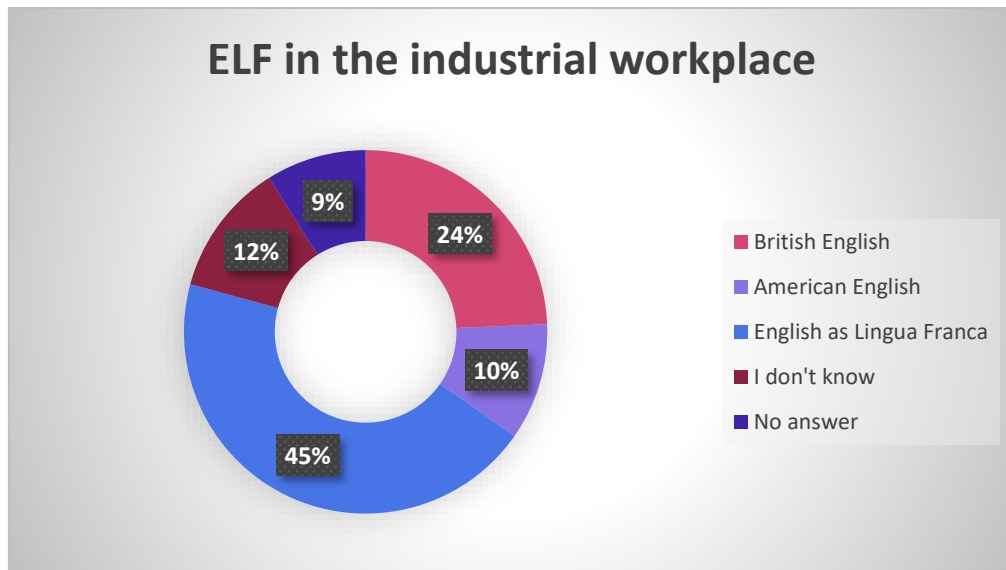
Graph 6.9. Students' opinions on the type of English used at work

It must be noted that many Algerian students, do not have prior academic knowledge about ELF, for this purpose, the researcher has insisted on explaining the concept while conducting the survey with the informants on the spot. As it can be seen in (graph 6.9), a great number of students corresponding to the amount of (45%) opine that the dominant type used by the international partners with the Algerian ones could be ELF or IE as they used to know it. Results show also another significant portion devoted to British English from (24%) of the surveyed population who express that this type is the leading variety in both business and industrial world. Almost the same amount of data displayed in the graph (10% and 12%) are shared between those who do not know and those who suppose that American English is used to communicate internationally. Finally, less than the tenth of the population have not expressed their opinions on the matter.

Further to the collected data in the previous concern, the following question (Q.11) interrogates the students if they are interested in learning this particular type of English basics which is different from standard to communicate professionally at international scale. The graph below summarises their collected answers.
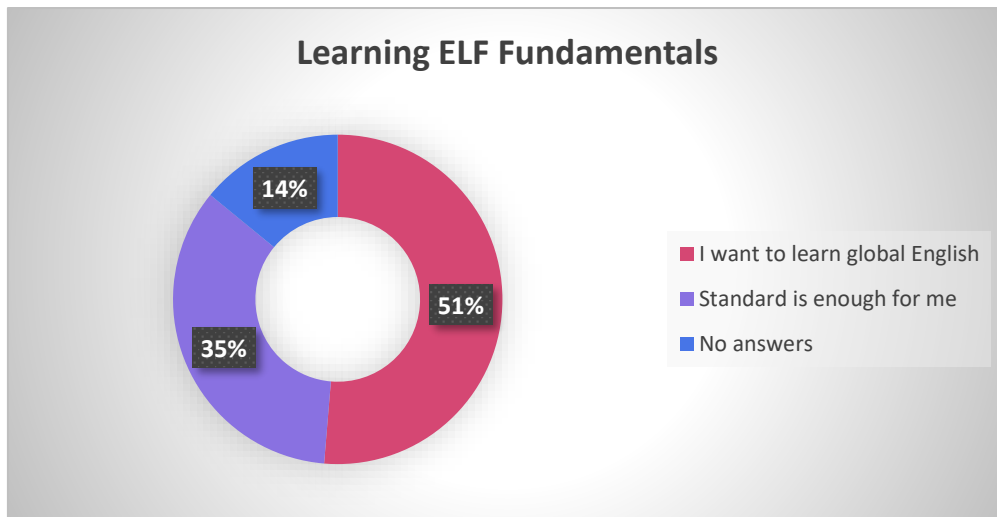
Graph 6.10. Students' opinions on learning ELF basics

Surprisingly, the findings reveal the largest share (51 %) for the students who have accepted to discover the fundamentals of ELF and some notions about a different type from the one studied in the Algerian academia. 14% of the population do not express their opinions while (35%) prefer keeping their learning about SE.

In order to discover the main objectives that can motivate students in mechanical engineering learn English and in order to categorise their profiles and priorities, question (12) raises this issue as follows: "What would be your purpose to learn English?". Four propositions are offered to the learners to be selected; more than one possibility is allowed. The obtained data are presented in graph 6.11.

Graph 6.11. Students' English learning purposes

The bar graph shows two dominant goals that motivated the students majoring in a technical branch to learn a foreign language. The findings show that for the three categories of students "to learn the minimum to communicate for professional purposes" and "to have a satisfactory level to speak and write" shape the ideal state to reach from learning English. As it is also distinct, "speaking like a native" score the least amounts and is not part of their top list motives to learn English. Interestingly, a new element joins the NA inventory namely "to know the others' culture. In general, this motive is not expected to be part of EST learners' ones, as they are most frequently busy with technical properties of their field. Nevertheless, adding some cultural elements to a technical syllabus can only be elements of motivating learners and raising their awareness to attend English classes.

Question 13 closes this category by inquiring about the type of culture future engineers would like to encounter in their English course. Three forms about the British, American or English-speaking countries' culture are offered for selection. The informants can also opt for a fourth item to express the irrelevance of culture in an EST course. Graph 6.12 below shows the informants' options for the types of culture to be included.
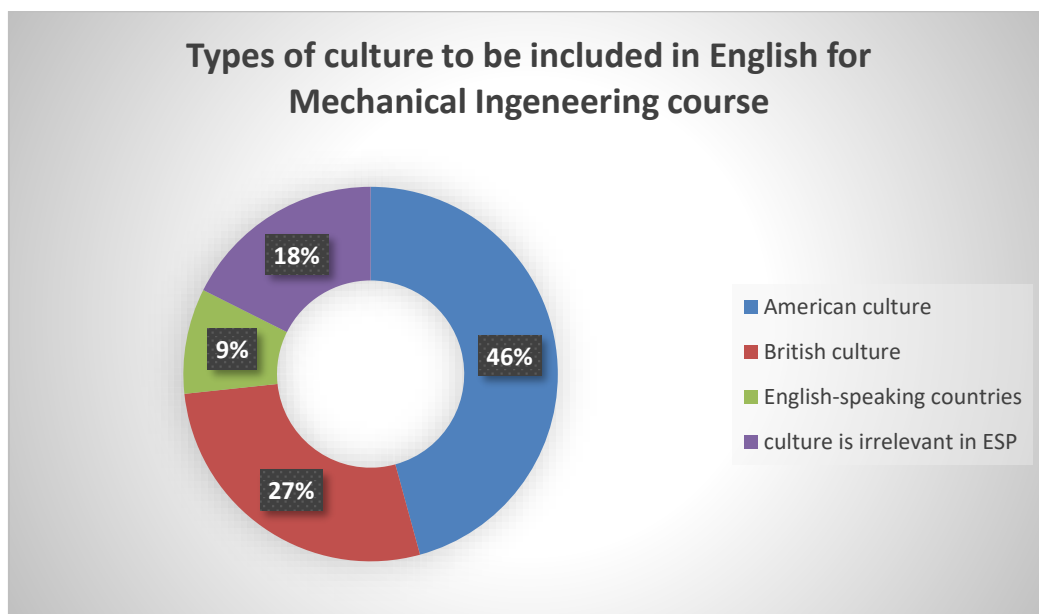
Graph 6.12. Learners' attitudes about the type of culture to be included in English for mechanical engineering.

Contrary to expectations, the informants show a high interest in culture integration in the EST course. Nevertheless, it is important to notice that American culture is on top of the preferred types, and this could be due to its major position in science and technology as well as its leading role in the academic and professional literature. Despite the discrepancy in rates of culture to be opted for, what offers optimism is the possibility to find a fertile ground to integrate culture in the EST syllabus, regardless of origin, since English is global and the informants' answers fit well with the nature of ELF. Overall, the learners express very positive attitudes towards the use of ELF in the field of mechanical engineering and do not exclude their will to be world citizens by learning some of its basics.

6.6. Learners' Wants

The set of questions under this category collect the information about effective ways of learning the previously suggested skills. For this intention, three questions are included in this part to discover the learners' wants in Hutchinson and Waters (1987) term. The graph below summarises the results of "What tools will help you best learn English?"
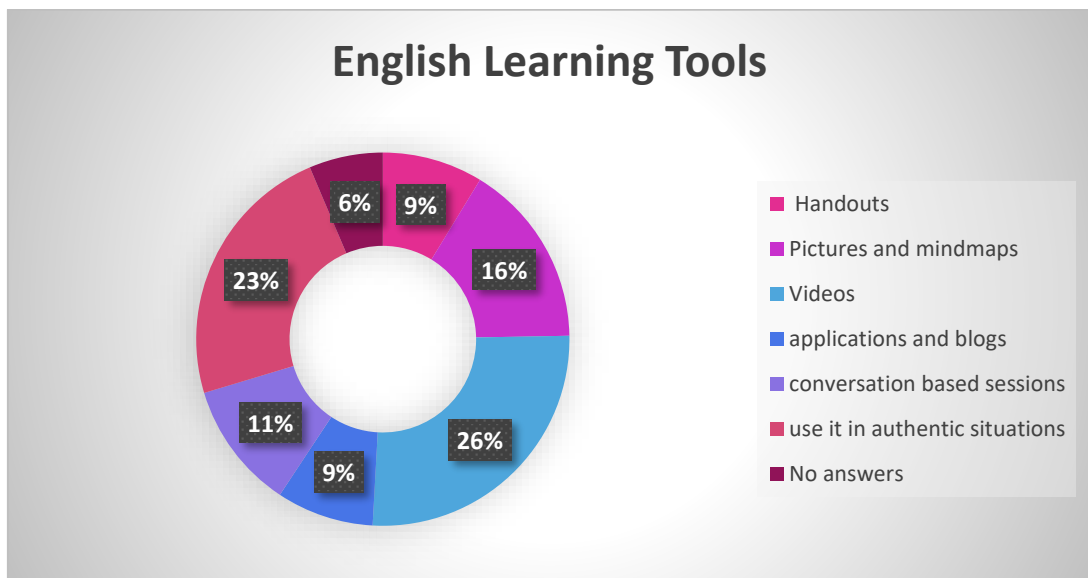
Graph 6.13. Learners' most preferred learning tools

The great majority of students, across the three categories, voice their wants in terms of preferred means that can be translated into their learning styles. Many students (26%) are rather visual learners, as they articulate using videos as very helpful in learning English. Another

important group (23%) believe that using English in authentic situations is the best technique to help them learn English. Using pictures and mind-maps are also important for mechanical engineering students (16%). Therefore, they are revealed to be more kinaesthetic than the others. Learning in speaking sessions holds (11%) while both reading handouts and using applications and blogs collect (9%) of the students' answers. Consequently, a successful EST course is the one that respects the students' learning styles and that offers appropriate activities and tasks. Building an ESP course on a single favourite approach would almost result in a monotonous class.

The second question that is relevant to the objective of this study is how do learners like to be assessed; graph 6.14 below shows the most common responses. Teachers are generally in charge of evaluation and assessment, and they have the competence and authority to examine both students and materials. As a result, getting the students' opinions on the subject can help with both developing the appropriate exam and enhancing the students' performance. In terms of evaluation mode, students are asked to indicate the most desired evaluation and assessment processes that they can provide the researcher with. A list of four items is designed to examine the learner's evaluation wants, and the results are displayed as follows:
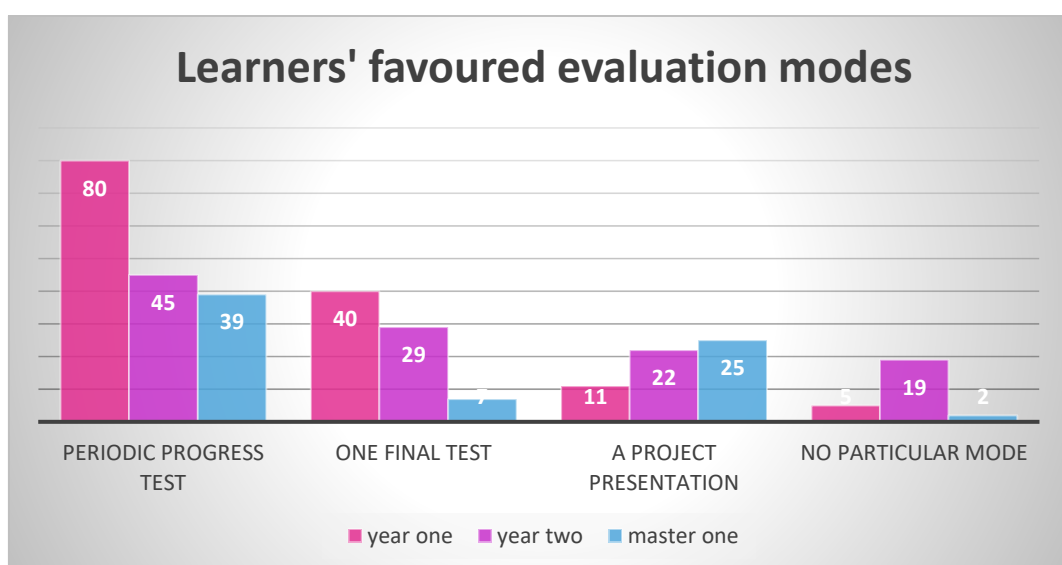
Graph 6. 14. Learner's opinions on their preferred evaluation modes

One assessment mode, according to the students, is prominent, as shown in the above graph. The majority of the students believe the idea of taking periodic progress tests might be an effective process of assessing their English proficiencies. According to the rates recorded in the bar graph, sitting for a final test or exam is not neglected by students, according to the rates recorded in the bar graph. While 27.77% of the first-year population and 23.77% of second year students declare that it is a suitable assessment technique, Master one students are rather reluctant to take periodic tests, mainly with a percentage of (52%). A considerable amount of (33.33%) of the population welcome the proposition of a project presentation which meets their learning target needs.

What can be deduced from these results is not only the specific needs of technical learners in terms of assessment. It is in particular, the diversity of the selected modes by the learners, is very revealing in terms of students' success and progress. When the ESP teacher listens more to his learners' needs and wants, much progress could be expected and students' positive achievements could increase. The last question in the questionnaire is an open-ended one which offers a free space for the learners to provide the researcher with some suggestions to improve their EST course in the following words: "*What are your suggestions to improve your technical English course*?"

Remarkably, a significant number of students in the three levels felt involved in the process of building an interesting EST syllabus for students in their field of study, and they have offer highly constructive sets of recommendations that would be displayed in the following table. It is important to remember that the most recurrent comments are selected and reported as follows:

S 1: "*I need more focus on speaking and pronunciation, I do not need to write a lot in English as we do it in real life*."

S.2: "*Review the time allotment of the course, it should be increased*."

S3: "*Provide us with a lot of videos.*"

S4: "*Use more online tools and interactive techniques.*"

S5: "*Avoid handouts and focus more on scientific presentations*"

S6: "*What I need is to read scientific articles in my field of interest.*"

S7: "*More focus should be on specific communication in English than the memorization of technical terms.*"

S8: "*The teacher needs to be a classroom manager more than knowledge provider.*"

S9: "*Provide us with more interesting lectures far from literature and linguistics and focus more on scientific research.*"

S10: "*Avoid the purely grammar and conjugation lessons.*"

S11: "*We need to watch English teaching videos by foreign teachers.*"

S12: "*We need well-trained specialized teachers in the field and not part-time teachers.*"

S13: "*Translate some difficult expressions into Arabic or French when necessary.*"

S 14: "*There's a lack of adequate methodology in adapting English course to our field.*"

S15: "*What is missing is the authentic and frequent practice to be more fluent.*"

S16: "*Encourage enquiries such as this one to improve our routine in English.*"

The students' efforts and contributions have been preciously praised and thanked in view of the fact that they have participated voluntarily in the survey and they have accepted to respond honestly and seriously to the questionnaire. Collecting their final comments and recommendations is particularly interesting and appreciated as they have provided the research, as expected, with valuable comments and recommendations. These suggestions vary from the class session time allotment, which has been focused on by a great number of the students in the three levels, to the methodology and techniques, as well as the importance of EST training

in their field of study. The students have also shed light on the significance of the oral communication skills that they claim to be lacking. They have complained about the classical method of using handouts and studying dry grammar rules. They have expressed the necessity to shift to a more digital and authentic world.

Finally, a considerable number of students have praised the initiative of doing such a survey and research, which has the purpose of making them participate in designing their own syllabus. The survey, in this free space offered to learners, has echoed a positive evaluation as they felt involved in the teaching process; they have done so in a very honest and a responsible way.

6.7. Synthesis of the Findings

The first step in developing a solid and reliable ESP course or syllabus is to identify the necessities, gaps, and desires through a needs review. Therefore, the NA survey described in this section operate very well as an instrument to gain understandings into the environmental situation of mechanical engineering field. After examining students' answers, the most prominent results are summarised subsequently, revealing the personal, language and learning information about the target situation.

Students, majoring in year one, year two and master one, have been challenged by their active involvement in identifying their weaknesses, obstacles and target situation needs to help build a sound English for mechanical engineering syllabus. The questionnaire analysis revealed that most of learners are young aged between (19-23 years old) with the exception of very few workers majoring in master studies. The participants, in master one, belong mainly to three specialties namely mechanical construction and maintenance, materials engineering and renewable energies. As far as year one and two students, they are rather studying common core as well as introductions to field specialties.

One of the first parameters to analyse is the course attendance rate and results indicate that over half the population at all levels attend "sometimes or never" their English course and this result is a serious alert to address more attention to teaching ESP in Algeria. In this regard, the students provide the study with the main factors behind the learners' demotivation to attend their EST course. The major reasons they mentioned are the course's focus on grammar and terminology memorisation rather than speaking and communicating. And this is what needs to be taken into account in the design of an EST syllabus. In the digital era, students are more attracted to verbal and interactive communication than they are to writing paragraphs and structures. Notwithstanding these results, the survey reveals that a large number of students in the total population are said to be interested in studying English for a number of reasons.

The most important ones are the significance granted to English in the field of mechanical engineering and in the industrial field in general. Moreover, students have manifested their strong will to learn how to communicate with people all over the world and how to consider their culture, as declared by almost half of the population surveyed. It is true that gathering language needs is the focal point of a sound syllabus/course design. However, knowing more about the students' needs and constraints is the key element in building a strong teaching basis. Therefore, a summary of the present situation analysis is presented in table 6.8. below in order to record the most striking results obtained from the survey.

