People's Democratic Republic of Algeria

Ministry of Higher Education and Scientific Research

University of ORAN2-Mohamed BEN AHMED

Faculty of Foreign Languages

Department of English

Exploring Algerian ESP Syllabuses:

Case of English for Biologists at the University of Oran 1

Thesis submitted to the Department of English in Fulfilment of the Requirements for the Degree of Doctorate 'LMD' in Didactics of English for Specific Purposes

Presented by: Miss.SARAA Nadia **Supervisor: Dr. ZAGHAR Fatma**

Board of Examiners:

Pr.DJAILEB Farida	**Professor**	**University of ORAN2**	**President**
Dr.ZAGHAR Fatma	**MCA**	**University of ORAN2**	**Supervisor**
Pr.BENHATTAB Abdelkader Lotfi	**Professor**	**University of ORAN2**	**Examiner**
Dr.ZIANI Melouka	**MCA**	**University of Mostaganem**	**Examiner**
Dr.BENABED Ammar	**MCA**	**University of Tiaret**	**Examiner**

Academic Year: 2020-2021

Declaration of Originality

I hereby declare that the submission of this dissertation is entirely the result of my investigation and that due reference or acknowledgement is made, whenever necessary, to the work of other researchers**.**

Signed: Nadia SARAA

Dedications

When someone you love becomes a memory. The memory becomes a treasure. To my Aunt.

This humble work is also dedicated to my dearest persons in the world:

My wonderful Parents, thank you for your love and support.

To my dearest brother Khaled.

To my lovely sisters Fatima, Karima, and Nouria.

To all those who lent a helping hand.

Acknowledgements

In the Name of ALLAH the Most Compassionate, the Most Merciful

First of all, my deepest gratitude is owed to my supervisor, **Dr. ZAGHAR Fatma,** for her patience, valuable feedback, and guidance. Among other things, she taught me what research is and how to explain and justify every word placed in the thesis. Thank you, **Dr. ZAGHAR**, for your friendly attitude and for the long hours of conversation that shaped and re-shaped the present research work.

I would also like to extend my sincere gratitude, respect and admiration to Dr**. ZITOUNI Mimouna** for bringing the ESP doctoral project to the University of Oran2. I cannot express her boundless wisdom, insightful knowledge, continuous encouragement and inestimable guidance that have helped me along in this work. She has been the perfect motivator, adviser and always accessible. I am honoured for being one researcher in her team. I just want you to know that ALLAH gifted you with the ability to penetrate right to one's heart, you are an amazing gift and inspiration to the Algerian society and to the youth in particular. May ALLAH bless you and protect you forever.

I am also indebted to Prof. M. MILIANI for being always there whenever needed and who never hesitated to provide me with endless help.

I would like to thank all the teachers working in the departments of Biology at the University of ORAN1, ORAN 2, the University of TIARET, the University of MOSTAGANEM, and the University of SAIDA who provided me with the essential background to carry out this research. Without their insightful comments and reports, this work would not have been completed.

I am also thankful to the panel of examiners including Pr.BENHATTAB, Pr.DJAILEB, Dr.BENABED, Dr.ZIANI, who have accepted to read and assess my thesis.

Special thanks go for all the administrative staff and the students of the department of Biology of the University of ORAN 1 for their collaboration, patience and help throughout this research.

A word of thanks goes Mr A. DJABBAR who kept encouraging me along my studies, Mr S.BOUKHENTACHE and Mr M.BENMANSOUR to whom I owe a debt of gratitude.

ABSTRACT

English for Specific Purposes (ESP) is the teaching of specialized language for learners with precise needs. However, even this specific teaching approach needs adjustments from one field to another, from one environment to another, and from one institution to another. Much like the other world's countries, Algeria decided to incorporate ESP teaching into its different higher education mainstreams. Nevertheless, Algerian ESP teachers complain of the lack of methodological guidance to effectively implement specialized courses for technical specialties. The previous studies (e.g. Allal, 2009; Bouzid, 2012; Krarzia,2013 and others) about ESP syllabuses in the Algerian context have devised alternative syllabuses, but no study to the researcher's knowledge has specified an optimal methodology to syllabus design that makes ESP teaching more learner-centered. This study examines the ESP teaching situation in the Department of Biology at the University of Oran1 in the view of designing a more effective and context- sensitive syllabus that uses inquiry learning to make the ESP students more active and involved in the learning process. To conduct this study, the researcher selected four data collection tools, namely, a questionnaire with the teachers, a questionnaire with the students, a semi-structured interview with the teachers, and classroom observation. The results have shown that ESP teachers face considerable obstacles in planning their ESP courses. Amongst these hurdles, one can cite the absence of a comprehensive and adequate syllabus, lack of teachers' training and lack of ESP materials. On the basis of the findings of this research, an ESP syllabus has been proposed for this population to satisfy the students' needs and meet the teachers' expectations. To prove the worth of the suggested teaching syllabus, a checklist questionnaire was sent to three English teachers to review its content. The results demonstrated that the new course guide appears to be promising and more effective than the existing syllabus. Moreover, this study recommends the Algerian Ministry of Higher Education to provide ESP teachers with more elaborate course guidelines and useful training to devise their syllabuses so that they can help learners from different specialities improve their language skills and meet their needs.

Keywords: Biology learners, ESP, ESP teachers, ESP learners, syllabus design.

Table of Contents

Chapter Two: Work Field and Research Plan

Introduction

Chapter Three: Compiled Data and Interpretation of the Findings

Chapter Four: Suggesting a Methodology to Designing an ESP Syllabus

List of Tables

List of Figures

List of Abbreviations and Acronyms

CBA Content Based Approach
CBI Content Based Instruction
CBL Content-Based Learning
CBLT Competency -Based Language Teaching
CEIL Centre d'Enseignement Intensif des Langues
CLT Communicative Language Teaching
CNP Communicative Need Processor
EAP English for Academic Purposes
EBE English for Business and Economics
EFL English as a Foreign Language
EGP English for General Purposes
ELP English for Legal Purposes
ELT English Language Teaching
EMP English for Medical Purposes
ENOP English for No Obvious Purposes
EOP English for Occupational Purposes
ESL English as a Second Language
ESP English for Specific Purposes
ESS English for Social Studies
EST English for Science and Technology
GE General English
IBA Inquiry-Based Approach
IBI Inquiry-Based Instruction
IBL Inquiry-Based Learning
IBLTA Inquiry-Based Language Teaching Approach
ICT Information Communication Technology
L2 Second Language
LMD Licence Master Doctorate
LSP Languages for Special Purposes
NA Needs Analysis
PBA Problem -Based Approach
TBA Task- Based Approach
TBL Task-Based Learning
TBLT Task- Based Language Teaching
TSA Target Situation Analysis
TENOR Teaching English for No Obvious Reasons
UK United Kingdom

GENERAL INTRODUCTION

General Introduction

Today, English is considered as the most utilitarian language in the planet and the lingua franca of the world. Learning English can have considerable benefits, it may widen people's understanding of almost any aspect of life through wide access to knowledge in media, permit individuals to fully immerse themselves in other cultures, and facilitate communication among human beings around the entire world especially when it comes to travelling, asking about directions, ordering food, or using public transportations. This prestigious language is, therefore, considered a shared code for international communication between nations. Furthermore, there is a wide range of interesting books, scientific articles, and important documents written in different languages and translated into English; consequently, knowing English allows access to this great variety of contents. Moreover, English is, nowadays, a valuable requirement for pursuing studies in many advanced countries or for working in these countries; that is, mastering English can help people take advantage of great career opportunities.

In the late 20th century, the American rise in the fields of technology, business, and education has strengthened its place in the world; thus, its language has become a fundamental tool for universal communication. Today, with its different varieties, English language is widely used between people all over the world for many purposes, notably in the areas of science, politics and economy. Indeed, this prominent language has invaded many territories by force or by choice and provides sprinkling perspectives regarding many policies such as business, economy, science and technology. Today, English can be viewed as one of the most appealing languages in the world, particularly, with its depth of vocabulary, grammar, borrowed words, and instructions. These advantages give the English language a desirable support to be acquired among people with less difficulty.

Because of business growth and occupational mobility, English becomes the language of science, technology and international communication in different countries, especially when it is needed for scientific research–access. Thus, English dominates most of research publications, international conferences, research projects and findings, and it is acknowledged as the language of science either for native or non-native speakers.