Learners' Capacities	Mastered Skills	Skills order to develop for education	Skills order to develop for career	Learners' lacks	Learners' encountered obstacles
Heterogenous level. Master reading and writing mainly Reading texts in general English Can understand familiar matters in general English Can understand simple and small texts connected to their field. A general level of **B1**	**Listening:** Understanding the teachers' talk Understanding videos **Speaking:** Very limited speaking in class **Reading:** Handouts Personal messages on social media **Writing:** In exams To make scientific research on the net	Speaking ▼ Writing ▼ Reading ▼ Listening	Speaking ▼ Writing ▼ Reading ▼ Listening	mastering English grammar and vocabulary Scientific terms retention techniques Lack of EAP General vocabulary for communication Pronunciation Listening skill Communicating with people Reading scientific documents Reading professional literature Make scientific research on the net Make an academic presentation Employing technical terms in a conversation.	Limited link to the field of study Inadequacy of required methodology Deficiency of digital tools Deficiency of language sources and materials

Table 6.8. Summary of present situation analysis

The key step that follows, bringing the EST course into focus, is the predetermination of the language objectives and input required by the learners. In other words, the results

collected in this section are critical for framing the curriculum. The obtained needs from the students are displayed in the fishbone graphic in chart 6.2.

The fishbone chart summarises the most frequent needs expressed by the learners in the survey, most of the students show positive attitudes toward the suggested tasks and activities in the four language skills. Results demonstrate that the majority of the learners are preconising communication in the professional context more than language structures and extensive reading activities. They identified another source of motivation to enrich the technical English course by introducing more globalised form of English including some aspects of culture and intercommunication approaches. The students exclude the existence of a purely standard British variety in the Algerian workplace's professional communications with the foreign partners. They hence showed a high interest to learn the basics of ELF to cope the new era of a globalised industrial and business world.

Figure 6.3. A Summary of English for Mechanical Engineering Target Needs

Listening
- Professional tasks
- Industrial videos
- General &Professional conversations

Speaking
- Social conversations
- Academic presentations
- Job interview skills

Reading
- Manuals-instructions troubleshootings
- Labelling diagrams/ drawings
- Interpreting charts/graphs

Writing
- Simple/complex sentences /EAP
- Reports-minutes-memos
- CVs/applications/emails

Culture
- Discover the other's culture
- Understand professional cross-cultural communication

EFL
- Understand different accents
- Learn the ELF basics
- Speak to engineers using IE / ELF

Target Situation

All learners reveal that they must use English to a certain extent to meet their academic and job requirements with a little bias toward social needs in first year, educational purposes in second year and professional expectations in master one. These results can be a strong indicator that from the students' perspectives, technical reading comprehension and technical writing are the most critical and necessary skills. Writing academic essays and making scientific presentations are considered as the most important educational skills by students. Writing, reading and performing classroom activities and taking notes during lectures have the lowest ratings at the three levels of the surveyed population.

One can state that the reasons behind focusing more on the academic and professional skills by the learners are mainly due to some monotonous grammar and structure lectures as well as a number of reading sessions in the afternoon of long condensed texts that do not really foster communication. The students have described some materials as being far from their expectations.

The learners' subjective needs assessment has uncovered the learners' learning styles which were unconsciously concealed by the learners. The most wanted learning styles and identified tools indicate that mechanical engineering students are mainly visual and kinaesthetic. These traits characterise mainly students in scientific and technical branches. Exposing them to language lectures should not make them distant from their nature nor their field methodology as required in the ESP characteristics by Dudley-Evans an St John (1998).

Suggesting assessment modes is also an interesting technique to adopt. It is demonstrated in the present study that when students are interested in expressing their preferred evaluation modes, they do so in a responsible and truthful manner. They have mostly revealed that testing them periodically and offering them opportunities to present their own research projects, in English, is highly motivating them to be assessed.

Finally, at the end of the questionnaire, the general appreciations and recommendations from the surveyed population have been collected, and the results indicate that students are very motivated to enhance their language syllabi. Involving ESP learners in the syllabus preparation does not only allow them to reflect on what they need from the course and how they want to learn it, but it also gives them the feeling of being a significant part of the teaching /learning system. The students mostly suggest the harmonisation of the EST course with the content requirements. Communication, for them, is the paramount objective of attending a language class. They claim more focus on communication than on usage, and this is in no doubt within the first prerogatives of a well-trained EST practitioner.

6.8. Conclusion

Chapter six has been chiefly devoted to analyse and discuss mechanical engineering students' needs. A contextual learners' survey has been conducted to fulfil this purpose and data have been classified according to the seven elements suggested in the NA environmental situation approach. The collected data have revealed the learners' three main requirements in ESP and NA, namely lacks, necessities and wants. Subsequently, all the gathered data will be summarized and inferred to be maximised for a most appropriate English syllabus for mechanical engineering purposes. Accordingly, the students have been approached as beings, as language users, and as language learners. The environmental situation analysis has revealed the learners' positive attitudes to be involved in their English syllabus building. They have provided the investigation with significant data in terms of language skills and materials development. Interestingly, the findings demonstrate a fertile EST ground to incorporate ELF features and intercultural reflexions in the technical English course.

Chapter Seven: English for Mechanical Engineering Syllabus Design

Chapter Seven: English for Mechanical Engineering Syllabus Design

7.   Introduction

This part of the work attempts to explain the rationale for viewing, interpreting and conceiving the syllabus intended for both graduate and undergraduate students in mechanical engineering. The developed rational, in this chapter, starts with identifying the fundamental principles in designing the target syllabus, the general teaching and learning principles as well as some of the selected materials for these purposes. The present chapter provides contextualized descriptions of the syllabus theory design inspired from the current experience in conducting NA with different stakeholders' perspectives.

The suggested model, in this section, is the outcome of a mixed analysis in which the lecture room environment observation, the students' needs, and the careful consideration of the pedagogical guidelines imparted to the present research. This chapter synthesises the study results to implement a workable syllabus that includes most of the research parameters. It also aims to formulate new objectives to ensure the program's renewal and revitalization. It is not, therefore, an absolute syllabus; it is a proposal for a mini-booklet which would offer some materials and tasks that can be used as a possible reference for novice practitioners in English for mechanical engineering. Some proposed ELF tasks would interestingly work for ant type of ESP course as they are free from the technical content aspect.

7.1. Main Components of the Syllabus

The syllabus is English for mechanical engineering purposes; it is a research-based series of courses intended for students who take English course as part of their curriculum. The programme is intended for students who need to discover how to communicate effectively in both academic and professional fields of their specialty.

The syllabus presented hereafter follows the conventionalised stages that are commonly used in academic English syllabi. It equips learners with the needed language skills as collected in their needs analysis survey. These skills would help them, first, understand typical academic and discipline-based situations. The syllabus is especially designed for mechanical engineering students who need to write and talk about various educational tasks at different levels; it presents the most needed study skills to take part in tutorials and to make presentations. It focuses also on the skills that allow students to understand academic and scientific research and help them use research tools to write appropriate articles at various stages in English.

Another principle of the syllabus is to provide students with the tools and skills they need to understand discipline-specific topics by connecting them to receptive skills such as listening and reading. However, productive skills, namely speaking and writing, are not neglected and are given the necessary emphasis as requested by the stakeholders. The focus is therefore on communicating in the work environment from simple to more complex situations.

Finally, the designed syllabus offers a space for learners in the technical branches to develop the four language skills considering international characteristics of ELF and to enrich the learners' background knowledge about the world varieties as used world-wide. It provides the course attendees with a corner devoted to intercultural communication encounters and explores cultural assumptions shared by native as well as non- native speakers of English around the world.

7.1.1. Learner's Needs Profile

Several techniques have been used to analyse the population's target requirements in order to determine the target necessities and deficiencies. This procedure spanned one academic year and has been extensively addressed in previous chapters; the results indicate a wide range of target needs, goals, and difficulties to be met. The research tools are not only instruments for

the thesis methodology purpose, but they constitute essentially a framework to provide the learners with a research-based syllabus. This would improve the existing programme with more personalised needs and would grant learners more perspectives to discover authentic and realistic use of English in its academic and occupational contexts.

According to Brindly (1984) there are two approaches in respect of needs analysis reading; the first orientation concerns "narrow or product-oriented interpretation of needs whereby the learner's needs are seen solely in terms of the language they will have to use in a particular communication situation." Whereas the second line of though is the "broad or process-oriented interpretation which sees needs in terms of learning situation." (p.63). In this respect, there is a strong emphasis, in usual syllabi suggested by the Algerian Ministry of Higher Education and Scientific Research, on teaching the language structures and on thematic texts of the field to learners of the different specialties.

However, the needs assessment process developed in the present study is more in favour of the second orientation. It therefore seeks to develop the target needed skills and aims to include more relevant texts with adaptable tasks and situations with the learners' profiles according to the set of elements representing the learning situation. Consulting the wide range of stakeholders and examining related syllabi documents revealed the following as a summary of all data collected from the multiple instruments and are synthesized in the following table:

	NEEDS ASSESMENT FORM

The purpose of this form is to give to the course designer an insight into a sample of learners' needs inventory. The outcomes can be modified and adaptable according to the given learning situation.

Learners' age: 19-28 years old

Learners' level: Licence 1, Licence 2, Master 2

Field/Specialisation: Common core- mechanical construction-maintenance-renewable energy.

Study Language: French- Arabic

LACKS				
Institutional		**Academic and professional**		
Source Researcher's Observations	Librarians	Content teachers	ESP teacher	Learners
*Narrow interpretation of learners' needs in the official ESP syllabus. *Inadequacy of scheduling English session in time and space. *Insufficient time devoted to English sessions). *Lack of materials that favour learners' presentation and manual demonstrations (projectors, internet wireless,) *lack of focus on the speaking and writing skill. *A contrast in the level of high learners'	*Quasi-absence of ESP books on the library shelves. *The dominant English books types are EAP or very few field books in English. *Scarcity of translated books and dictionaries in the field. *Insufficient international libraries access for learners via the local one.	*lack of motivation *lack of teachers' training. *Narrow scope of language use. *Difficulties of the learners' communicative use of technical terms. *Inadequate materials with the learners' needs. *lack of authenticity in language use. *Unfitness in the teaching methodology. *Little reference to international contexts of language use. *Little/absence of intercultural approach in the	*Lack of learners 'impetus to attend English class. *Heterogeneous learners' level. Insufficient time allotment for English course/week. *Lack of mastering English grammar and vocabulary. * Need of English Laboratory. *Adequate pedagogical tools. *Lack of mastering reading, speaking and writing skills.	*Insufficient English sessions. *Lack of motivation. *Lack of confidence in speaking. *Lack of Memorization techniques and retention of technical terms. *Weaknesses in grammar and vocabulary. *Weaknesses in the four skills. *French or Algerian

attendance in subject class and the low participation level in English class. *2/3 of the English teachers are holding a master degree and are not specialised in ESP. Insufficient ESP teachers' collaboration with the experts.		technical classroom. *Little projection in the real context of the professional world.		English pronunciation. *Know little about cultural information about the others. *Ignore English basics used in professional settings.
NECESSITIES				
*Find topics directly related to their field. *Learning via design and problem solving. *Speaking by simulating professional situations. *Listening to and following instructions. *Reading research data and results. *Presenting findings and research comments.	*Provide learners with more EST books. *Offer the learners further translation and bilingual manuals in the field. *Equip the library with electronic software and access to international libraries. *Promote the learners' awareness about the importance of	*Increase and develop the technical vocabulary teaching strategies. *Reading technical manuals and charts. Writing emails and technical reports. *Speaking with non-native partners. *Using academic and technical vocabulary in contexts.	*Adapted materials to the learners' needs. *Larger authentic spoken and written materials in the field. *Focus on content related topics in conversations with foreign partners. *Reading professional literature and academic research. *Writing emails and academic literature. *read and understand technical	*Focus on grammar & Vocabulary. *Writing memos, reports, technical documents. *Reading technical manuals, instructions, professional literature. *Presentation skills. *Improving pronunciation. * Learning to speak with non-natives. *Listening & understanding

*Writing technical reports. *Using authentic professional documents. *Participate in field training. *manipulate machines and instructions in English. *Increased use of digital tools.	English in each field. *create teachers-learners' workshops to read and write documents in English within the library.	*Focus on translation skills. *Focus on presentation skills. *Develop communication skills with international speakers. *Learn to communicate in workplace and professional situations.	documents & research papers. *write and talk about research results and technical reports. *Integrate various English speaking countries' cultures.	others in conversations. *Learning ELF fundamentals. *Using English in professional situations. *Integrating cultural dimensions in ESP course.
WANTS				
*Learners centred-approach. *Group presentations. *Intensified pair-work. *Use of videos. * Reading and interpreting charts and diagrams. *Integrate online learning in the course sources. *Use of visual aids and authentic documents. Group /peer interaction. *Assigning learners' roles	*Reading workshops *motivation campaigns *twinning programme with international libraries. *collaboration with the English department.	*Using videos and podcasts. *Group discussions. *Working with authentic materials. *learning by doing tasks. Focus on using pictures and drawings. Periodic progress test evaluation.	*Learning through videos. *Using pair work and group work tasks. *Problem-solving based activities. *Individual or group Presentations. *Group discussions. *Group assignments & ongoing evaluation.	*Increased use of videos. *Enhanced digital tools in English lessons. *Intensified conversational sessions instead of reading ones. *Higher English use in authentic situations. *Focus on fluency. *Targeted English use in communicative situations.

Table 7.1. Summary report of the learners' main needs.

The table summarises the mechanical engineering student' three needs types. The de facto situation of the mechanical engineering in the Algerian University is that some learners lack motivation to integrate English within their academic priorities and consider it as an extra subject to take the exam and obtain the grade. Attending one session a week in a large crowded rooms was challenging for learners. In terms of lack of assessment, many learners come from secondary schools with a heterogenous English level, defined by the learners themselves as being intermediate. Many of them have threshold English level, having a modest general background of grammar and vocabulary. On account of some conditions gathered from different stakeholders as mentioned in table 7.1, this may decrease their intrinsic motivation and turn them into passive learners.

Out of the congruency expressed by the different stakeholders concerning the learners' necessities, it is assumed that the learners need to write both academic and professional genres including research data analysis, memos, reports and emails. They have expressed also their need to read and understand academic research articles, professional literature and other texts related tightly to their field of interest. Listening and pronunciation are not neglected by all informants and need to be highly considered in their syllabus. As far as their wants are concerned, all informants agree to include videos and online devices as instruments to vehicle language skills teaching. Charts, machines and parts design are part of the mechanical engineering learner's daily routine; therefore, it is one of the priorities to be considered by the course designers.

7.1.2. Rational and Goals of the Syllabus

First, it must be mentioned that the actual suggested syllabi in the different curricular offer the practitioner sole topics and grammatical structures that are not put in functional contexts (appendix II). Few suggestions and recommendations are provided with regard to the required terminology and language skills. The first and paramount motivation behind designing

the present syllabus has been designed to find workable solutions in order to match the content with the learners' needs. A further incentive was to introduce the science and technology learners to the authentic use of English in an international context and make them aware of the intercultural English setting. The syllabus goals are as follows:

✔ To prepare the mechanical engineering students, at different levels, to face the highly specialized materials as future academics and to understand professional literature as future engineers.

✔ To help learners get information by looking for specific details in spoken or written text, then interpreting and using the information

✔ To familiarize the students with some linguistic characteristics of ELF with the help of texts, audio and video materials, and to introduce some sociocultural aspects of the variety at hand.

✔ To relate closely the students to their areas of interest by selecting articles of their own choice.

✔ To help build cognitive processing strategies by asking for repetition and requiring additional explanation.

✔ To exploit the selected texts and to maximize the creation of assignments according to the needed and authentic tasks such as laboratory reports, design reports and problem-solving assignments.

✔ To promote the students' engagement from a variety of subjects.

✔ To teach students to cope with receptive skills, i.e., listening and reading in mechanical engineering. Once the general content is understood, students are expected to develop ideas in both productive skills, i.e., speaking and writing.

✔ To focus on discipline-specific vocabulary as well as terms and phrases typically used in academic and technical English.

✔ To emphasize the necessary skills needed by the learners to participate in academic seminars and professional situations.

✔ To enable students to extract data from charts and tables then to write summaries and reports.

7.1.3. Contents and Areas of Interest

Before discussing the syllabus principles, it is paramount to provide an overview of the selected topics and how it would be delivered. It is important to acknowledge that to achieve these goals is not an easy task because of time constraints and pedagogical challenges. However, the syllabus seeks to refresh the official suggested program by the Ministry of Higher Education with further topics to familiarize the students with. It suggests types of English tasks that might be performed by researchers, technicians and professionals in the field; besides, it enriches their linguistic background knowledge with some features of ELF and some intercultural awareness. The program is flexible enough to accommodate the inclusion of new subjects and subskills in response to the needs of any target level and community.

This syllabus includes typical tasks that require the students to speak in different situations and to engage in conversations about academic research and work -related concerns. Teaching pronunciation in EST is neglected in some technical branches, and if native-like English should be emphasised, then pronunciation is the area that should be most exploited for this purpose to ensure intelligibility and comprehensibility with other native and non-native speakers of English. Needless to say, raising learners' awareness about English deviations' existence is overlooked by some English instructors and considering them as errors on the part of the communication partners refers back to the main topic of discussion.

Listening is an inseparable language skill from speaking mainly, it is also necessary for reading and writing. If the listener doesn't understand the speaker's utterance because of his

regional accent, intonation, or word choice, he will find difficulties in decoding the message. This communication breakdown will have a negative impact on the engineer's performance, especially in a business or industrial situation. Nevertheless, due to time constraint, listening is introduced as mini-lessons in each unit. The Master One syllabus is not an exception, and it is inappropriate to neglect or to delete totally the listening tasks, whatever the level is. This program category includes mostly work-related mini-listening lessons.

The syllabus content is also focused on the language skills learning and on techniques for reading academic and professional texts, as well as the study of academic debate using a genre approach. The syllabus also emphasizes the development of skills and strategies for reading academic and professional literature, as well as a genre-based approach to studying academic debates. The texts' content is representative of students 'styles that are required to process in their main disciplines. Reading texts can include extracts from publications in the field, as well as texts and designs taken from the academic literature.

The structural forms get increasingly sophisticated as the course progresses, transitioning from exposition, exemplification, analogy, cause and effect, and problem–solution, solution–evaluation to exposition, exemplification, analogy, cause and effect, and problem–solution, solution–evaluation. all of the common texts found in mechanical engineering literature, as it has been depicted from their answers in the NA.

As far as the listening texts are concerned, they are either recordings that may be found on the web or pedagogical materials designed for the purpose of teaching English for mechanical purposes. In terms of text nature, the selected passages meet the learners' needs and are based on the different aspects of mechanical engineering. The choice of the texts was mainly oriented towards being accessible and of interest to the learners.

The texts do not cover only academic literature and scientific research; some authentic excerpts from the professional literature are also required to be part of the general layout of the course contents. Reports, emails, minutes and manuals shape the materials tailored for the purpose of the studied syllabus. More information about material development will be further provided.

Focusing on the skills, sub-skills, and techniques that were introduced and applied both in classrooms and as assignments is an additional strategy in selecting the materials. An assortment of topics is favoured so as to create a typical but not confined environment for the learners, made up of discipline, academic research, and job-related situations. This diversity will allow learners to be motivated and will help them feel English proficient in a large array of topics within their own discipline.

The writing tasks are the end products of the preceding skills-learning. This skill might be unpopular among the learners' community, as a considerable number of the students have argued against its need in professional life, whereas the experts focused on its importance for both study and professional life. The current syllabus connects both contexts in the task objectives and provides learners with some guidance based on genre analysis to write specific types of texts, beginning with sentence structures. These kinds of tasks can be challenging for students, but they are more than beneficial in preparing them for the professional workplace and its requirements.

A number of topics, listed below, were selected from textbooks in mechanical engineering literature for ESP practitioners and syllabus designers in the field. These topics can serve as written, audio or visual support for the English lessons.