The growing interest in learning English seems to be a real concern, many countries started to introduce English in their curricula, schools, and higher education, either as first, second, or foreign language. Seeing that English reflects the universality of millions of people

across the globe, the demand for English Language Teaching (ELT) has exploded. As teaching English has influenced many scholars and linguists, many methods and principles in language teaching have developed, all of which, have attempted to teach English for practical purposes such as conversing with native speakers and getting things done.

In the Algerian context, learning and teaching English has become a prevailing necessity. Although most scientific branches such as biology, medicine, mathematics, architecture, chemistry still rely on the use of the French language, Algerian experts in academic education have felt the need to promote English at the national level; notably, when this language has gained the status of the language of science and technology, and when most publications, articles, books, research findings, and scientific resources are presently written in English. Besides, there is a considerable attention in scientific and commercial fields among educators on how to teach and how to use English in specific research domains.

Currently, the status of the English language in Algerian universities is seen as a way to develop and evolve and as a criterion to keep pace with globalization. Today, English courses are integrated in all university curricula, and English is taught in the departments of many universities as a separate course.

The researcher anecdotal observations show that the teaching of English for Specific Purposes (ESP) in the Algerian higher education departments is carried out in ad hoc manner. Taking the case of English language teaching in the department of biology at the University of Oran 1-Ahmed BEN BELLA, a series of inadequacies has been noticed. The teaching staff seems little prepared to fulfill this task. Only one English teacher is found at this department and this teacher is providing courses for the various cycles of the Licence and Master levels, the teacher prepares on her own the courses which are supposed to be in line with the different specialities provided at the level of the faculty, yet there is no systematic plan that guides the teacher personal endeavours. In addition to that, this teacher is operating alone in the department deprived from having “an office” where she could share experiences or come up with a sound syllabus or methodology of teaching.

Perhaps the most remarkable observation is that there is no official ESP syllabus that could guide individual teachers to implement a pertinent programme for each speciality. There is no prescribed or recommended teaching methodology to bring this challenging task to fruition. This could be one of the many reasons why ESP courses seem inadequate at the department of biology as it might be a direct cause of learners’ weak proficiency in English.

Like many other countries in the world, Algeria does not teach general English for scientific streams at higher education, but rather technical and scientific English that is dispensed at each mainstream department. These departments are provided with only objectives for teaching courses to upgrade the level of the students in terms of access to foreign language documentation, be it spoken or written.

Since we cannot teach all the language even for general purposes, there must be a kind of language content selection. Research work in English language teaching (ELT) has advocated the control of contents to be taught (either grammar or lexis). Likewise, it has shown the value of planning ahead the teaching content in accordance to the target objectives. Hence, ELT should first start by defining the objectives of teaching, selecting content and learning experiences that align with the teaching objectives. Moreover, defining objectives permit establishing criteria and benchmarks for the teaching syllabus.

Consequently, it could be argued that education in ELT or in ESP should be based on a pre-defined syllabus which would warrant coherence, and at the heart of syllabus design is the performance of needs analysis which would specifically define the contents of teaching. Many researchers such as Munby (1978) , Hutchinson and Waters (1987) , and the Council of Europe have established powerful needs analysis instruments to conduct researches and to survey the learners' intended wants for their educational endeavours. In fact, needs analysis is no longer the realm of applied linguistics, it is a common practice among teachers. Nowadays, every teacher is required to carry out needs analysis through the use of simple questionnaires or group meetings or any other needs analysis method to investigate their learners' needs, lacks and wants in order to design effective courses.

Moreover, providing teachers with teaching guidelines in terms of methodology could better channel their efforts to maximize the attainment of objectives. The dominance of teacher-fronted practices in the Algerian universities needs to be changed. It is high time teachers experienced with more active pedagogies such as task-based learning (TBL) and content-based learning (CBL), and inquiry-based learning (IBL). Thus, teachers need to discover these new approaches which might be unfamiliar to many of them. In so doing, they could uncover their effectiveness in improving teaching results and training autonomous learners.

In a nutshell, the Algerian ESP programmes need to be systematically designed through needs analysis surveys, and innovative methodologies need to be employed to

upgrade the attainment of objectives. As a result, teaching would be easier and clearer for the teachers, and their time would be treasured for engineering the learners' progress.

In the light of these data, this study aims, notably, to explore the ESP teaching/ learning situation in the department of biology at the University of Oran1, and shed light on the academic obstacles facing the ESP teachers, then helping them select a convenient content and choose an appropriate methodology to ESP teaching. Furthermore, this research work suggests a teaching approach (Inquiry-based approach) that may help students learn English effectively. Finally, an ESP syllabus model that is compatible with the students' needs, lacks, expectations, and in harmony with the ESP teaching objectives is then devised. This work can be used as a documentation profile for ESP instructors since it proposes some guiding principles in a specific ESP teaching environment.

To better understand the teaching situation of English at the department of biology and tackle the inadequacies, the following research questions are asked:

1. What might be the obstacles that ESP teachers face at the department of Biology at the University of Oran1?
2. How do ESP teachers at the department of Biology evaluate the existing syllabus?
3. What possible solutions do ESP teachers propose to enhance the current situation of teaching English at the department of Biology at the University of ORAN1?

Based on the above research questions, the following hypotheses are suggested:

1. It is hypothesized that among the obstacles faced by ESP teachers in the department of Biology (University of Oran1) are lack of appropriate syllabi, unavailability of teaching materials, and learners' low level of motivation.

2. We advance that ESP teachers in the department of Biology consider the existing syllabus unsuitable and inadequate for the learners' needs.

3. We presuppose that promoting teachers' professional training and designing a more context suitable syllabus, are among the possible solutions for improving the current ESP teaching situation in the department of Biology at the University of ORAN-Ahmed BEN BELLA.

As a starting point, and to observe how the current ESP syllabus is put in practice, a random observation of second and third classes was made. Concerning ESP teachers, as the number of teachers operating in this department of biology of the University of Ahmed Ben Bella is too small to guarantee a valid sample, the researcher will resort to include other teachers working in the neighbouring universities such as Saida, Tiaret, and Mostaganem to get a reasonable sample.

Moreover, the research participants (teachers and learners) have been requested to fill in a questionnaire through which they will be asked to identify teachers' constraints, the purposes for teaching/learning ESP, the needs of learners, the topics of interest, the relevance of the contents, the preferred teaching methodology, and the available materials. These two questionnaires (teachers and learners' questionnaires) have the same objectives and are almost identical except in the wording of the questions and the relevance of the questions to the academic role of each of them. The students' questionnaire will be paired with an Arabic version, as many of them are not proficient enough in English.

Additionally, another group of teachers working in other biological departments in Oran (University of Science and Technology Mohamed BOUDIAF-Oran -USTO-, Oran Higher School of Biological Sciences) have been asked to participate in the interview to further explore issues left out or little elucidated in the questionnaires. Once the syllabus and the ESP courses are accumulated, and the unit samples are designed, the researcher asked 3 English teachers to review them. The English teachers were invited to answer a checklist questionnaire. The objective of this latter is to gauge the merits or the demerits of the novel syllabus.

The thesis encompasses four main chapters and it starts off with a general introduction that wraps up the context of the research. First, chapter one is devoted to the review of literature which introduces some directions and perspectives in ESP. Second, chapter two and chapter three explain the practical investigation of the field of work, data analysis, and interpretation of the findings. The last chapter represents the suggestions and pedagogical recommendations provided by the researcher. Finally, a general conclusion sums up the most important findings that stem from this study.

Chapter One:

Directions and Perspectives in ESP

Introduction

The shift towards teaching English for particular purposes or what is often introduced under the label of ESP has expanded all over the world. Today, the trend to teaching English for Specific Purposes has become an important and sensitive sub-field within ELT.

This chapter aims at providing a theoretical overview of English for Specific Purposes, examining its different types, comparing ESP with English for General Purposes (EGP), and explaining the characteristics of the course design and language teaching skills in ESP. The chapter also discusses notions of needs analysis and concepts of syllabus design pertained to ESP. Furthermore, these discussions are followed by defining the prominent approaches to teaching ESP, the roles of the ESP teacher, and the benefits of ESP.

1.1. Definition of English for Specific Purposes

Over time, a tremendous concern for ESP has begun to evolve, notably in the field of second /foreign language teaching. Basically, ESP is viewed as a distinct discipline; and one of the most intricate components in English language teaching literature. It is acknowledged as being a lively part in the area of ELT that holds identifiable proper sub-sections. Yet, several writers offered a bunch of definitions to the acronym ESP. The most important of these definitions of ESP are reviewed in what follows.