- ➢ Manufacturing and Systems
- ➢ Properties of Materials
- ➢ Dynamics

> ➤ Fuels

> ➤ Fluid Dynamics

> ➤ Aircrafts Specifications

> ➤ Turbomachinery

> ➤ Energy Sources

> ➤ Dynamics and Vibrations

> ➤ Pressure Vessels

> ➤ Specifications and Catalogues for Some Machines and Systems

> ➤ Engine Types and Specifications

> ➤ Troubleshooting

7.1.4. Approaches and Principles to Syllabus Design

In contrast with the approach and the technique, the syllabus figures out the detailed plan which describes what should be included in the English course. It shows the most recommended subjects, language items, tasks, books and soft technologies that both practitioners and learners need for the ESP course. Another important element that a syllabus shows is the evaluation mode to be used to assess the learners' linguistic competence.

All effective syllabi are designed upon a central guiding principle which influences the organisation of knowledge and the teaching-learning approach. In light of this, six main types of syllabi were first proposed by Krahnke (1987) and later elaborated by Nunan (1988) to be adopted in different contexts of ELT and ESP teaching. Later, Nunan (2012) provides a second definition of syllabus design as compared to methodology: traditionally, syllabus design involves the selection and classification of content, whereas methodology is the selection and sequencing of tasks, exercises, and related classroom activities. Metaphorically speaking, syllabus design is concerned with the destination, while methodology is concerned with the route. The following table summarises the six approaches with their main characteristics and typical descriptions.

Syllabus/language focus	Specification	Distinctive items
Structural	Formal language items to be learnt. The order of the items is from simple to the most complex. No communicative usefulness is considered. This type is influenced by the GTM.	List of grammar, lexis and phonological features such as: (passive voice-infinitive vs gerund)-future simple vs be going to. Words & expressions to describe a process. / pronunciation of weak & strong forms.
Notional/functional	based on communicative functions such as requesting, suggesting and agreeing. Notions refer to the concepts & the functions are the communicative purpose to be achieved by learners.	List of notions such as dimension, measurement, size and time. Functions are language forms to fulfil communicative actions.
Situational	based on the language needed for different situations such as meeting- speaking to non-native colleagues- participating in a conference	List of situations including: At the workplace In the hotel In the office Mending machines and ordering spare parts
Skill-based	based on a collection of linguistic competences & specific abilities. Well- determined specific skills by learners. Little need for global and general use of language. Relevance on students felt needs or wants.	List of skills to be performed: Reading a research paper Summarising results Writing a report/memo Understand how texts are organised via receptive skills and be able to produce similar ones in the productive skills.
Content-based	Organised around topics and themes called units. Form of content should be involved in language courses. Richards (2001)	Necessary language tools related to a given topic or theme. Topics such as: Technologies Renewable energies Forms of materials in nature
Task-based	Based on enabling students to perform a series of complex and purposeful tasks in the target language.	Using a list of verbs while describing a process. Talking about technologies using the passive voice. Solving problems using gerund vs infinitive.

Table 7.2. The six types of syllabi and their distinctive features. Adapted from (Krahnke;

1987:10)

According to Krahnke (1987) it is uncommon to use an exclusive type of syllabus for one category of population and in a unique context, and a combination of one or more types is more probable and common among syllabus designers' community. Furthermore, he maintains that task-based instruction is suitable in ESP because learners "have a clear and immediate need to use language for a well-defined purpose" (p.61).

i. *Content and Task-based Syllabus*

One of the merits of the task-based syllabus model is that it provides a variety of assignments for use in the classroom. There are classroom activities that require students to manipulate, comprehend, create, practice, or communicate. The task in this syllabus model is viewed as a means of communication rather than a structure and form.

First, the present mechanical engineering syllabus is content-and task-based, with a focus on skills in problem-solving learning in order to achieve the student's goals in learning English. As can be observed in table 7.2, three zones are highlighted in green to make prominent the reasons for choosing the suggested three syllabi types. The important foci on learners' needs and the designated tasks to improve students' mastery of skills are important factors for selecting the syllabi.

Therefore, mechanical engineering students are expected to do activities such as dealing with troubleshooting issues and finding some possible solutions through roleplaying cards, for instance. Students can also design machines on paper or on the computer using as many words as they are provided with. Understanding authentic materials such as machine catalogues, engineering reports, and industrial designs are also communicative activities that emphasise the pedagogical character of the task and guarantee the real-world task for future engineers.

These tasks and activities are particularly selected to meet the learners' needs for EST learning. They also reflect the fundamental approach to task-based language teaching (TBLT).

Second, this type of syllabus matches very well with content syllabus in the context of EST as they serve the requirements of language teaching in terms of specific content and assignments for the learners' everyday needs. Another necessity to achieve the learner's goals in learning ESP is to understand the content if found in English. Initially, a content-based syllabus (CBS) is meant to teach the content in the target foreign language, according to Richards (2001). However, it is at the close interest of the learners 'needs. In line with this, the original texts and materials written in English are very useful to help learners be familiar with the type of materials used in the future workplace.

Finally, the syllabus tends to be learner-centred as it emphasizes its relevance to students' needs and it is workable with the three features of a task-based syllabus: needs analysis, problem-solving activities, and group work. All of these salient elements serve ESP teaching principles, the reasons for which they are adopted in the present syllabus profile.

ii. The Cultural Dimension

Table 7.2 reveals an evident paucity of cultural and intercultural considerations in all the syllabi types. Despite the important role given to culture in English language teaching, syllabus design over decades still lacks a sense of regard for such an important concept. From a need-oriented purpose, cultural teaching must be considered in the present syllabus for operating, intercultural proficiency and practical use of the language in real-world situations. In fact, intercultural competence is defined as the "awareness of the socio-cultural content in which the concerned language is used by native speakers and of the ways in which this context affects the choice of communicative effect of particular language forms" (Neuner, 1998: 56). The adopted methodology in the present syllabus needs to be culture-sensitive not only concerning native speakers of English, but also that of non-native speakers around the world. Byram and Zarate (1998), the leading figures in teaching culture in ELT, point out:

A learner possessing socio cultural competence will be able to interpret and bring different cultural systems into relation with one another, to interpret socially distinctive variations within a foreign cultural system and to manage the dysfunctions and resistances peculiar to intercultural communication (p.13).

To promote intercultural competence for the learner, some methods and techniques are proposed by Zarate (2004) to promote cultural teaching and that are favoured in the present syllabus, such as group projects, video-based discussions and debates, emails, web conferencing, and blogs. As the practitioner seeks to stress the issue of cultural similarities and differences in workplace settings, he/she can work with his/her students on developing intercultural communication skills via group reflections, improve critical thinking skills and raise the learners' awareness of cultural content and issues. This could be achieved in mechanical engineering topics and discourse practices.

7.1.5. Course Description

The course schedule is suggested to be at least a combination of two sessions a week covering 12 weeks in licence excluding tests and exams, and 8 weeks for master 1 level as planned officially. Initially, the syllabus starts with the rudiments of mechanical engineering definition in English and the related terminology that is frequently used in the field. Students can also work on topics which require typical common phrases and expressions that may be used in their academic research and presentations as well as their professional life communications.

Some EST practitioners, especially those who are beginners or part-time teachers, frequently follow the syllabus already proposed by the Higher Ministry of Education or they even imitate some previous practitioners in the field. Sometimes they can design a new syllabus to meet their learners' needs or to adapt an existing one to the context in which they are

teaching. The provided syllabus may be a helpful document that gathers especially target necessities. Regarding the subjective needs and wants, the EST practitioner may then devote a first-day survey to conduct a NA session by gathering information about his/her students' needs and profiles. He/she will then be able to adapt and modify the syllabus accordingly; for instance, if students are heterogenous in level and proficiency, the teacher will have to consider more general English courses in the first classes.

The syllabus has no unit or activity hierarchy, so the instructor can begin with the unit that best matches his students' level in year 1, year 2, or master 1. This is due to the potential discrepancy in students' levels of English. The tasks in the table are also adaptable in terms of competence level, which means that students can perform and practise at their own pace.

The suggested syllabus is a personal proposition, which attempt meeting the learners' needs. Nevertheless, it is by no means an absolute product to be followed by novice practitioners and it can be always as adjusted and readapted as needed. The included programme does not comprise all existing materials, texts, tasks and activities; therefore, it is followed by further valuable sources and materials to be used by the EST practitioner as a support to the syllabus guide proposed subsequently.

UNIT	Title	Vocabulary bank	Skill Focus	Practicing structures & expressions	Tasks and Instructional activities
UNIT 1	**What is engineering?** (definitions & branches)	Nuclear-steam-engine, kinetics, turbine- goods-power-environmental control- heating-cooling-cap-coat-cycle, continuum, petrology- **words from general with special** meaning (collar-hand- cap-coat-cycle)	**Listening and speaking** **Check** the pronunciation of key words- **Listen** and **predict** content **Listen** and **write** an outline **Discuss** missing information **Make** notes using charts and diagrams	**Present Simple for definition and description** *There+ is/are* *It involves/it is concerned with* *It is about* *It requires* **Conditional type 0** If/when+ present+ present **prefixes & suffixes** (re-en-)	**Listen to** part I once (as in authentic situation) and guess what is the main topic about. **Write down** some key words Make a list of possible ways to take notes **Describe** your specialty from the engineering family tree **Getting information from (lecturer-other students)** **Imagine you** have to report the lecture to a student who was absent
Assessment: Quizzes assignments homework project online assignments					
UNIT 2	**Materials**	Steel-concrete-rubber-iron-alloy-brass-ferrous/ anorganic materials-insulators-silver-copper-polymer materials-mould-rods-hollow-tube-dies-flat-bent-extrusion-elastomer-face-centred cubic hexagonally closed packing-body centred cubic- gliding planes stiffness-	**Reading and writing** **Focus** on properties of materials **Recognize** basic metal processes **Write and exchange** information about materials process **Write a paragraph by listing** about types of materials	**What is it made of?** *is used to* *are manufactured* *is made (of/from/out/with)* *it includes* *it consists of* *is the process by which..* ***Noun formation** from verbs and adjectives -age,-al,-ance,-ence,-ation,-dom,-iety,-ism,-ment,-sion,-ure,-th,* ***Meaning and function of suffixes.*** *e.g. Nouns describing devices*	**Read and match** the words with their definitions **Read and Fill in** the diagram **Write** a summary following a flowchart **Reorder** the words to write complete sentences **Find in** the text…. Synonyms/nouns and adverbs **Describe some provided** structures in 3/5 of metals using the given cues **Explain the differences between**

					A conventional motor and an improved one using the appropriate expressions
UNIT 3	**Fuels and Energy sources**	Fossil fuels-nuclear fuel-renewable energies-lignite-plant-biomass-state of the art-load- gas supplies-liquified gas-transmission In my opinion-In my view- I think/feel that To be honest- I don't quite agree-personally, I don't see why…	**Listening and speaking** Telephoning for information Expressing opinions and (dis)agreement Speak about merits and demerits. **Describe** the types of energy and its intensive factors **Identify** factual and subjective texts	**Present passive voice** **Is + pp** (*generated/fed/delivered*) **Polite/formal request** *with can and could.* *Do/would you mind?* *Sure /I'm afraid I can't.* **Hedges to reach an agreement:** *We could probably* *We might be able to* *I would say* *I think I*	**Make/react** to proposals **Complete** mini-dialogues **Pair-work: Think** *of a project that you need to discuss on the phone and practise turn taking.* **What do you think tasks?** *Power industry/gas supplies/gas and oil crisis.* **Complete** the text with the correct form of the passive voice. **Group work** *Read a newspaper article about gas crisis and discuss the main issues.* *Read what people say about fuel & energy sources*
Assessment: (papers and drafts, projects, presentations), tests, quizzes, and exams.					
UNIT 4	**Engineering and Computer Aided Design**	Operating device Computer aided design CAD/computer aided manufacturing (CAM)-three dimensional Design prototype-draft-plan-	**Writing and reading** **Work** with technical drawing tools **Discuss** dimensions and precisions **Describe** design steps **Resolve** design problems	**Ordering information** **Preposition(s)/object of preposition** **To fill in a description with prepositions** *on-in-of-from- for-by-with-around-behind-at-under-*	**You work at an engineering firm. Write** a memo about: Types of pressure vessel model Testing prototypes and Measurements Recommendations **What is meant by scale on a drawing?** In pairs, explain how a scale rule, like the one shown in a picture, is used.

| | | schematic-cutaway view-deconstructed view-network-ducts-scale-simulation-pressure vessel system- fan door lock and sensor pump, motor, input, output, control, switch, feedback up/downwards | Describe CAD/CAM systems

Giving examples and details

Reading a diagram **Explaining** a diagram

CAD Vs traditional approaches: listing the advantages | *beside-into-out of- to-above-along*

Articles: a-an-the *This/that, these/those* • Plurals • *Some, any*

Using adverbs for an accurate design description

If/Unless sentences *to describe a machine process* | **You are engineers on a project** to design the metal handrail that will run around the perimeter of the top, outdoor deck of a large cruise ship. **In pairs, discuss what drawings you will need to** produce for manufacturing and installation with regard to the following issues: The types of view that will be required and what each one will show the approximate scale of different drawings and views |
|---|---|---|---|---|---|
| **Assessment:** special projects, reflective assignments, research papers, case studies, presentations, group work | | | | | |
| **UNIT 5** | **What is English as a Lingua Franca?** | ENL- ESL-EFL- ELF-VOICE Native -non native New Englishes-Lingua franca core expansion, emergence, underpinnings, concentric circles, approach, primary -variety-globalisation Inner- outer-globish expanding-Intelligibility-comprehensibility | **Reading** a text about the expansion of English and discuss the role of ELF

Native and non-native speakers of English across the world

Speaking: Define the different varieties Discuss reasons of ELF emergence

Listening to different excerpts of native and | **Listening** to different pronunciations of /ð/ & /θ/

Use and absence of third singular /s/ concord in the simple presents

e.g. She **like** the news (Philippines)

SV order in native and non-native speakers of English | **On the World Englishes map, put** three different coloured circles to identify the English varieties (ENL-EFL-ESL). **Discuss the role of ELF** in pairs or groups: 1. *Who speaks English today? Where is English spoken today?* 2. *When do you speak English?* 3. *Why do we call English a global language today?* 4. *What is standard English? Who speaks standard English?* **Describe the differences and similarities** between the inner and outer circles of English. |

		Interpretability	non-native speakers of English	Displacement of subjects and verbs in different cultures Arabic- French-English	Discuss the advantages (or disadvantages) of being a native/non-native speaker of English.
Assessment: Class discussion, video feedback, presentations					
UNIT 6	**Mathematics & Measuring**	**Measuring tools:** fixed jaw | movable jaw | depth bar | vernier scale | slider | inside jaws | main beam (bar) | scale | clamp screw | outside jaws *vernier calliper* metric *talking about numbers* is, equals, comes to, and, plus, add, minus, less, subtract, times, multiplied by, over, divided by, hundred, fraction, root, decimal, formula, ratio of, proportion factorial, percent cosh x/ shine x ratio,	**Reading and Writing** **Convert** imperial to Metric system **Write** basic quantity units **Express** units of measurement as numerals (*3 miles*, *45 cubic feet*, *9 meters*). **Use** passive voice in scientific writing **Punctuate** numbers and sums **Interpret** mathematical symbols and operations **Learn words** to express a formula or represent a constant **Make comparison** and contrasts using the cues in the table	**Numbers:** how to say large numbers Cardinal **Vs** ordinal numbers **Comparative and superlative with short/long adjectives** *(Much, not much)) greater than/ less than/ equal to Varies as Proportional to/ (not) similar to To the n; to the nth;* **Active Vs Passive** am/is/are+3rd form/ pp am/is/are+being+3rd form /pp may/can/might/should+be +3rd form/ pp	**Choose one of the tools from the pictures** and describe it in terms of its material, its appearance and what it is used for. Your text should be between 60 and 80 words long. **Write an email** to a co-worker describing the dimensions of some spare parts that you want to order. **Use iFake text Message (see sources)** to write some messages to your co-workers about: What you've done so far What to do the next day Special recommendations **Have a look at the pictures** of the various measuring tools and label them with the words from the box. **Have a look at the sentences** and match the correct verb from the box with its definition of the appropriate tool

Assessment: Peer to peer feedback, critical feedback, individual presentations and group feedback

| UNIT 7 | Writing Scientific Texts Genre | **Reporting verbs** Expose, initiate, glean Expound, suggest, estimate, state, report, affirm, claim, Elucidate, dissect, proclaim, assume, deduce, acknowledge maintain

 Transitional words First of all, to start with, second, then, next, after subsequently, eventually, also, additionally, furthermore, moreover, notably, As a matter of fact, In fact, thus, hence | **Reading & Writing**

 Compare different types of texts

 Identify formality from different excerpts

 Compare *two journal articles*:
 Compare the words and expressions
 Sort out the texts' features

 Write with precision: *Exactness & clarity* ***Replace*** *common words by academic expressions:* | **Scientific Use of tenses**

 present tense indicates general knowledge and general principles

 past tense indicates results of experiments and specific observations

 Formal grammar and style *But---however* *Start----commence* *Go up ---increase* *Check --verify* *Get --receive* **Phrases and short clauses**

 Sentence Vs Run- on | **Pair work:** Study the purpose and formal features of the texts

 Which of the underlined words would be more suitable for an academic paper?

 Transform the sentences from active to passive

 Replace /Find more formal words or phrases to replace those underlined

 Use different sources to report research findings

 In pairs, do some particular research in English about the current project you are working on / MECHATRONICS and tell your mates about your findings |

Assessment: practical exercises, oral presentations, group projects, class discussion, *writing as a form of assessment*

UNIT 8	Safety Measures in the workplace	Precautions-hazard-troubleshooting - glove goggles-hock-prohibited-first aid-fire extinguisher-Safety gear-safety glasses-steel toe boots-leather gloves-safety helmet Rubber mat-arc shield- hard hat-hot stick-arc flash blanket-arc flash clothing highly flammable harmful explosive corrosive oxidizing, toxic grinding and cutting	**Listening and Speaking** Safety signs and equipment **Listening:** *safety rules and accident procedures; dialogues about safety equipment and how to prevent accidents* **Explain** safety features of equipment used at work **Understand** a description of a workplace accident **Complete** a form **Report** a workplace accident **Complete** a risk assessment form **Making safety rules:** *use of imperative and modals*	**Imperative/ Modal auxiliaries** Must; mustn't / have to don't have to Need/ needn't **Giving commands and impersonal instructions** *simple past: statement, negatives and short forms Use of modals for emphasis* **Conditional type 0, type I** *Instruction If you need to turn it on press 1 Before you start….. you must….*	**Discuss in groups** Some of the hazards in workplace and the precautions that should be taken The risks that engineers may take while working **Using safety poster** present in pairs the represented regulations and standards **Discuss** the pros and cons of different materials. **Listen to** a safety meeting & Safety training Oral instructions and **rewrite t**he precautions using the correct modals **Read** Live line maintenance Helicopter safety on oil platform
Assessment: Matching- cloze passages Quizzes assignments homework project online assignments					
		Courteous, letter wizards, layout, template, standards, Fonts, tone, formal/informal, block format,	**Listening and speaking** *Cultural differences across Europe. (The case of French English)* **Formal /informal style**	**Interrogative form** In simple present and simple past **Use of (WH)**interrogative adjectives	**Group work:** Using the guidelines, work on a presentation on how to respect your reader's nationality and ethnic/racial heritage *Make sure not to select the same points*

UNIT 9	Meeting workers from another country	salutation, body, complimentary close, headquarters, department, branch, boss, division, employee, employer,	**Letter & email** protocol for international readers **Guidelines** for Communicating with international readers **International Measurements:** *dates, distance, numbers, weight and volume in different cultures*	**Will Vs going to:** study the difference Positive/negative form Question and long answer **Heteronyms:** difference in General English words and other varieties	*Pair work:* Write appropriate inside addresses and salutations to (a) a woman who has not specified her marital status; (b)a Chinese engineer speaking little English; (c) a professor at your school; (d) an assistant manager at your local bank; (e) a member of your team. **Individual work:** The following sentences taken from letters are discourteous, boastful, excessively humble, vague, or lacking the "you attitude." Rewrite them to correct those mistakes and make more professional.

Assessment: class discussion, oral and video presentations, online assignments

UNIT 10	Skills and Qualifications/ Your Job	Consultant, clerk, job/work, to manage, chairman/woman FAQ, IMs, memo, workplace, greeting, Junk email, netiquette, flag words, ethics, protocol, tactful, forward, transfer, Recipient, attached file, headings, timely, alert, issue, streamline,	**Speaking & writing** Talking about skills and experience **Writing Routine Workplace correspondence:** *Memos, Emails, Blogs, Instant Messages IMs Phone calls*	**Simple past Vs present perfect** **Regular / common irregular verbs** (REMINDER) Use of ago, last, in (date), **Vs** Since, for,	**As a group activity**, write an IM to two or three other members of your collaborative writing team on a project you are working on. Print out your IM exchanges during this time and submit them to your teacher. **Write external blog** posts for three or four days about some aspect of your current job or a previous job in which you share with readers news about your company's products/services, technology you are using, professional travel,

		synchronous, asynchronous, enquiry, reply, prompt, request, apology/apologize / incoming/outgoing calls. Extension/put through, busy, engaged (line)	**How to get a job:** searching, preparing, applying, and interviewing **Writing keys for** a C.V. and an application for a job **Difficulties** in writing a CV **Writing** a meeting minutes and out of office messages	**Some basics** in punctuating sentences and paragraphs. **CV layout and typing**	community service, working with international colleagues, and so forth. Be sure that your posts put your company, department, or agency in a good light. **Match personal** characteristics to interview questions **Write a paragraph** assessing your strengths and weaknesses as a student in mechanical engineering
Assessment: simulations, oral presentations, role plays,				

UNIT 11	**Tables and Graphs**	Data, display, pie chart, bar graph, line graph, grid, tables, records, results, figures, scale Variables, rates, percentages, lowest, highest, report, pictorial view, fluctuate, decline, flat increase, decrease, sharply, steadily, Parallel, intersect, symmetrical, balanced shape, Changeable amount	**Speaking and Writing**
			
			Information displayed in tables
			Information displayed in charts
			Gathering and presenting data
			
			Reporting an experiment
			
			Diagram Labelling
			Reporting the findings
			
			Describing a process
			    Sequence the stages
			    Locate the stages
			    Describe what
			    happens at each
				Types of sentences: Simple, compound, complex
				
				Conjunctions: coordinating conjunctions & correlatives
				
				Working with **FANBOYS**
				
				Expressing cause and contrast
				
				Because/since/as
				&
				Whereas/in contrast/whereas/ different from
					Read the passage and label the given diagram
					
					Observe the graph and table *which give information about fuel use worldwide and oil consumption in two different countries.*
					Summarise the information by *selecting and reporting the main features, and make comparisons where relevant.*
					The diagram shows how a central heating system *in a house works. Summarise the information by selecting and reporting the main features*
					The diagram displays *the metal structure and measurements.*

		To figure, to evaluate, to compute,	stage		*Write a report describing the information shown*

Assessment: individual projects and presentation self and peer- feedback,

UNIT 12	**Robotics and automation**	**Common verbs in engineering** *Lower, raise, heat, Release, compress, reduce, increase,* ***Robots:*** *Component, power supply, manipulator, Digital converter Linear, rotational, Rectilinear, involved, Constraints, Scallops, joints, side view, plain view, anthropomorphic, Mechanical wrist, Pitch, yaw, roll, Plotters, stepper motor, magnet, stator,*	**Reading** Identifying topic development with a paragraph using the internet effectively Evaluating internet search result **Learning fixed phrases** from mechanical engineering Using research questions to focus on relevant information **Using topic sentence** to get an overview of the text	**Plural of words of Greek and Latin origin** **Agreement between pronoun and antecedent (Referent)** **Parts of speech:** *NOUNS and ADJECTIVES in scientific English* **Multiple meaning words e.g. Valve, fighter,** **compound NOUNS**	**Read the text and complete the tables** Type/advantage/applications **In pairs:** Design a brochure of a product that you manufactured to explain its function and use read it to the whole class **Information-gap Tasks**: from the suggested texts in the unit Students watch a video on a latest design of a robot and are asked to exchange opinions, **Using DVD materials or video** clips to improve comprehension and language skills.

Assessment: special projects, reflective assignments, research papers, case studies, presentations, group work

		Fly-by-wire system Flight, aircraft, Bulky pumps, Hydraulic system, Fleet, Servo valves,	**Listening and speaking** **Making** effective contribution to a seminar	**Phonology** (focusing on the discrimination and production of English sounds and their differences from those of Arabic and French)	**Employ the learnt terms** to explain the modern functions of aircrafts **Problem-solving Tasks:** Your company supplies faulty goods or if there is a delay in

| UNIT 13 | Aeronautics and Aircrafts | Actuators, Wings, servo tab, Control stock, pulleys, elevators, override, cockpit, redundancy, high pressure system

Parts of an airplane Radome, landing gear, fuselage, nacelle, leading edge, spoilers, flaps, wing tip, slats | Referring to other people's ideas in a seminar

Agreeing/disagreeing

Preparing and taking part in a seminar discussion

Summarizing and reporting in a seminar discussion

Reporting people in general English
            Vs
Citing in academic English | **Making and acknowledging apologies**

 I'm sorry that
 Sorry about
 I/we apologize for
 We regret
        Vs
That's alright. / OK. It's not a problem.
Don't worry about it.
No problem,

Reported speech
Simple present, present perfect, future | providing a service or meeting an order, you may have to apologize to the customer. We can apologize face-to-face, by phone, or by email using the expressions and finding a solution to this inconvenience **Watch a video about an issue in maintaining an aeroplane** Do you think the engineers made the correct decision? What would you do instead? **Problem-solving task** Each of the students picked one problem an aircraft might encounter and had five minutes to prepare as many possible outcomes of that malfunction as possible. |
|---|---|---|---|---|---|

Assessment: individual projects and presentation self and peer- feedback, test or homework

| UNIT 14 | Manufacturing Techniques | Machining , workpieces, holes, grooves, threads, swarf, chips, Milling, lathe, blade, kerf, saw, hacksaw, Abrasive wheels, drilling, drill bit, Grinders, toothed, Guillotining and punching, Flame-cutting, spark-erosion, waterjets, Anchors, embedded,

 Attached, connected, fixed, fastened, held, joined, bolts, nuts, spanner, washer, welding, brazing, soft/hard soldering, stress and strain, stretching, tension, twist, deflect, bending stress, | **Reading and Writing**

 Replace the underlined words and expressions with alternative words and expressions

 Translate some expressions and parts of texts to the source/target language

 Compare the use of nouns, verbs and adjectives in the two languages

 React and participate in blogs' comments

 Complete a scientific article and summarize it.

 Making words combination (noun-adjective / Adjective noun) e.g.
 Energy stored
 Energy converted
 Potential energy
 Mechanical energy | **Verbs** for manufacturing operations

 Modifiers: misplaced Modifiers

 affixes such as *-free, -less, -like, and -wise-able--dom, -ess, -ation, -ness, -ize, -ly*.

 Technical abbreviations of scientific terms and acronyms

 Abbreviations in writing: cf. e.g. et al. Fig. ibid i.e. K. op.cit.

 Parts of speech/ lexical categories

 Expressing result and consequence

 Time clauses: using as, when, until, after | **Students work in pairs** to produce a list of bullet points covering what they each consider to be key developments in the history of manufacturing. Then use connectors to produce coherent and cohesive text.
 Use the words in the box to complete the text about bolted joints, taken from a bolt **supplier's website**.

 Complete the extract from a technical document about welding using the words in the box.
 Think about the different techniques used for welding metals in the industry you work in, or **in** an industry you know about. **In** what specific situations are different techniques used, and why are they suitable?
 The question below, which was posted on a forum on a construction website, contains a mistake about a technical fact. Can you find the mistake? |
| Assessment: Matching- cloze passages Quizzes assignments homework project online assignment ||||||

| UNIT 15 | The amazing world of Englishes | Have=hav Friday=fri Good=gd, From=frm Night=nite The=da Because=coz Received Pronunciation, cockney Trilled, rolled

Meat is there, vegetables are there, bread is there = There is meat, there are vegetables, there is bread *I'm sure an explanation is there= I'm sure there is an explanation* | **Listening and writing**

Recognize types of variation in forms and its origins Afro-American, Irish

Spelling in formal writing **Spelling** in informal writing

Recognize type of variation in pronunciations

Absence or presence of **/t/** Pronunciation of **/r/& /l/**

Translating passages from L2 into L3 | **Confusion** between countable and uncountable nouns

Difference in marking the past tense in some World Englishes: *the case of Chinglish*

Discourse style **Cultural differences** in greetings and apologizing

Lexical categories deletion in some variations *Object deletion* *Pronoun deletion* *Omission of articles* ***Key questions to be considered for use analysis:*** *What does it mean?* *What grammatical rules are being followed? When might it be used?* | **Pair work: read some samples of authentic emails (**received from the expanding circle countries) and identify the possible deviations in the English use **Discuss with your teacher** *the comprehensibility of the messages* **Provide the students with a list** of deviations from standard and ask them to classify them as ***Unclear/inappropriate/clear but unusual*** **Individually**, the students are asked to write an email to a friend who is overseas in the most natural(informal/casual) style. **In groups the students discuss** the type of greetings, specific words choice and other cultural issues. **Variants:** translate the email into Arabic or French and discuss if this type of mail could be sent officially to a colleague. |
| **Assessment: In class, Online or homework. E.g.** In a comment, discuss which kinds of non-standard features (pronunciation, grammar or words and phrases) might cause the greatest difficulties in communication between native speakers of English and German speakers of English. (Write a minimum of 200–300 words!) ||||||

Table 7.3. English for Mechanical Engineering Syllabus Map

7.1.6. Syllabus Selected References and Further Readings

Table (7.3) is studied and organised taking into account the learners' needs collected from the present study survey. Therefore, the EST practitioner is invited to use the following references in order to enhance further texts, dialogues, activities, videos, podcasts, tasks, and grammar structures suitable for students who are involved in vocational and technical education. Other references concern ELF practical teaching, as including all aspects of ELF in the syllabus mentioned above.

Textbooks

Aich, F. & Tomlinson, J. (2013). *Lectures: Learn Listening and note-taking skills*. Collins.

Bailey, S. (2011). *Academic Writing: A Handbook for International Students*, Routeldge.

Bowden, J. (2004). *Writing a Report: How to prepare, write and present effective reports*, Howtobooks.

Campbell, S. (2009) *Express Series: English for the Energy Industry*, Cambridge OUP.

Dearholt, J. D., (2013). *Career Paths: Mechanics Books 1-3,* Express Publishing.

Dunn, M., & Howey, D. & Ilic, A. (2010*). English for mechanical engineering in Higher Education Studies with Audio CDs (2): Course Book*, Garnet Publishing Limited.

Glendinning, E.H., & Glendinning, N. (1995). *Oxford English for electrical and mechanical engineering*, OUP.

Glendinning, E.H., & Pohl, G. (2009). *Oxford English for Careers: Technology 2: Student's Book*, OUP Oxford.

Halliday, M.A.K., (2004). *The language of science*, Continuum.

Ibbotson, A. (2008) *Cambridge English for Engineering Student's Book with Audio CDs (2),* Cambridge Professional English.

Ibbotson, M. (2009). *Professional English in Use: Engineering*. Cambridge University Press.

Lambert, V.& Murray, E. (2003). *English for work: Everyday technical English*, Longman.

Liold, C. & Frasier, J.A. (2012). *Career Paths: Engineering*, Expressed Publishing.

Mavrow, C., (1994). *Writing in Engineering: A guide to communication*. Mc Graw Hill.

Morgan, D., & Regan, N. (2008) Take-off technical engineering for engineering, Garnet

Education.

Murray, N., & Beglar, D. (2009). *Writing Dissertations and Theses*, Pearson Longman.

Paterson, K., (2013). *Oxford Grammar for EAP: English grammar and practice for academic*

purposes with answers, OUP.

Schofield, J. (2012). *Workplace English: Get ahead with everyday business English*, Collins.

Sopranzi, S. (2012). *Flash on English for mechanics, electronics & technical assistance*, ESP

SERIES, ELI.

Tebeaux, E.& Dragga, S. (2015). *The Essentials of technical communication*, OUP.

Timonshenko, S. & Young, D.H., & Rao, J.V. (2007). *Engineering mechanics*, Tata Mc Graw

Hill.

Van Aken, D. C. & Hosford, W. F., (2008). *Reporting results: A practical guide for*

engineering and scientists. Cambridge University Press.

Wallwork, A. (2013). *English for academic research: Writing exercises*, Springer.

Wallwork, A. (2014). *User guides, manuals, and technical writing: A guide to professional*

English, Springer.

Wordlists and Dictionaries

The following lists collect terms from different scientific domains, mainly industrial and mechanical engineering:

Academic phrase bank: https://www.phrasebank.manchester.ac.uk/

Academic Word List words (Coxhead, 2000)

Basic Engineering List (BEL), (Ward, 2009)

Hsu, 2014 Engineering English World List (**EEWL**)

Markov, A.S., & Romanov, A.S., (1984). Dictionary of Scientific and Technical Terminology (English, Russian, French German), Springer Science.

The Arabic-English Dictionary of Mechanical Engineering, Academy of Arabic Language Cairo, 1998.

ELF & ESP Corpora

VOICE. 2013. The Vienna-Oxford International Corpus of English (version 2.0 XML).

British National Corpus (BNC) https://www.english-corpora.org/bnc/ (accessed 14July 2021)

(Offering insights into variations of English)

English as a Lingua Franca

Around the World. Routledge London and New York.

Baratta, A. (2019) World Englishes in English Language Teaching, Palgrave Macmillian.

Bech, K. & Möhlig-Falke, R. (2019). Grammar Discourse Context: Grammar and Usage in Language Variation and Change. De Gruyter.

Mackenzie, I. (2014) English as a Lingua Franca: Theorizing and Teaching English, Routledge.

Melchers, G. & Shaw, P. (2003) World Englishes: An Introduction, Hodder Education.

Ref-N-Write English Academic Bank (Written & Spoken) https://www.ref-n-write.com

Siemund, P. & Davydova, J. (2012). The Amazing World of Englishes: A practical Introduction, De Gruyter Mouton.

Trudgill, P. & Hannah, J. (2013) International English: A guide to the varieties of Standard English, Routledge.

Trudgill, P.& Hannah, J. (2017). International English: A Guide to Varieties of English

Some Guides to Cultural Diversity

Axtell, R.E. (2007) Essential Do's and Taboos: The Complete Guide to International Business and Leisure Travel, Jhon Willey &Sons.

Carte, P. &Fox, C. (2005) Bridging the Culture Gap: A Practical Guide to International Business Communication, Kogan Page.

Dresser, N. (2005) Multicultural Manners: Essential Rules of Etiquette in the 21st Century, John Willey & Sons.

Peterson, B. (2004) Cultural Intelligence: A Guide to Working with People from Other Cultures, Intercultural Press.

Thomas, D.C. (2004) Cultural Intelligence: People Skills for Global Business, Berret-Koehler.

Webpages and Blogs

These links provide the learners with videos and a possibility to be part of a community of practice. The discussions are about major topics in mechanical engineering.

https://www.careerexplorer.com/careers/mechanical-engineer/

https://www.facebook.com/mech.eng.world

https://www.facebook.com/ana.muhands

https://www.facebook.com/Mechanical-Engineering-250261838764156

https://www.facebook.com/Mechanical-engineering-103181565193078

https://www.facebook.com/Mechanical-engineering-2192859754167881

https://mechanicalengineeringhq.com/

https://www.truecadd.com/mechanical-projects.php

Journals

https://www.sv-jme.eu/view-articles/

https://journals.sagepub.com/home/ade

https://academicjournals.org/journal/JMER

Podcasts

https://www.listennotes.com/search

This engine search allows the ESP practitioners find a range of podcasts related to the topic they are working on., for example:

Robotic Reaction – Giuseppe Loianno,

Electrical and Computer Engineering & Mechanical and Aerospace Engineering.

Microscale Manufacturing – Rahul Panat, Associate Professor, Department of Mechanical Engineering at Carnegie Mellon University –

An Overview of Modern Manufacturing and Technology's Important Role. (taken from the source mentioned above).

7.1.7. Materials Samples and Teaching Methodology

Materials for the course will be based on mechanical engineering textbooks and articles taken from online journals as previously mentioned. Furthermore, PowerPoint slides and YouTube videos are paramount materials to be used in the EST course. Additional authentic materials such as emails, reports, minutes and catalogues are added to the syllabus. Another useful and motivating material is the use of electronic software such as **iFake Text Message** (figure 7.1).
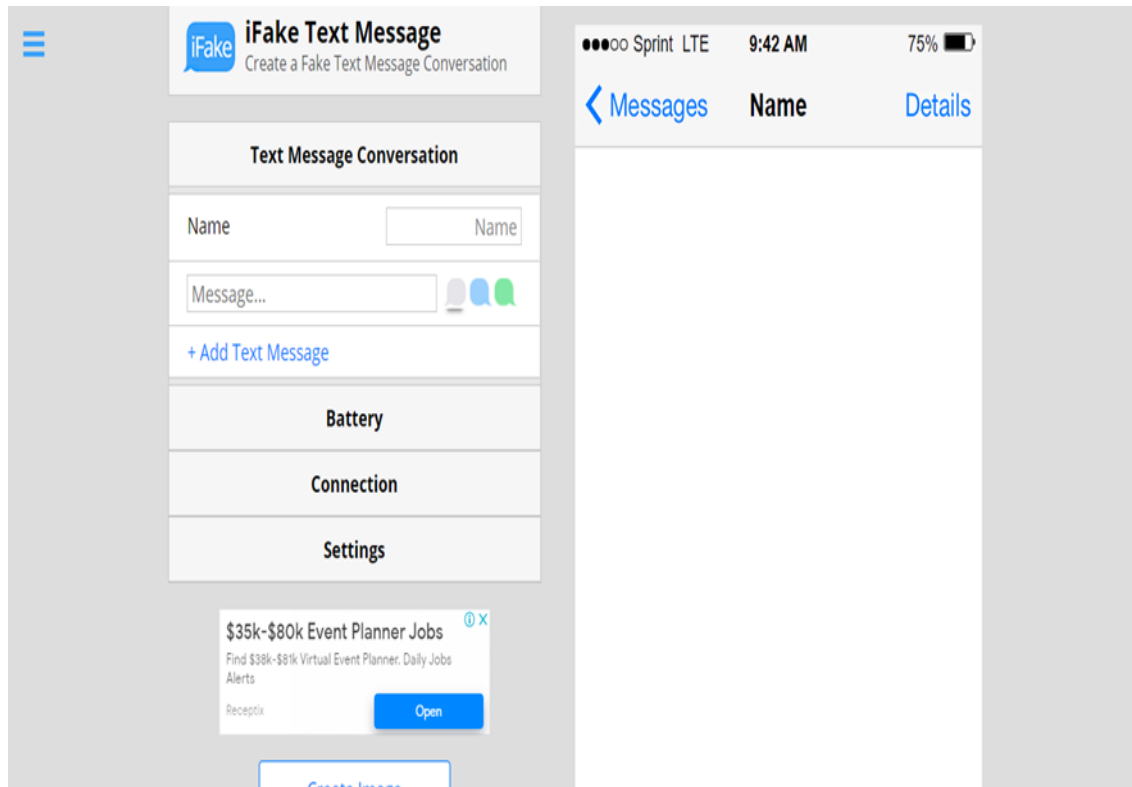
Figure 7.1. Screenshot of **iFake Text Message** software.(https://ifaketextmessage.com)

This software is a helpful communicative device to simulate some workplace situations for the learners and to reproduce authentic situations in writing professional messages and evaluating the learners' communicative proficiency. This technique is mentioned in table (7.3) as a tool for some assignments. The figure represents a screenshot of the software taken from the link mentioned above.

Figure 7.2 below is a screenshot representing a link where samples of emails and recorded speakers from different parts of the English-speaking world are available to use as sources for discussion and comparison activities about the ELF and SE differences.

Figure 7.2. Screenshot of IDEA webpage (http://web.ku.edu/~idea/)

By clicking on the favourite region, the learner can discover the countries and can select

a number of various speakers' recordings, they are described in terms of age, place of birth and

other personal information.
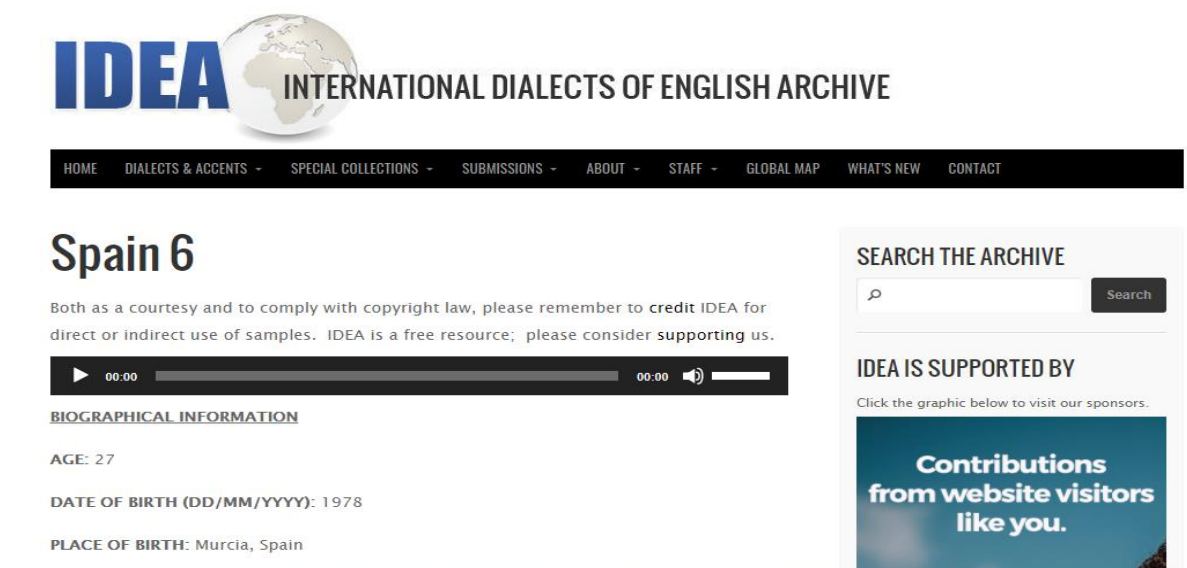
Figure 7.3. Screenshot of the selected speaker's recording (http://web.ku.edu/~idea/)

The webpage makes at hand various listening recordings of native and non-native

speakers, talking about different topics. Hence, the learners can, while listening, identify

different origins and different use of English words and grammatical deviations in each

presented case.

As far as culture is concerned, if in technical branches, culture is not part of the daily routine of the EST practitioners, there is a smooth transition to integrate some cultural notes and a "Did you know?" corner into every end of teaching skill, as displayed in the figures below. The three models are instances of how to integrate culture into a unit, if teaching a complete unit about culture is time-consuming.

DID YOU KNOW?

In English-speaking cultures, being polite is very important; this particularly applies to communication in business. For example, the phrase 'I was wondering ...' can be used for requests, as in 'I was wondering if you could send the information again.' Phrases such as 'I'm afraid', 'Well actually', and 'Unfortunately' are used to introduce something negative or make complaints. Look at these examples:

May I smoke?

Well actually, it is forbidden in this building.

I'm afraid the last bill was not accurate.

Not using such phrases can be seen as being too direct.

Figure 7.4. Sample of integrating culture in an ESP lesson (Taylor & Zeter, 2011:6)

The culture box can be integrated into the page corner so as to add light cultural information within the syllabus and create a smooth and homogenous learning environment with purely ESP lessons. The other samples displayed in figure 7.5 and figure 7.6 are presented in the form of tasks to involve the learners in being part of the international English-speaking community.
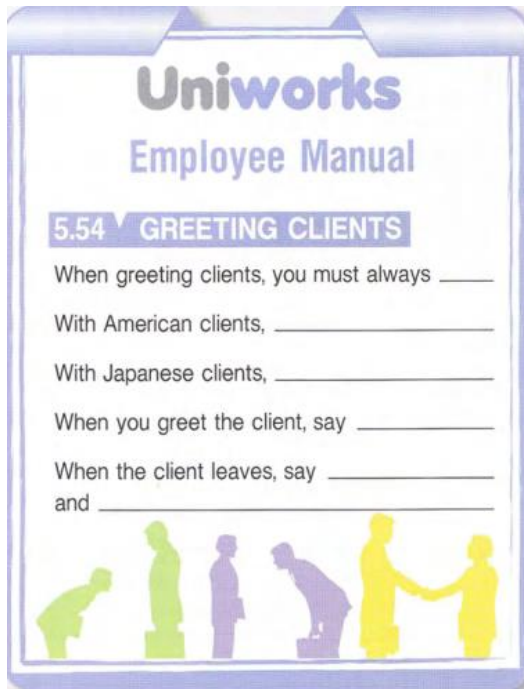
Figure 7.5. Greeting's etiquettes task   **Figure 7.6.** Origin of words task
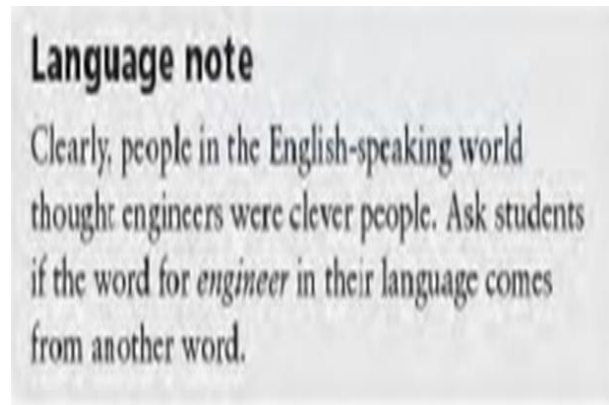
Source: Taylor & Zeter, 2011:11-16)

Authentic materials designed for professional or commercial purposes may provide real exposure to learners. They are additional materials to the pedagogical ones, created for the purpose of classroom activities. Hence, the EST teacher can select some texts from brochures and magazine pages to use as support for teaching. Figure 7.7 is a page taken from a machine design issued in 2015. It is an interesting task to assign the students to work in groups and simulate the advertising and create another with their "part, engine, machine" they would like to produce and promote. The magazine page contains a design, an advert, and text to be used to advantage pedagogically, and it targets both the professional and non-professional audience.

Figure 7.7. Sample of authentic materials to be used in the ESP course. (Machine Design

        Magazine, 2015)

One of the main purposes of the present thesis is to modernize and focus more on the

communicative aspect of the ESP syllabi devoted to the technical branches. Therefore,

enriching the learners' background with a list of terms cannot be efficient unless it is presented

in a task that helps learners use these terms communicatively. Figure 7.8. and Figure 7.9. show

the types of communicative tasks that are useful for the discussed purpose.

Vocabulary and speaking

1   Complete the words for parts of an engine by filling in the missing letters.

   a p___p_ll_r   **c** exh___st   **e** sh___t   **g** t_r___ne   **i** in___ke
   b g___rb_x   **d** c___b_s_i_n   **f** ch_m___r   **h** c___pr_ss_r

2   This is a cutaway diagram of a gas turbine engine. Work with a partner to put the
     words from Exercise 1 in the right places.
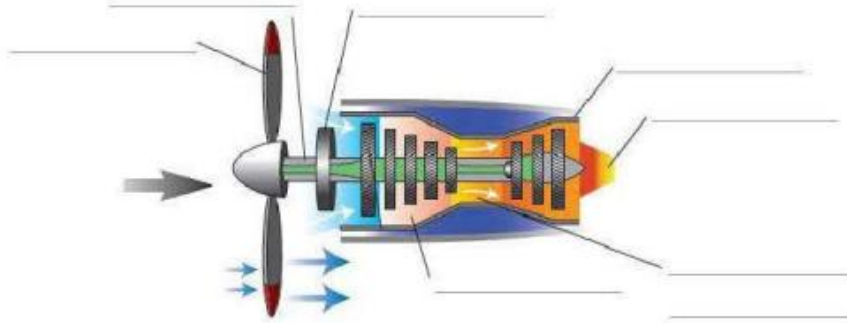
3   Look at the path of the arrows through the engine. Discuss with your partner what it
     shows. Use these expressions.

   air goes into   push the turbine blades
   the compressor acts on the air   the propeller uses the power
   the air is mixed with fuel   the exhaust gases go out
   the hot gases drive the turbine

Figure 7.8. Sample of communicative tasks to enhance vocabulary and speaking (Morgan &

        Regan, 2008:65)

Speaking and writing

1   In pairs, talk about the properties of aluminium which make it suitable for these products.

2   Write a sentence for each of the objects in the pictures. For example:
     Aluminium is good for making windows because it is tough and durable.

Figure 7.9. Sample of communicative task to enhance "expressing cause" in writing. (Morgan,

        & Regan, 2008:70)

7.2. Integrating ELF into English for Mechanical Engineering Syllabus

In light of associating workplace research with higher education pedagogies that help ESP learners point at authentic use of English, previous findings collected in the Algerian workplace contexts (p.29) are suggested to be used as additional sources to the ones included in the syllabus references.

7.2.1. Authentic ELF Integration Collected from a Professional Algerian Context

These ELF instances are authentic constructions used in an Algerian professional situation. The ESP practitioner can make use of these genuine typical constructions for the purpose of awareness-raising and aiming at projecting the real-life situation in mechanical engineering English classroom. The table below summarizes the typical constructions to be used in the ELF unit course or it can be incorporated briefly in each unit to reinforce the students' background.

<div style="border:1px solid black; padding:10px;">

Deviations in the use of tense

"Can't be eat up" (China/Spain)

"I will delivery the mould and moulds after received your payment" (China)

"Andy check with the bank details and reply you asap tomorrow" (China)

"We start manufacture samples of long neck bottles for your attention" (Turkey)

"there is problems" (Turkey/ China)

I sent /send the parts (China/Spain)

"On the 23th we start manufacture samples of long neck bottles for your attention." (Turkey)

"Spout standing pouch is very fit for the packagings of the flavoring and the product which can be eat up at once after open" (China)

Subject concord

"We offers" (Spain) "You is placing" (China)

"It demand" (Turkey/ China)

"Regarding the shipments of the good, I'd like to ask you why the good don't goes through Ghangzhou? because we have other products, that we gather and ships together from Ghangzhou." (China)

</div>

Mechanics

"the chang" , "liguid" , "bagrow". (China)

We paasivly products same samples of yours" (Spain)

Word /Sentence Order

"Rinse your head and retain half hair conditioner. If it is dry you will cause it to frizz",

(Spain)

"To detangle your hair, from the end you start at the roots of the hair". (Spain)

Length/Absence of punctuation

"According to the characteristic of fan-coil air-conditioning systems you require cooling formula of fan-coil units based on the heat transfer and gauge cooling system which can monitor the individual air-conditioning cooling consumption during a period of time by detecting

the parameters of inlet air condition –temperature and humidity – of the fan-coil air-conditioning system as well as the parameters of inlet cooling water provided by chiller." (China)

Pragmatics and culture

Absence of receipt of acknowledgement

Familiarity:

"I miss you" (China)

"Can you send me a picture of you?" (China)

"You found a wife?"

"I want to imagine your life there."

Use of "Later" or "Very soon" as indeterminate by time.

Chronological carelessness in sending commercial documents.

Different conceptions about "colour terms"

Different use of

"Hope you are well,", "Hope business is well," , "It is very nice to hear from you, »

"It has been so long that we haven't heard about your news"

Table7.4. Collected instances of workplace deviations from Standard English (Benaouda,

2012)

The aforementioned data can be a valuable resource for teachers who are able to tailor their teaching practices according to their learners' needs. Similar examples can be utilised from ELF Core features collected in VOICE and BNC.

7.2.2. Creative ELF Activities Integration

Charts and maps can be the starting tools to place English NSs and NNSs according to their country of origin. For instance, the map displayed in figure 7.10 can be used as a starting basic activity for ESP learners to become acquainted with English as a Native Language (ENL), English as a Second Language (ESL), ELF, and can also be a communicative activity that raises learners' interest and encourages them to speak in groups.
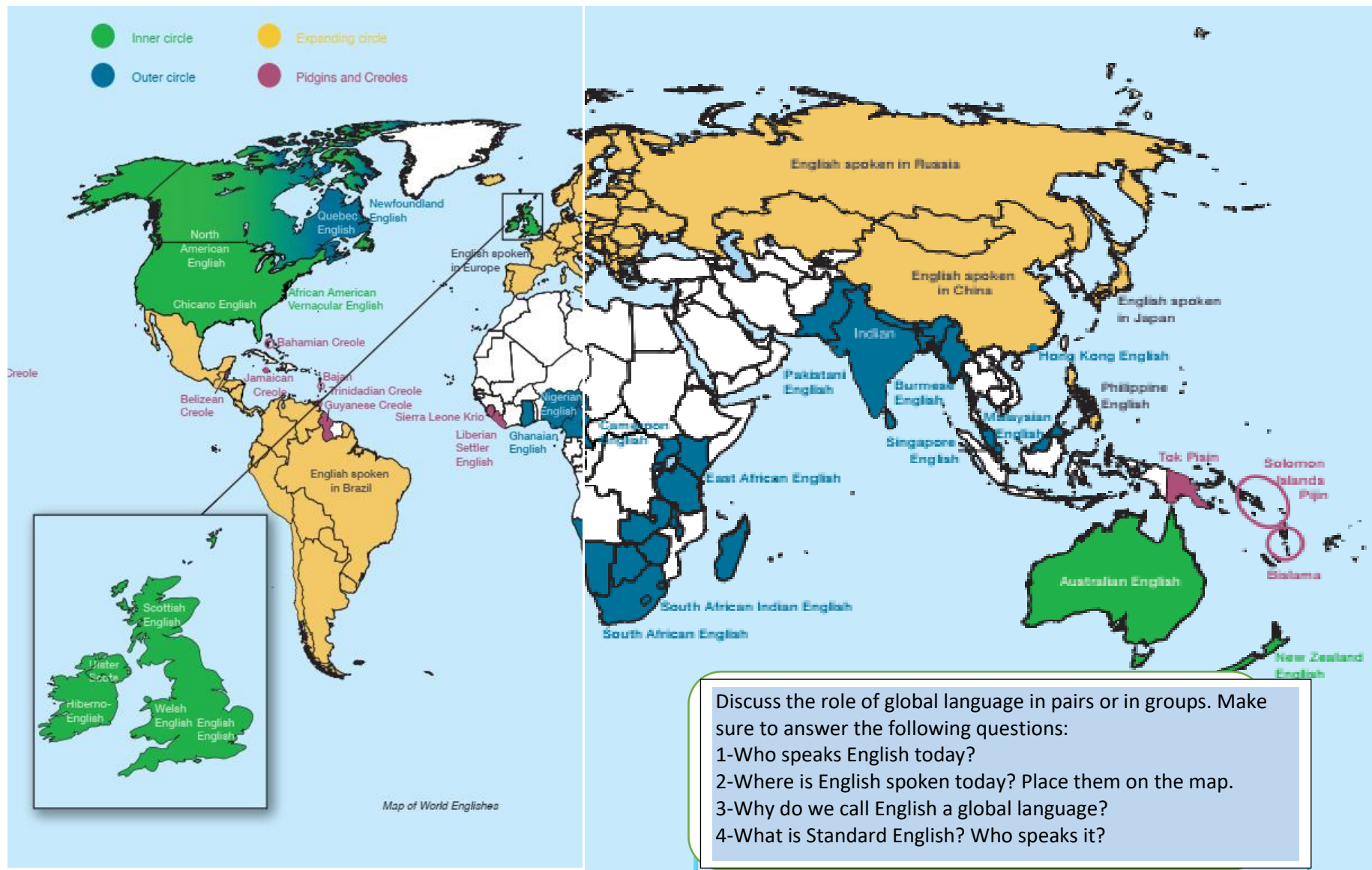
Figure 7.10. ELF map discussion activity (Siemund et al., 2012: 10-11)

The syllabus can be supplied with creative activities to be used by the EST/ESP practitioner. It is noteworthy to remind that such activities can be integrated in any technical branch. Authentic examples are provided in the links displayed in figure 7.11. that illustrates how to teach ELF in an ESP situation.

Figure 7.11. Sample of ELF teaching tasks (Siemund et al., 2012 :27)

Similar tasks are provided and suggested to be used by ESP practitioners in technical branches to teach communication strategies in an ELF context. The following task (figure 7.12) introduces the Indian accent in a video conversation accessible via the activity's link.

Next, watch the same conversation with the script reproduced below and discuss the same two questions. Are your answers different this time? If so, in what way and why do you think they are different?

01 S1:   Hi!
02 S2:   Hi! Sanjay?
03 S1:   Yes. How are you, Priya?
04 S2:   I'm good. How are you? Long time no see.
05 S1:   Yes, it's been a long time. I have been in Chennai for the past two years.
06 S2:   Chennai? What are you doing there?
07 S1:   I am doing B. Tech in Computer Science.
08 S2:   Wow, that's great!
09 S1:   How about you? What are you doing these days?
10 S2:   I work for an MNC.
11 S1:   That's good! What did you do after college?
12 S2:   I did Master's in management from IIM Ahmedabad.
13 S1:   IIM Ahmedabad, awesome! That's one of the top business schools! Should we go have coffee somewhere?
14 S2:   Yes, that's a good idea.

(KUIS & TUFS, 2020)

Notes
MNC   multinational company
IIM   Indian Institute of Management

Feedback: *We guess many of you have discussed Sanjay's and Priya's pronunciation, which represents many Indian speakers of English. To be precise, their tongues are placed more inside for /t/ and /d/ (e.g., lines 04, 11, 13) and more frontally for the /l/ as in "schools" (line 13), and their lips are not rounded for the /w/ as in "work" (line 10). Similarly, and probably unlike most of you, they pronounce "great" /greːt/ (line 08) and "Ahmedabad" /ˈemdəˌbɑːd/ (lines 12, 13). Moreover, they place stress on the first letters of both MNC and IIM (lines 10, 12, 13) while both authors of this book would pronounce the last letters the strongest. Apart from pronunciation, "B. Tech" (line 07) is a local term for bachelor of technology. Note that no article is used for either "B. Tech" or "Master's" (lines 07, 12) even if you might prefer using the indefinite article in each case, i.e., a B. Tech and a Master's (or master's) (degree).*

Figure 7.12: Discovering Indian English via video conversation activity (Baker and

Ishikawa, 2021: 62)

CREATIVE WRITING

Imagine that you spend your summer holidays in a summer school in England where you share rooms with students from France, Spain, Nigeria, and Singapore. Comment on the English they use in an email to your friends at home. Give examples of the language you heard.

Summer school
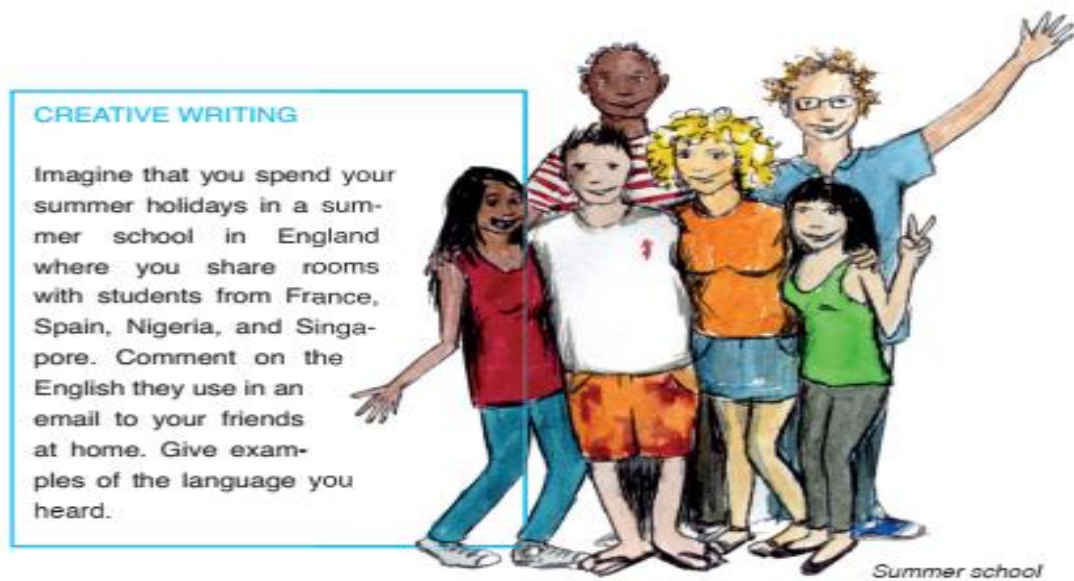
Figure 7.13. Sample of ELF communicative Activity. (Siemund et al., 2012 :15)

Matching exercises, mind maps, and comparison or contrast analysis, are all examples of useful techniques that can create ground on which the teacher raises his ESP learners' awareness of ELF. Figure 7.14 is sample of an activity that can be extended to many others.

ANALYSIS

Match the Indian English sentences on the left side with their standard English equivalents given on the right side of the page. Explain the differences you notice between Indian English and standard English in your own words.

I am here since two o'clock.	What is this made from?
You are going home soon, isn't it?	I drink very hot coffee.
What this is made from?	I have been here since two o'clock.
I am doing it often.	I was there ten years ago.
This sari cheap cheap.	You are going home soon, aren't you?
I drink hot hot coffee.	This sari is very cheap.
I have been there ten years ago.	I do it often.

Figure 7.14. A sample of Contrast ELF Activity (Siemund et al., 2012 :70)

7.3. Evaluation and Grading Criteria

According to the official curriculum produced by the higher ministry of education and scientific research, academic evaluation standards demand a final test, or 100 percent in academic assessment jargon. However, conceiving the idea of integrating English into technical disciplines and inspiring students to become more active in this approach cannot be accomplished with a single, final test. It is in one's view the primary source of the students' absenteeism. Convinced that by obtaining a mark in the final exam, students do not really find it compulsory to attend and commit themselves to learning English on a regular basis. Therefore, it is suggested to incite the ESP learners to take part in various activities and benefit from an evaluation based on the following suggested criteria:

Unit Test	**20%**	**04/20**
Final Exam	**40%**	**08/20**
Classwork	**20%**	**04/20**
Attendance	**20%**	**04/20**
	100%	**20/20**

As indicated in table 7.3, ESP practitioners may assess their mechanical engineering students using a range of instruments: MCQ TESTS, grammar tests, quizzes, academic research essays, oral presentations and assignment folders, drawings and designs or video presentations. Assessment can be done online and on an ongoing basis. This regular process will increase the students' opportunities to be immersed in the knowledge they are acquiring, and they will constantly improve their skills and background knowledge.

Not all competencies can of course be evaluated using the same approach and tool. Some skills can sometimes require observation and class feedback. If a test taker drew the correct spare part design following the verbal instructions, the task would be successfully fulfilled. Students' assessment is best when it is in the form of exercises similar to course tasks. In the current situation, the students sit for two major tests, at the end of both semesters.

However, at the level of the master level, the evaluation is final with one single exam. It is also motivating and effective to generate a learning portfolio to be able to trace the learners' progress and follow closely their academic and professional maturity throughout the year. In doing so, the practitioners start with collecting classwork documents over a period of time and may be able to display a range of their learners' performances in different genres and assignments. The Portfolio offers a delayed evaluation and provides a pedagogical means of ongoing assessment that is very suitable for EST situations such as in mechanical engineering contexts.

Assessing ELF

In order to avoid confusion in following a model of language norms in written and spoken English at a higher level of education, ELF has been introduced in the English for Mechanical Engineering syllabus to raise learners' awareness of the changing sociolinguistic realities. Accordingly, attention will be given to similar tasks and classwork to identify the relevant variety of English and recognize the relative deviations, not considering these variations as mistakes but as speakers' identity in the global world. Another focus in assessing ELF/EIL is to evaluate the learners' strategic competence in dealing with interlocutors who belong to the English-speaking world, with different accents and writing styles.

7.4. Special Recommendations

- As this course is for non-native speakers of English, the students will enrich their terminology background if there is an opportunity to learn the target terminology in all three languages, Arabic, French, and English. This means that the students will be motivated to communicate and switch from a language to another and in different modes of communications (i.e., texts, face-to-face or synchronous communication, videos).

- Another important recommendation concerns the evaluation and grading techniques suggested above. Because of the Covid-19 situations, students all over the world, as well as in Algerian universities, have been forced to follow distant teaching and online assessment, and ESP teaching is no exception. Teaching English exclusively online to technical branch students may create an interruption in motivation and can generate a gap between the subject and the learners. Therefore, thinking about reviewing the evaluation and grading modality of a final exam (100%) taken online is an urgent issue to be resolved. More importance must be given to the classwork.

- As a monitoring and assessment tool, most learner-centred approaches, especially ESP, self-evaluation checklists are fostered by teachers and educationalists. As suggested by Hasselgreen (2003), an instance of these self-evaluation criteria is to let the learner complete a four-category list:

  - I think….
  - I know…..
  - I can tell….
  - Now I can do…...

- Finally, it should be noted that an ESP practitioner should be careful with material design and authentic texts. In this line of thought, Dudley-Evans and St. John (2005) opine that many trainers lack knowledge of the financial, scientific or engineering sectors. They may take the responsibility of creating their own materials and may misinterpret some content in the discipline in which they are not specialized.

7.5. Length of ESP Course

The syllabus described in table 7.3 contains 15 units that last for 35 weeks at least, as one unit consists of a number of sequences to deal with besides the assessment sessions if done in-class. For this reason, the practitioner can use the syllabus for the target three populations of the present research, i.e., year one, year two, and master one students. It should be reminded that the official time allotment is one session of one hour till one hour and a half per week, although it is suggested by the population asked in the survey to devote two sessions per week. Classroom time in the lower-level classes can be devoted to general English classes if the practitioner sees a need for that. It is only at a certain threshold of an intermediate level that the teacher can use the units described in the syllabus with more teacher-created activities.

7.6. Learning Outcomes of the Course

The prepared syllabus describes specific target learning outcomes for learners to be attained and are exemplified as follows;

> ➢ To develop the ability to understand and employ the terminology related to the learning units.
> ➢ To maintain a task-based approach to learning English in the development of language proficiency
> ➢ To incorporate ELF in the learners' knowledge background as a key to international communication.
> ➢ to reinforce communication strategies in academic and professional contexts.
> ➢ To promote language learning to successfully complete authentic tasks related to academic and professional tasks.
> ➢ To enhance learners' competencies in structured academic and scientific writing.
> ➢ In terms of examination, the test and exam should be of the same nature as the classwork tasks and assignments.

7.7. Technology Requirements

Recently, since 2019, the COVID 19 pandemic has drastically changed several aspects of our lives, notably schools and higher education. On an international scale, many universities have resorted to total online teaching, even overnight, to minimise the contamination risk (Daniel, 2020). On a national scale, Algerian universities experienced total online instruction via university platforms for a first step, then switched to a mixed delivery. To a very large degree, ESP teaching is part of the subjects selected to be delivered virtually, as it does not belong to the core subjects of the technical branches. The fact is that it represents a high challenge to be achieved. It should be reminded that the present survey took place a year before the lockdown and teaching totally online was not part of the mode of instruction at that moment. Accordingly, considering this point as an emerging issue in the survey, one can suggest some ex post facto practical recommendations built on personal as well as world-experienced methods.

When it comes to applying or implementing online learning, there are a number of different learning strategies that are commonly used (Alammary, 2019, Panopto, 2020). The most frequently used in the Algerian higher education context is hybrid learning, which is a type of electronic learning in which some online pedagogical items replace the face-to-face components of a course. These online items could be course materials and texts, power point slides, recorded videos or synchronous chatting according to the availability of the hardware such as mobile devices, computers and others, and conforming to the teachers and learners' access to software (e.g., blogs, emails, social media accounts and others.). Subsequently, some of these software devices are displayed in the figure 7.14 below.
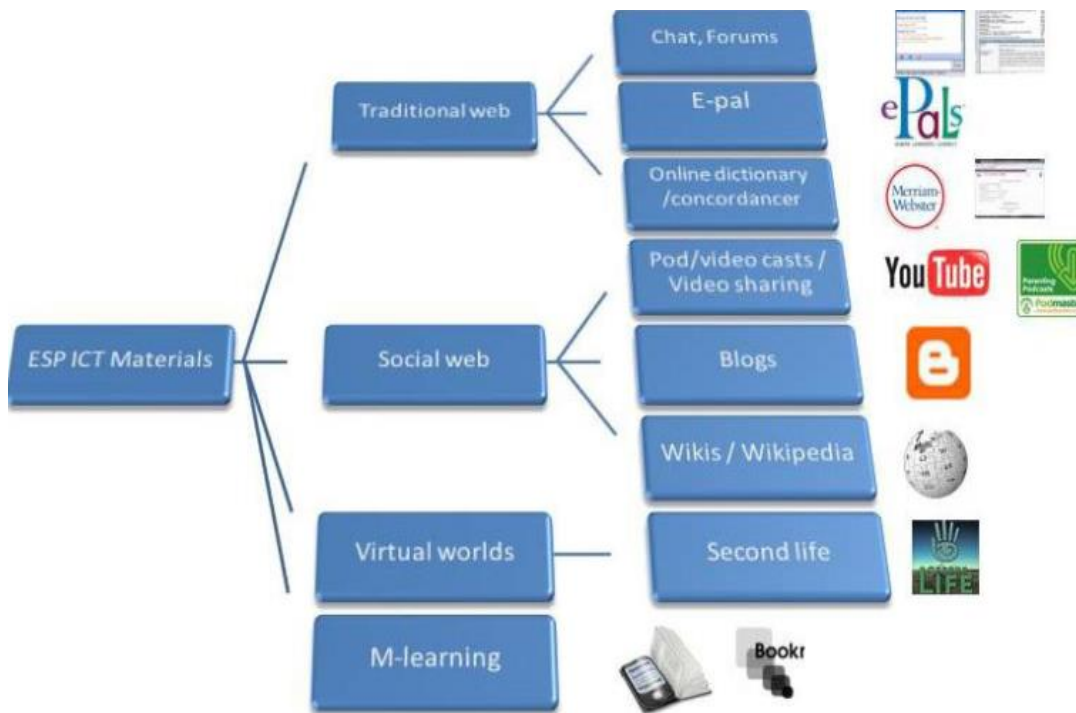
Figure 7.15. Current Trends in Electronic Materials Development for ESP (Laborda, 2011)

Hard and soft technologies are evolving to satisfy university students' needs, especially after the COVID-19 pandemic (see figure 7.10). Websites and apps will be used to provide and receive a large percentage of educational activities and tasks. With their advantages and inconveniences, the practitioner must adapt his lessons according to the use and availability of hard and soft technologies for both the educational institution and the students. Nevertheless, classwork is more than required in teaching English communicatively. If this is not possible, the teacher needs to meet his learners in groups or in one-to-one situations so as to motivate them to be in regular contact with ESP courses. Furthermore, students must have access to teaching materials in a variety of formats. Some students tend to learn new topics by reading text; others prefer to study new topics by watching videos and/or using multimedia. This must be respected and made easier for students.

7.8. Conclusion

This chapter has highlighted the most important components in the English for mechanical engineering syllabus designed for Algerian university students. It has also offered a detailed description of the rationale for developing the syllabus as well as the learning and teaching principles for the programme proposal. The components presented so far have been the outcomes of the stakeholders' NA, which were gathered and analysed in the previous chapters. Focus has also been placed on the syllabus content and on some examples of the developed materials. The content has included mechanical engineering students' areas of interest in terms of topics and English language skills. The guiding lines have helped select the most adequate type of syllabi according to the collected data. Furthermore, an important part of this chapter has been devoted to the portrayal of the suggested syllabus. The syllabus proposes units of content including specialized terminology as well as language functions and skills.

The syllabus has contextualised ELF and culture awareness raising tasks in order to demystify the incorporation challenge of such components into a technical English programme. This has been effectively carried out through some methods and via materials and tasks tailoring to fit the learners' needs. Learners' evaluation and assessment have not been neglected, and some suggestions have been provided for novice practitioners and syllabus designers. Finally, the chapter concludes with a discussion of the global challenge of teaching English in the context of pandemics, and how some methods and techniques can help promote and modernize learners' learning habits.

General Conclusion

In the 21st century, English is the official language of several international organizations, technology, research, publishing, education, media, politics and international trade. With its position as a powerful lingua franca in the world, English has taken several aspects, operating for multiple purposes in different contexts and satisfying various learners' needs. Accordingly, the learners' communicative demands as future workforce in higher education requires a considerable regard to the key topic of ELF. English has not only extended among its native speakers, but it has also accessed almost every aspect of non-native life worldwide.

While SE is the official language in many textbooks and instructional materials, ELF in technical English teaching has received little attention. On the one hand, there is a significant lack of focus on increasing learners' understanding of ELF traits and equipping them with effective communication skills. On the other hand, there is a scarcity of specialized ESP teachers in these technical areas, as well as a lack of suitable syllabi that would incorporate the learners' needs and wants.

The contribution that the present work has attempted to make is twofold. First, the research aspired to apply methodological practices and varied data collection tools on a large scale, rather than using a limited population and studying their needs and interests. Traditionally, the NA auditing technique is overlooked as it necessitates the sine qua non condition of conducting surveys in different geographical locations. Nonetheless, applying this strategy has received special attention in the present research. To obtain a panoramic view of the authentic mechanical engineering students' English needs has been a priority. This population, in its turn, has not received enough attention to be a source of interest in recent Algerian academic research. This crucial sub-branch of science and technology, which

symbolizes future commercial and industrial personnel sources, has received limited English documentation.

The second important contribution to academic research in the field of applied linguistics is to have fostered the ELF/ESP dichotomy. ELF has been introduced as a part of English for mechanical engineering syllabus proposed as a sample of technical branches. The purpose has been to give the students a touch of worldview and culture while learning technical English. Incorporating communicative tasks with reference to the authentic use of ELF in technical syllabi; develops the EST learners' language competency and enhances their critical thinking level in order to survive in a globalised professional market.

This study has reviewed the literature of three main fields; the sociocultural spread of English across the globe, major approaches in ESP, and some key tools and techniques in NA. There is an important cross-disciplinarity between the three first chapters; ELF description has overlapped with ESP philosophy to corroborate the hypothesis that the fusion of both types may work in a technical profile. World communication is mostly a mix of native and non-native exchanges in different fields, most notably in the field of industry and business. The second point of convergence has been between NA and ESP, as the former is the major approach for generating syllabi and courses for the latter.

The second part of the research work is a survey that has provided a detailed analysis of mechanical engineering students' English needs who represent a sample of the community concerned with the industrial and manufacturing sectors. This study has set out to find answers as to the learners' English communicative needs and interests, as well as to investigate stakeholders' attitudes toward integrating some aspects of ELF into their technical English syllabus. As a result, the present work has developed a content and task-based syllabus model adapted to both learners' needs and professional requirements for the benefit of the students.

This research has aimed to examine the present and future English language needs of science and mechanical engineering students comprehensively at three university departments in the Algerian Western region. Every single category of participants in the present survey contributed to this goal by providing the investigation with the precise data. Being experts in their respective fields; the librarians, for example, explained the importance of collaboration between the staff, learners and teachers in motivating learners to use English resources efficiently. Administrators also provided the researcher with the necessary documents about the course's schedules, materials availability and subjects' curriculum. In the same vein, content teachers were the major source of information with regard to target necessities and even learners' lacks and wants. As far as the stakeholders are concerned, the survey has revealed that librarians and expert teachers have considerable experience in their respective fields. With their high engagement in being part of the experience, the participants' maturity and their previous involvement in real-life technical communication, far from the one conveyed in textbooks, portray their responsiveness about the need to raise the young learners' awareness of learning the basics of ELF in their EST course.

To answer the second research question, mechanical engineering content teachers and learners were involved in the project of integrating ELF into the ESP syllabus. The issue was sufficiently explained and discussed informally before being asked officially. Stakeholders' reactions to the issue were surprisingly positive toward connecting the syllabus content with the authentic work life context. First, the content teachers shared the opinion that it was advantageous to make the learners conscious about the challenges of the professional world. They expressed their positive attitudes toward equipping learners with the necessary tools to achieve good communication in professional as well as academic situations. As far as engineering learners were concerned, and despite their young age, their answers displayed a certain awareness about the real English use in professional communications. They also

manifested their will to discover the fundamentals of a growing English type worldwide. Furthermore, stakeholders' positive views on including ELF into EST syllabus were critical to the effectiveness of learning English for mechanical engineering.

Correspondingly, to answer the third research question, it is noteworthy to mention that integrating ELF into English for technical specialties in general and mechanical engineering in particular does not mean teaching ELF as an independent variety. SE is the language of textbooks and scientific materials par excellence, and since deviations in English varieties are not conventionalised, the debate over English types hegemony stays at the socio-political level. At the pedagogical level, the intention behind the ESP and ELF association signifies including tasks and activities with the purpose of raising the ESP learners' awareness about its existence, particularly in the Algerian business and technical exchanges. These exchanges have been evidenced by existing English deviations in synchronous and asynchronous conversations and were also present in spoken as well as in the written mode.

In the light of stakeholders' identified needs, final results have covered this integration of ELF into the proposed English syllabus for mechanical engineering. The syllabus contains varied tasks to provide learners with the necessary language skills based on the information they have revealed. The main focus has been on task performing and communication activities. The syllabus has also provided learners with opportunities to develop the four language abilities while taking into account the worldwide features of ELF and expanding their background knowledge of global varieties. The tasks have been suggested to enhance technical branches learners' basic notions about ELF features.

Intercultural activities have not been overlooked in the technical syllabus because they were examples of the activator for international communication awareness tasks to be considered. Thus, ELF Core features in the world as well as those identified in an Algerian workplace case study, have been shown to be important databanks for such tasks. The technical

English teacher, in this sense, is free to adapt the techniques and strategies to his/her syllabus content. Certain proposed activities concerned observation and detection exercises of the main deviations and their comparison to the standard forms of English. The tasks were samples of online activities carrying a variety of native and non-native listening recordings. Hence, promoting ELF may be carried out via active participation in blogs and forums to be more familiar with those deviations and to be prepared for a more technical and professional context. Such communicative activities would serve as simulations for future engineering professions as a first step toward being a skilled workforce.

The fourth research question has necessitated detailed examination of learners' needs. Every stakeholder, from their own perspective, has disclosed what English language needs mechanical engineering students have. NA outcomes have been classified into three categories based on Hutchinson and Waters' (1987) definition of needs: lack, necessities, and wants. It is important to note that due to the participants' age range and grade level in the current study, significant needs pertaining to low and high proficiency students in the under graduation have been mentioned. Field observations, librarians' interview and the three questionnaires handed to experts, ESP teachers and learners have helped achieve insights into the learners' three types of communicative needs and have been inferenced as follows:

Students majoring in mechanical engineering in part of the Western Algerian University were revealed to be of a heterogenous English level. However, the students have identified themselves as being intermediate to upper-intermediate English learners. Most students came from the secondary school at the age of 17-18 years, having a background of general English studied mainly for exam purposes. The fact that English usage was mainly acquired with the help of rote-learning, i.e., learning based on memorisation and repetition, has prevented them from using English communicatively.

Results have revealed that students lacked grammar and general vocabulary to communicate, as emphasised by most of the stakeholders. In the same context, the synthesis of results has shown that their weaknesses lie in their ability to listen to and understand people while communicating in English. Their examples have been drawn from the teachers' classroom speech or some conversations with foreigners on social media. As far as high engineering proficiency students were concerned, they have manifested their palpable lack of EAP discourse and presentation techniques. They admitted lacking technical vocabulary retention strategies, as technical terminology as the first target language needs to be achieved.

According to the findings, the language skills that students needed to consolidate were listening and speaking; hence, the survey concentrated more on the micro-skills where students demonstrated limited competence, namely in communication tasks and academic pursuits. The noncompliance of ESP syllabi with both actual learners' requirements and authentic use of English in real life, as well as the dearth of well-trained ESP teachers, were the most prevalent barriers in the survey. Nonetheless, other important impediments have been signalled by the informants, such as the limited link between the English course and the discipline content, besides very few adequate materials and methodology. Workplace challenges have also been part of the survey findings; it has been highlighted by experts that future engineers might encounter barriers in shifting from an academic type of English to an occupational one in a context full of new cultural and communicative praxis.

The identified learners' needs which have emerged from this study have revealed a notable level of congruency among the different participants' responses. Necessities are so named because they are required for the design of an ESP syllabus. In practice, all students believed that learning English would help learners be more successful in both their future academic and professional careers. The findings have indicated that the majority of learners prioritized communication for the professional setting over language structures and intensive

reading activities. Learners have opted for improving their speaking and writing skills in both academic and professional settings.

Terminology and its retention strategies, as well as technical writing skills, have been identified as the most important target skills for students. Whereas the most significant instructional abilities were deemed to be writing academic articles and giving scientific presentations. Concerning professional future needs, results have indicated that writing memos, reports, technical documents, filling out forms, writing CVs, and job applications were the skills they professionally targeted. It is important to highlight the experts view about developing reading, writing and speaking as main learners' target needs.

Little concern has been attributed to grammar and pronunciation by all informants as these course items have always been included in the English course. Fundamentally, and to answer the last research question, the real-life and communication needs that emerged from the survey were developing communication strategies in conversations, writing emails, using phone tactics, understanding videos and podcasts, describing orally machine processes and technical specificities, which seemed to be neglected in their ESP courses. Overall, all of the proposed tasks and skills have received positive feedback from the community of professionals and students.

ESP practitioners continuously aim to delimit content and language functions reflected in tailored materials to meet learners' target demands in order to promote class dynamism and achieve the course's short- and long-term objectives. However, this desired motivation cannot be totally reached unless learners' learning preferences are identified and met. The survey helped mechanical engineering students express overtly their expectations from an ESP syllabus and the process they would like to be put into practice. Results indicated that students preferred foremost to learn English to communicate by intensified conversation sessions in their field of interest. For this purpose, the use of videos and digital technology were their favoured

techniques. The ESP teacher added group and pair work for tasks and presentations. Experts distinguished the use of authentic materials, drawings and plans as outstanding strategies to learn English best. As far as librarians were concerned, they believed that motivation campaigns, English speaking university twining programmes and collaborating with English departments were main motivation techniques for science and technology particularly mechanical engineering students to like English. Class observations disclosed important methodology tools such as problem-solving, graphs presentation and charts design.

The Algerian country offers different business as well as industrial perspectives in its different corners; therefore, a unified syllabus with joint purposes has become pedagogically obsolete. Out of formal and informal discussions with all the stakeholders, results showed that the first secret for a successful ESP course/syllabus is to consider the learners as human individuals having needs and desires to learn language functions. To find the right balance after conducting NA is a guarantee to meet the learners' needs.

Current Research Limitations

One of the obvious limitations of this study concerns the conditions in which the field exploration was initially conducted. Though it seemed simple to come in contact with university personnel and implement a survey, the actual concretisation of the research has revealed unforeseen expectations. First, the number of stakeholders willing to be involved in the experiment was limited to one single location at the beginning of the process. This necessitated the employment of auditing and the detection for more volunteers in other places, which eventually proved to be beneficial to the study. Second, the language in which the questionnaires were written was supposed to be the language of subject instruction. However, French was limiting the students' answers because of their low level in writing French. More responses could have been collected were the questionnaire written in Modern Standard Arabic.

Another unanticipated issue was the inconvenience encountered when EST teachers, in two of the mechanical engineering departments, did not grant access to English lecture rooms for observations and therefore obstructed survey questionnaires from being answered. If there had been an opportunity and time to monitor some of the EST classes, there would have been more relevant and palpable data about what was happening in English classrooms. In practice, this study involved a significant number of participants and locations; this provided a substantial amount of data to be handled and analysed manually. Thus, using software like SPSS which offers advanced statistical analysis would have been extremely beneficial. Obtaining all of the informants' email addresses was challenging, as was their willingness to respond.

Implications for Further Studies

This thesis has provided a comprehensive representation of Algerian mechanical engineering students' English needs. Such a profile can serve as the groundwork for major improvements in the materials and techniques that researchers in ESP can undertake. The findings can contribute to better understand technical syllabus design and all the encompassed techniques and intricacies. This study should, therefore, be stimulating ESP practitioners, researchers and syllabus designers wishing to develop English courses such as English for mechanical engineering with authentic materials and more real-life techniques.

The challenges and issues emanating from this survey should become a wake-up call to academics and language planners to focus more attention on ESP training and syllabus design in general and more specifically in technical branches. Inadequate attention to learners' needs analysis and reforming ESP teaching policy will demotivate these students to learn English in science and technology. It would be critical to create a new textbook based on the presented needs, which would include a variety of communicative activities and tasks, with a special emphasis on ELF awareness raising activities, as well as intercultural corners devoted to the different cultural practices of English native and non-native speakers.

Further suggestions also concern future researchers in the same field who will capitalise sound results if industrial workplace personnel are asked. In doing so, clearer target necessities will emanate from authentic professional English use. There will be mutual benefit from the cooperation of both universities and industry market, bridging the existing gap between English use in academic institutions and the workplace. Therefore, syllabus design for technical branches is necessary for successful links and participation in the speech community through their external communication activities.

Finally, English has a growing importance in science and technology, and therefore the needs of students to meet the overall position acquired by English in recent decades. The inclusion of this component in the ESP program/course is critical, both in English and in actual learning situations. Engineering English courses should focus on the learners' communication needs and on English as it is used around the world to create a link between the learners' classroom and their future employment expectations, thereby opening up additional career opportunities.

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    the linguistic identity of native and non-native English speakers in Geneseo (Doctoral

    Dissertation, Cadis University). Retrieved from:
https://rodin.uca.es/xmlui/bitstream/handle/10498/20117/jfa_tfg_eeii.pdf?sequence=1&isAllo
wed=y

Benaouda, S. (2012) English as a Lingua Franca in a Workplace: The Case of a Cosmetics

Liability Limited Company. University of Mostaganem. (Unpublished work).

Appendices

Appendix I

الجمهورية الجزائرية الديمقراطية الشعبية
République Algérienne Démocratique
et Populaire
وزارة التعليم العالي والبحث العلمي
Ministère de l'Enseignement Supérieur
et de la Recherche Scientifique

Université

Logo

OFFRE DE FORMATION L.M.D.

LICENCE ACADEMIQUE

PROGRAMME NATIONAL
2018– 2019

Etablissement	Faculté / Institut	Département

Domaine	Filière	Spécialité
Sciences et Technologies	*Génie mécanique*	*Construction mécanique*

B - Objectifs de la formation:

La mécanique se situe le long d'une chaîne allant de l'extraction de la matière première à la distribution en passant par les produits finis les plus élaborés. Le secteur peut être décomposé en trois domaines d'activité :

- Les équipements (machines, systèmes de production, composants)
- La transformation (sous-traitance, outillages, articles de ménage)
- La précision (santé, optique, instrument de mesures)

L'existence de plusieurs activités industrielles liées au domaine de la mécanique à l'échelle nationale ou régionale, nécessite une formation adéquate en mécanique.

L'objectif de la Licence *construction mécanique* est de donner aux étudiants l'ensemble des connaissances nécessaires à la compréhension et à la résolution des problèmes liés aux systèmes mécaniques.

Cette formation permet aux étudiants d'acquérir une culture scientifique large dans le domaine des sciences de l'ingénieur, avec des bases solides en mécanique, mathématiques et calcul scientifique.

Elle consiste à:
- Former les étudiants aux méthodes de synthèse, d'analyse et de compréhension des lois et aux phénomènes fondamentaux relevant du champ des sciences mécaniques.
- Apporter les compléments indispensables aux applications des mathématiques et de l'informatique.
- Préparer les étudiants à l'acquisition des méthodes théoriques et pratiques pour les applications dans des domaines variés en général et dans le domaine des industries mécaniques en particulier.

C – Profils et compétences visées:

La Mécanique est l'élément charnière entre des domaines aussi divers que le calcul de structures, l'aéronautique, la météorologie, l'acoustique, l'océanographie, ...

Tout étudiant titulaire d'une licence en Construction mécanique a accès sur titre aux **Masters** correspondants, en vue d'une carrière orientée vers les métiers de recherche dans la filière du Génie mécanique ou bien vers la vie professionnelle. Le titulaire de ce diplôme sera apte à :

- mener à bien une politique de maintenance relevant de l'aspect mécanique.
- faire un suivi de maintenance d'un parc machines ou d'une installation d'équipement.
- Engager des études de mécanique sur un produit donné.
- Analyser les données et les résultats d'un problème mécanique et prendre les décisions adéquates.

Semestre 2

Unité d'enseignement	Matières	Crédits	Coefficient	Volume horaire hebdomadaire			Volume Horaire Semestriel (15 semaines)	Travail Complémentaire en Consultation (15 semaines)	Mode d'évaluation	
	Intitulé			**Cours**	**TD**	**TP**			**Contrôle Continu**	**Examen**
UE Fondamentale Code : UEF 1.2 Crédits : 18 Coefficients : 9	Mathématiques 2	6	3	3h00	1h30		67h30	82h30	40%	60%
	Physique 2	6	3	3h00	1h30		67h30	82h30	40%	60%
	Thermodynamique	6	3	3h00	1h30		67h30	82h30	40%	60%
UE Méthodologique Code : UEM 1.2 Crédits : 9 Coefficients : 5	TP Physique 2	2	1			1h30	22h30	27h30	100%	
	TP Chimie 2	2	1			1h30	22h30	27h30	100%	
	Informatique 2	4	2	1h30		1h30	45h00	55h00	40%	60%
	Méthodologie de la présentation	1	1	1h00			15h00	10h00		100%
UE Découverte Code : UED 1.2 Crédits : 1 Coefficients : 1	Les métiers en sciences et technologies 2	1	1	1h30			22h30	02h30		100%
UE Transversale Code : UET 1.2 Crédits : 2 Coefficients : 2	Langue étrangère 2 (Français et/ou anglais)	2	2	3h00			45h00	05h00		100 %
Total semestre		**30**	**17**	**16h00**	**4h30**	**4h30**	**375h00**	**375h00**		

Intitulé de la Licence : Construction mécanique   *Année: 2018-2019*

Appendix II

Semestre: 1
Unité d'enseignement: UET 1.1
Matière 1: Langue Anglaise1
VHS: 22h30 (Cours: 1h30)
Crédit: 1
Coefficient: 1

Objective:
Develop the reading, writing, listening and speaking abilities of the students.

Recommended prior Knowledge:
Basic English.

Contents:
The English syllabus consists of a set of texts containing scientific and technical parts. The chosen texts must be used to study scientific and technical English and Grammar acquisition.
The texts must be selected according to the vocabulary built up, familiarization with both scientific and technical matters in English for further understanding. Therefore, each text will be defined by a set of vocabulary concepts, a set of special sentences (idioms) and comprehension questions.
The texts must contain also a terminology which means the translation of some words from English to French one. Besides, the activity at the end of each session must include a translation of long statements which are selected from the texts.

Examples for some lectures:	Examples of Word Study: Patterns
Iron and Steel	Make + Noun + Adjective
Heat Treatment of Steel.	Quantity, Contents
Lubrication of Bearings.	Enable, Allow, Make, etc. + Infinitive
The Lathe.	Comparative, Maximum and Minimum
Welding.	The Use of Will, Can and May
Steam Boilers.	Prevention, Protection, etc., Classification
Steam Locomotives.	The Impersonal Passive
Condensation and Condensers.	Passive Verb + By + Noun (agent)
Centrifugal Governors.	Too Much or Too Little
Impulse Turbines.	Instructions (Imperative)
The Petro Engine.	Requirements and Necessity
The Carburation System.	Means (by + Noun or –ing)
The Jet Engine.	Time Statements
The Turbo-Prop Engine.	Function, Duty
Aerofoil.	Alternatives

Evaluation mode:
Exam : 100%.

References:
1. J. Upjohn, S. Blattes, V. Jans, Minimum Competence in Scientific English, Office des Publications Universitaires, 1994.
2. A.J. Herbert, The Structure of Technical English, Longman, 1972.
3. S. Berland-Delepine, Grammaire méthodique de l'anglais moderne avec exercices, Ophrys, 1982.
4. Test of English as a Foreign Language – Preparation Guide, Cliffs, 1991.

Semestre : 1
Unité d'enseignement : UET 1.1
Matière : Anglais technique et terminologie
VHS : 22h30 (cours : 1h30)
Crédits : 1
Coefficient : 1

Objectifs de l'enseignement:

Initier l'étudiant au vocabulaire technique. Renforcer ses connaissances de la langue. L'aider à comprendre et à synthétiser un document technique. Lui permettre de comprendre une conversation en anglais tenue dans un cadre scientifique.

Connaissances préalables recommandées:

Vocabulaire et grammaire de base en anglais

Contenu de la matière:

- Compréhension écrite : Lecture et analyse de textes relatifs à la spécialité.

- Compréhension orale : A partir de documents vidéo authentiques de vulgarisation scientifiques, prise de notes, résumé et présentation du document.

- Expression orale : Exposé d'un sujet scientifique ou technique, élaboration et échange de messages oraux (idées et données), Communication téléphonique, Expression gestuelle.

- Expression écrite : Extraction des idées d'un document scientifique, Ecriture d'un message scientifique, Echange d'information par écrit, rédaction de CV, lettres de demandes de stages ou d'emplois.

Recommandation :Il est vivement recommandé au responsable de la matière de présenter et expliquer à la fin de chaque séance (au plus) une dizaine de mots techniques de la spécialité dans les trois langues (si possible) anglais, français et arabe.

Mode d'évaluation:

Examen: 100%.

Références bibliographiques :

1. *P.T. Danison, Guide pratique pour rédiger en anglais: usages et règles, conseils pratiques, Editions d'Organisation 2007*
2. *A.Chamberlain, R. Steele, Guide pratique de la communication: anglais, Didier 1992*
3. *R. Ernst, Dictionnaire des techniques et sciences appliquées: français-anglais, Dunod 2002.*
4. *J. Comfort, S. Hick, and A. Savage, Basic Technical English, Oxford University Press, 1980*
5. *E. H. Glendinning and N. Glendinning, Oxford English for Electrical and Mechanical Engineering, Oxford University Press 1995*
6. *T. N. Huckin, and A. L. Olsen, Technical writing and professional communication for nonnative speakers of English, Mc Graw-Hill 1991*
7. *J. Orasanu, Reading Comprehension from Research to Practice, Erlbaum Associates 1986*

Appendix III

Interview Protocol for Science and Technology Library stakeholders

Project: Mechanical engineering needs analysis and environmental description

Date: --
Time:- ---------------------------------------
Location: _____
Interviewer's name and profile: _____
Interviewee job position: _____

Notes to interviewees:

Thank you for your participation. I believe your input will be valuable to this research and in helping grow the learners' performance and progress. Therefore, I am looking for some details and clarifications.

Confidentiality of responses is guaranteed.

Approximate length of interview: (60) minutes, visit of the library documents and investigating five major matters.

Purpose of the study: The aim of this visit is to make a kind of inventory of English books for mechanical engineering. It aims also at discovering the relationship of both learners and teachers with this type of documentation.

             Section I   **Qualifications**

Q.1.   What is you qualification?

Q.2.   What is your job position in the library?

Q.3.   For how many years are you working in this library?

Q.4.   How well do you understand English?

       Section II

Q.1. Are there any library shelves or sections dedicated to English materials? Are they General

     English books or English for specific purposes ones?

Q.2. Who (from the learners and teachers) are likely to borrow these books more frequently?

     How do you explain this matter?

Q.3. In your opinion, how do you explain (the availability/scarcity) of English books in the

     library?

Q.4. What solutions do you suggest to reconcile mechanical engineering students with English

     books?

 Q.5. Are there any other comments you would like to add before closing this interview?

Thank you and all the best.

Appendix IV

Questionnaire pour les étudiants en génie mécanique

Ce questionnaire consiste en une analyse des besoins des étudiants et futures ingénieurs mécaniques en anglais technique. Les résultats sont importants pour évaluer la situation de l'enseignement de l'anglais au département de génie mécanique. Ils permettent surtout de façonner les programmes d'études en langue anglaise et ses pratiques pédagogiques.

Ce questionnaire est anonyme, vos réponses sont essentielles. Il est donc très important que vous répondiez à toutes les questions avec autant de soin et de précision que possible.

Nous vous remercions du temps, des efforts et de la réflexion que vous allez consacrer à répondre à ce questionnaire.

Section 1 :   Renseignements généraux

Vous êtes   ☐ Homme   ☐ Femme

Age   ………………………….

Année d'études   ☐ Licence 1   ☐ Licence 2   ☐ Master1

Langue d'étude   ☐ Arabe   ☐ Français

Avez-vous déjà un emploi dans le secteur ?   Oui ☐   Non ☐

Si oui, veuillez préciser lequel …………………………………………………………………..

Section 2 :   Renseignements pédagogiques

1-Quel est le volume horaire consacré aux cours d'anglais par semaine ?

…………………………………………………………………..

    a) Croyez-vous que c'est suffisant ?   ☐ Oui   ☐ Non

    b) Vous assistez aux cours d'anglais ?
  ☐ Régulièrement   ☐ parfois   ☐ rarement ou jamais

2-Pourquoi assistez-vous aux cours d'anglais ? Cochez la réponse correcte. Plus d'une réponse est acceptable.

(a) Parce que la présence est obligatoire   ☐
(b) Parce que les cours m'intéressent   ☐
(c) Parce que ça m'aidera pour mon futur emploi   ☐
(d) Parce que cela m'aide pour mes études en mécanique.   ☐
(e) Parce que je trouve les cours faciles et la note du cours m'aide dans la moyenne générale
    ☐
(f) Autres…………………………………………………………………………………………
    …………………………………………………………………………………………………
Je n'assiste presque jamais (précisez la raison)
…………………………………………………………………………………………………......
....

3- Quelle importance accordez-vous à l'anglais pour vos études en mécanique ?

☐ Pas important du tout   ☐ Pas très important   ☐   important   ☐ très important

4-Quelle importance donnez-vous à l'anglais pour votre carrière/future emploie ?

☐ Pas important du tout   ☐ Pas très important   ☐ important   ☐ très important

5 - Cochez la /les case(s) correspondante(s) à votre réponse :

Aptitude	Je maitrise	Important(s) à développer pour mes études	Important(s) à développer pour ma carrière
Compréhension orale			
Expression orale			
Compréhension écrite			
Expression écrite			

6-Cochez la/les réponse(s) que vous sentez vous correspondre :

Aptitudes	Je comprends quand j'écoute	Je parle sans difficulté (s)	Je comprends un texte	J'écris
	Mon professeur parler ☐	En classe ☐	Polycopiés ☐	Pendant les examens ☐
	Des vidéos ou podcasts ☐	Avec mes copains ☐	Articles scientifiques ☐	Pour effectuer des recherches scientifiques sur le net ☐
	Des Personnes sur téléphone ou réseaux sociaux ☐	Avec des étrangers sur réseaux sociaux ☐	Messages personnels ☐	Messages personnels ☐

7-Quelle(s) compétences linguistiques vos cours d'anglais vous aident-t-ils à développer le plus ? Cochez la /les cases de vos réponses :

Compréhension orale ☐   expression orale ☐   lecture et compréhension ☐

Expression écrite ☐   grammaire ☐   vocabulaire générale ☐

terminologie ☐   prononciation ☐

Autre(s) ………………………………………………………………………..…………

8- Quelles sont les difficultés que vous rencontrez quand vous apprenez l'anglais en classe ?

………………………………………………………………………………………………
………………………………………………………………………………………………
………………………………………………………………………………………………

9-Croyez-vous important d'approfondir vos connaissances dans ces différents domaines ?

Compréhension oral : Je veux améliorer ou apprendre à

comprendre les autres dans une conversation ☐
comprendre quand je regarde des vidéos industrielles ☐
comprendre les présentations académiques ☐
comprendre le discours des enseignants ☐
comprendre anglais britannique et américain ☐
comprendre différents accents anglais ☐
prédiction du contenu des cours ☐
comprendre la conversation par téléphone/skype ☐
comprendre les instructions des machines, la description des
matériaux et les procédés métalliques ☐
reconnaître des informations spécifiques à partir d'un passage d'écoute ☐

Autre(s)
………………………………………………………………….………………………………
…………………………………………………………………………………………………..

Expression oral : Je veux améliorer ou apprendre à

rapporter des résultats et analyse des données ☐
parler à des ingénieurs ou étudiants en ingénierie d'origine britanniques/américains ☐
parler avec des ingénieurs anglophones internationaux utilisant l'anglais international ☐
traduire ☐
formuler des questions ☐
contribuer efficacement à la présentation d'une conférence ☐
être d'accord/en désaccord et apporter des contributions efficaces à un séminaire ☐
parler au téléphone/sur les réseaux sociaux ☐
présenter (décrire un projet/processus) ☐
parler dans des situations sociales (conversations à l' hôtel, aéroport, restaurant) ☐
comment gérer un entretien d'emploi ☐
Autre(s)
………………………………………………………………….………………………………
…………………………………………………………………………………………………

Compréhension écrite : Je veux améliorer ou apprendre à
lire les manuels techniques, les instructions et publications spécialisés ☐
lire efficacement les résultats de recherche académique sur le web ☐
rechercher des informations dans un texte ☐
interpréter des graphiques, des tableaux et des graphiques ☐
en savoir plus sur les sites web des entreprises et les politiques en matière de lieu de travail
☐

Mettre des légendes sur un diagramme/dessin

comprendre et déduire des idées implicites

Autre(s)

……………………………………………………………………….……………………………………

…….

Expression écrite : Je veux améliorer ou apprendre à

rédiger des mémos, des rapports, des documents techniques

écrire des messages électroniques,

remplir les formulaires, rédiger les CV et les demandes d'emploi

rapporter les résultats des graphiques, des graphiques et des tableaux

écrire des résumés de texte

rédiger des résumés de recherche et des présentations

écrire des citations et des références académiques/bibliographie

écrire des paragraphes/essais

écrire des phrases simples et complexes

écrire des étapes d'article de recherche.

Autre(s)

…………………………………………………………………………….…………………………………

………

10- Dans la vie professionnelle, quel type d'anglais utilisent les partenaires internationaux (ex. chinois, turques, espagnoles etc.) avec les Algériens ?

☐ Anglais britannique   ☐ Anglais américain   ☐ Anglais Internationale

☐ Je ne sais pas.

11- Croyez-vous important de connaitre les fondamentaux de l'anglais comme langue internationale/globale pour communiquer avec les techniciens étrangers ?

☐ Oui, je veux parler l'anglais global, celui de la mondialisation   ☐ Non, l'anglais standard britannique me suffit.

12- Quel serait votre but d'apprendre l'anglais ?

☐ Parler parfaitement comme une personne de langue maternelle

☐ Connaitre le minimum pour communiquer en situation professionnelle

☐ Avoir un niveau satisfaisant pour parler et écrire

13- En tant que futur ingénieur, quelle culture préférez-vous étudier en cours d'anglais?

☐ la culture britannique   ☐ la culture américaine   ☐ la culture des pays anglophones

la culture n'est pas importante dans l'anglais technique   ☐

14-Comment vous apprenez le mieux la langue anglaise en classe ?

☐ par des polycopiés et cours magistraux   ☐ par vidéos ☐ par photos et graphes

☐ par internet   ☐ Dans des séances d'écoute et de discussion

☐   Autre(s)…………………………………………………………………………………………

15-A votre avis, quelle est la meilleure méthode d'évaluer votre progression en anglais ?

☐   Par des activités régulières.   ☐   par un seul teste à la fin du programme.

☐   Par une seule présentation de projet. ☐   pas de méthode particulière.

16-Quelle(s) sont vos suggestions pour améliorer votre cours d'anglais technique?

………………………………………………………………………………………………………

………………………………………………………………………………………………………

………………………………………………………………………………………………………

………………………………………………………………………………………………………

Mercie pour votre participation et pour votre coopération.

Appendix V

Questionnaire pour les enseignants en génie mécanique

Ce questionnaire consiste en une analyse des besoins des étudiants et futurs ingénieurs mécaniques en anglais technique. Les résultats sont importants pour évaluer la situation de l'enseignement de l'anglais au département de génie mécanique. Ils permettent surtout de façonner et élaborer les programmes d'études en langue anglaise et ses pratiques pédagogiques.

Ce questionnaire est anonyme, vos réponses sont essentielles. Il est donc très important que vous répondiez à toutes les questions avec autant de soin et de précision que possible.

Nous vous remercions du temps, des efforts et de la réflexion que vous allez consacrer à répondre à ce questionnaire.

Section 1 :   Renseignements généraux

Grade :   …………….………….

Spécialité : ………………………….

Nombre d'années d'expérience professionnelle : ..……….…………………….

Langue d'enseignement : ☐ Arabe   ☐   Français   ☐ Autre …………..

Combien de langues étrangères maitrisez-vous ? Veuillez les mentionner.

…………………………………………………………………………………………

Section 2 :   Renseignements pédagogiques

1- Quelle importance attachez-vous à l'anglais pour les étudiants (de tous les niveaux) en génie mécanique (GM) ?
☐ C'est important ☐ C'est nécessaire ☐ C'est indispensable ☐ Ce n'est pas très important

Veuillez décrire cette importance
………………………………………………………………………….........................
....
....

2- Quelles- sont les spécialités en mécanique les plus sensibles à l'anglais dans le domaine académique?
…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………

3- Quelles- sont les spécialités les plus sensibles à l'anglais dans le monde du travail ?
…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………

4- Quelles sont les difficultés que peuvent rencontrer vos étudiants quand ils apprennent l'anglais en classe ?

………
………
………

5- Quelles sont les difficultés que peuvent rencontrer les futurs ingénieurs dans leurs futures carrières ?
………
………
………

6- Sensibilisez-vous les étudiants au rôle de l'anglais en GM dans vos cours ?
☐ Oui   ☐ Non
Si oui, comment ?
………
………
………

Section 3

7- Quelles compétences linguistiques anglaises pensez-vous les plus importantes à développer pour vos étudiants ? Cochez la /les cases de vos réponses:

Ecoute   ☐   le parler   ☐   lecture et compréhension   ☐

écriture   ☐   grammaire   ☐   vocabulaire générale   ☐

vocabulaire technique   ☐   prononciation/phonétique   ☐

Autre(s) ……………………….. ……………………………………………………………….
………

8- Quelles sont les domaines que doivent vos étudiants approfondir dans leurs cours d'anglais? Veuillez suggérer d'autres que vous voyez nécessaires.

Oral

Comprendre une conversation d'une ou plusieurs personne qui pare anglais comme langue maternelle   ☐

Comprendre une conversation d'une ou plusieurs personnes qui parlent anglais comme langue étrangère   ☐

Comprendre une présentation orale   ☐

Comprendre une vidéo ☐

Prendre notes dans un cours magistral   ☐

Comprendre un conversation téléphonique ☐

Autre(s)……………………………………………………………………………………………
………
………
………

Présenter une communication en conférence   ☐

Présentation orale de résultats et graphes   ☐

Décrire les instructions et fonctionnement des engins et machines.   ☐

Communiquer avec des ingénieurs/ techniciens étrangers dont l'anglais est langue maternelle ☐

Communiquer avec des techniciens étrangers dont l'anglais est langue étrangère. ☐
Traduire ☐

Autres
………………………………………………………………………………………………
………………………………………………………………………………………………

Lecture :

Lire les articles publiés en anglais ☐

Lire et comprendre les manuels techniques ☐

Lire des documents divers ☐

Connaitre la culture des partenaires anglophones ☐

Autre(s)……………………………………………………………………………………
………………………………………………………………………………………………
………………………………………………………………………………………………

Ecriture :

☐ Rapports techniques   ☐ articles et résumés   ☐ emails (courriels)

☐ Descriptions techniques de machines   ☐ Description de schémas

Autre(s)………………………………………………………………………………..…
..………………………………………………………………………………………………
………………………………………………………………………………………………

Section 4

9- Dans la vie professionnelle, quel type d'anglais utilisent les partenaires internationaux non-anglophones (ex. chinois, turque, espagnole etc.) ?
☐ Anglais britannique   ☐ Anglais américain   ☐ Anglais internationale

10- Croyez-vous important de connaitre les fondamentaux de l'anglais comme langue Internationale/globale pour communiquer avec les techniciens étrangers ?

☐ Oui   ☐ Non

11- Quel serait le but d'apprendre l'anglais ?
☐ Parler parfaitement comme une personne de langue maternelle

☐ Connaitre le minimum pour communiquer en situation professionnelle

☐ Avoir un niveau satisfaisant pour parler et écrire

12- Est-il nécessaire d'intégrer l'enseignement de la culture dans les cours d'anglais scientifique ? veuillez justifier votre réponse
………………………………………………………………………………………………
………………………………………………………………………………………………
………………………………………………………………………………………………

13- Quel(s) type(s) de culture sensibilise le plus, l'apprentissage de l'anglais technique ?

☐ la culture britannique   ☐ la culture américaine   ☐ la culture du monde anglophone

Section 5

14- Existe-t-il de la documentation en anglais dans votre bibliothèque du département ?
☐ Oui   ☐ Non   ☐ Je ne sais pas

Si oui, la consultez-vous ?   Oui ☐   Non ☐

Comment lisez-vous les documents en anglais?

☐ Je lis et je comprends les textes   ☐ Je traduis   ☐ je demande de l'aide à un enseignant d'anglais

15- Comment pensez- vous que vos étudiants apprennent le mieux, la langue anglaise en classe?

☐ Par des polycopiés et cours magistraux   ☐ par vidéos   ☐ par photos et graphes

☐ par internet   ☐ Dans des séances d'écoute et de discussion

Autre(s)………………………………………………………………………………………… ………………………………………………………………………………………… ……….………………………………………………………………………………..

16- A votre avis, quelle est la meilleure méthode d'évaluer la progression de vos étudiants en anglais ?

☐ Par des activités régulières.   ☐ Par un seul teste à la fin du programme.

☐ Par une seule présentation de projet.   ☐ Pas de méthode particulière.

Autres :………………………………………………………………………………… ………………………………………………………………………………………… …………………………………………………………………………………………

17- Quelle(s) sont vos suggestions pour élaborer un cours d'anglais technique et pour motiver les apprenants ?
………………………………………………………………………………………… ………………………………………………………………………………………… ………………………………………………………………………………………… ………………………………………………………………………………………… ………………………………………………………………………………………… ………………………………………………………………………………………… ………………………………………………………………………………………… …………………………………………………………………………………………

Mercie pour votre participation et pour votre coopération.

Appendix VI

English Teachers' Questionnaire

This questionnaire aims at investigating the learners' needs in English for mechanical engineering. To answer the questions helps evaluating the situation of learning and teaching English at the department of mechanical engineering. This questionnaire is anonymous and your answers are precious. It is thus very important that you answer all the questions with as much of care and precision as possible. We thank you for the time, the efforts and the reflections that you will devote to answer this questionnaire.

Section 1:   General Information

Tick the appropriate box

Gender   ☐   Male   Female   ☐

Age   ……………………………………………

Status   ☐   Permanent teacher   Part-time teacher   ☐

Qualifications   ☐   Licence   ☐   Master   ☐   Magistère   ☐   Doctorate

Number of teaching years   ……………………………..…………….……………

Number of teaching years at the department……………………………….……………

Why did you choose the Mechanical Engineering department?

☐ Because I liked the field ☐ because I needed a job ☐ It was imposed by the university

Others…………………………………………………………………………………
.

Have you been trained in ESP (English for Specific Purposes) or Scientific English teaching?

☐ No   ☐   Yes, please specify……………………………………………………

………………………………..………………………………………………………….…

Answer the following questions

(a) The classes you are in charge of ………………………………………………………….

(b) The number of students in each class…………………………………………………..

(c) The number of hours of English per week is …………………………………………..

(d) Do you believe that the number of hours devoted to your course is sufficient?

☐ Yes   ☐   No   if no, how many hours would be suitable? ....

Section 2:   Pedagogical Information

01-Describe the general level of your learners in English?

……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………

02-Do you assign any placement tests (a preliminary test to know your learners' level) before starting your course?

Yes ☐ please specify………………………………………………………………………

No ☐ please justify ………………………………………………………………………….

03-Do you study your learners' needs before you choose your materials and prepare the English course?

No ☐ please justify………………………………………………………………………………

Yes ☐ What are the tools that you use to investigate your learners' needs analysis?

(a) Questionnaires ☐   (b) ☐ formal Interviews   (c) ☐   Informal discussions

(d) Other(s)

……………………………………………………………………………………………….…….

04-Describe your course, you can tick (√) more than one option?

(a) ☐ EST (English for Science and Technology) (b) ☐ EAP (English for Academic Purposes)   (c) ☐ EOP (English for Occupational Purposes (d) ☐ General English

(e) ☐ English for mechanical engineering

05-How is the English syllabus defined in the general mechanical engineering curriculum?

(a) ☐ Integrated   /   Do you apply it? ☐ Yes

      ☐ No, why?..

(b) ☐ Independent   /   What sort of materials and sources do you use to teach?

………………………………………………………………………………………….…..……….

………………………………………………………………………………………….…..……..……..

06-What content materials do you use in your course?

(a) Ready-made textbook available at the library   ☐

(b) Tailored (adapted) materials for the purpose of the course   ☐

(c) Different on-line texts and exercises   ☐

(d) Authentic materials, e.g. manuals, catalogues, emails, manufacturing schemes. ☐

Add more specific information about any specialist or authentic texts you use in your course (titles and sources)

……………………………………………………………………………………….………....…..

……………………………………………………………………………………………….….…

………………………………………………………………………………….. …………....

07-Working in collaboration with the content teachers, you

  (a) ask them about your learners' needs of English ☐

  (b) always ask them to clarify some content knowledge ☐

  (c) never get in touch with ☐

  (d) others……………………………………………………………………………………….

Section 3

08-When selecting your materials, you usually (you can tick more than one answer)

(a) Choose American English materials ☐

(b) Choose British English materials ☐

(c) Choose materials prepared by non-native speakers ☐

(d) Select mixed sources ☐

(d) Do not pay attention to the type of English used ☐

09-How do you raise your learners' awareness about the non-native use of English?

(a) Through videos and listening passages showing different accents ☐

(b) Through authentic texts written by non-native speakers of English ☐

(c) Through authentic spoken and written examples related to mechanical engineering ☐

(d) Through class discussions ☐

(e) I do not take the type of English into account in selecting materials. ☐

(f) I do not think the learners will really need to use English as an International
    language in their studies or in their careers. ☐

(g) A focus on task achievement is more motivating than a focus on accuracy. ☐

(h) The teaching and testing of a single standard English makes it difficult to meet the
needs of different kinds and levels of students. ☐

Others ………………………………………………………………….………………

10-What do you focus on mostly?

  (a) Teaching technical vocabulary related to the content ☐

  (b) Using technical vocabulary in conversation ☐

  (c) All grammatical structures. ☐

  (d) Some grammatical structures related to the content. ☐

  (e) Communication, ☐

  (f) American culture ☐ (g) British culture ☐ (h) Various English speaking countries'
       cultures ☐   (i) Pronunciation

  (j) Others …………………………………………………………………….….…..……..
    ………………………………………………………………………………………………

Section 4

11-Are your objectives in teaching English for Mechanical Engineering to prepare the learners to?

(a) Memorize the maximum of technical vocabulary related to their discipline only ☐

(b) Speak sufficiently for communication in work environment ☐

(c) Speak perfectly (mistake-free speech and writing) ☐

(d) Be able to read various written technical textbooks ☐

(e) Be able to translate technical texts into French ☐

(f) Have satisfactory speaking and writing skills to communicate in general situations ☐

(g) learn survival English to communicate with foreign technicians and engineers. ☐

12-What skills do your learners need mostly?

☐ Listening   ☐ Speaking   ☐ Reading   ☐ Writing

13-Rate the skills you focus more in your course

☐ Listening   ☐ Speaking   ☐ Reading   ☐ Writing

……… %   ……….%   ………..%   ………..%

14-What skills does your course provide?

Listening	tick
Every day conversations	
Field and job related topics	
Recorded lectures in the field	
Technical lexis in professional settings	
Speech of native speakers	
Speech of non-native speakers	
Others:	
Speaking	
Every day conversations	
Workplace discussions and phone conversations	
Small presentations to a specialist audience	
Accuracy in speaking with foreign visitors	
Fluency in speaking with foreign visitors	
Using content-related lexis to communicate with foreign technical staffs	
Others:	
Reading	
Reading standard English texts	
Reading data in tables and graphs	
Reading instructions and recommendations	
Reading a wide range of technical content-related documents	
Reading international texts and understanding the authors' points of view	
Others:	
Writing	

Writing emails	
Writing abstracts and summarising papers	
Reporting data from tables and diagrams	
Using a wide range of lexis in writing paragraphs and essays	
Others:	

Section 5

15-What strategies do you use in class?

☐ (a) Role plays   ☐ (b) Texts and handouts   ☐ (c) Videos   ☐ (d) Group discussions

☐ (e) Presentations   ☐ (f) Problem solving.   ☐ (g) Using pair work and group work tasks

Others

…………………………………………………………….…………………………………………

……………………………………………………………………………………………………...

16-How do you assess your learners?

(a) Through term tests ☐ (specify the type)………………………………………………

(b) Through regular tests ☐ (specify the type) ………………..………………………

Through continuous evaluation (attendance +participation+ written test)

Others ………………………………………………………………………………………

17-Do you readjust your course after the test results?   ☐ **Yes**   ☐ **No**

Justify………………………………………………………………………………………

18-Which difficulty (ies) do you encounter while teaching English?

…………………………………………………………………………………………….....…
………………………………………………………………………………………………......
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19-What are your suggestions to improve the ESP course for mechanical engineers?

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Thank you for your patience, participation and cooperation.