Mackay & Mountford (1978) viewed ESP as "the teaching of English for a clearly utilitarian purpose*"* (p. 2). In their definition, the co-authors regarded ESP as a pre-determinate language teaching approach. The point is that learners need to learn English required in the field of specialism and future career. They also considered needs as vital in ESP, because it enables teachers tailoring courses according to their learners' needs. Sharing the same line of thought, Munby (1978) denoted that the communicative needs of learners are viewed as essential when planning the courses, selecting the materials and designing the syllabus. According to him *"ESP* courses are those where the syllabus and materials are determined in all essentials by the prior analysis of the communication needs of the learners*"* (p. 2).

Likewise, Widdowson (1983) posited that "ESP is simply a matter of describing a particular area of language and then using this description to impart to learners the necessary restricted competence with a particular area" (p. 10). Thus, ESP came to describe the teaching of English in a particular area of interest and to provide students with the necessary language

skills needed in professional or academic domains. Similarly, Coffey (1985) pointed that ESP is ‘‘A quick and economical use of the English language to pursue a course of academic style (EAP) or effective in paid employment (EOP)’’ (p.79).

A more elaborate definition is given by Hutchinson and Waters (1987) who conceived ESP as “An approach to language teaching in which all decisions as to content and methods are based on the learners’ reason for learning” (p.19). According to these authors, ESP can be purely seen as an ‘*approach*’ to language teaching and not a ‘*product*’. Thus, as denoted here, the key point is that no particular type of methodology or language teaching method or materials are involved in the ESP classroom. Yet, the foundation of ESP, as they indicated, occurred simply by answering the question why the learner needs to learn the foreign language? In fact, the view of Hutchinson and Waters (1987) on ESP is contrasted with Dudley-Evans and St-John (1998), who were of the opinion that ESP must take the use of a particular methodology that should link the ESP teacher with his/her learners.

By the same token, Strevens (1988) claimed that “ESP is a particular case of general category of special –purpose language teaching. The same principles apply no matter which language is being learnt and taught” (pp. 1-2). He has also made up a distinction between four absolute and two variable characteristics in ESP described in what follows.

I. **Absolute characteristics**:

The absolute characteristics denote that ESP

- is designed to meet the specific needs of the learner
- content-centred to particular disciplines, occupations and activities
- is centred on language appropriate to those activities in lexis, syntax, semantics and analysis of the discourse
- and is contrasted with general English language teaching.

II. **Variable characteristics**:

The variable characteristics are that ESP maybe and not necessarily

- restricted to the learning of skills (for example reading only);
- taught according to any pre-determined methodology (Strevens, 1998, pp.1-2) .

In ESP Japan Conference of 1997, Dudley-Evans and St-john (1998) modified and improved Strevens’ (1988) absolute and variable characteristics of ESP, they replaced his old

concepts, then offered new ones, asserting on what ESP is in contrast with general English. Moreover, they added more variable characteristics. The revisited definition of Dudley-Evans and St-john (1998) is the following:

I. **The absolute characteristics are that ESP**:

1. is designed to meet the needs of the learner in a particular area;
2. uses a specific methodology and activities of the discipline it serves;
3. and, is a language centred approach.

II. **The variable characteristics are that ESP**:

1. maybe designed for particular disciplines;
2. may use different methodology from that of general English;
3. could be designed for an adult learner;
4. is designed for intermediate or advanced students;
5. and requires having a basic knowledge of the language system, but ESP can be taught to beginners' (Dudley-Evans & St -John 1998, pp. 4-5).

Dudley-Evans et al (1998) elucidated that ESP does not necessarily include a specific discipline and that ESP, unlike the methods used in GE, has its own use of a methodology which reflects on the discipline it serves; however, the language (registers, genres) and activities are simply generated by learners' needs.

Robinson (1999) delineated that "ESP is protean, as it is responsive to developments in all three realms of language, pedagogy, and content studies" (p. 1) In this quotation, Robinson (1999) described ESP as an educational enterprise that is comprised of three realms of knowledge including: language, pedagogy, and the speciality of the students. She is also of the opinion that when teaching ESP, the content (i. e., subject matter) is fundamental and should be taken into consideration when delivering ESP courses. Yet, her review is relatively anticipated from different angles. For example, Dudley-Evans and St-John (1998) argued that most of the ESP work is exclusively based on the notion 'common-core' of language and skills of different academic disciplines; that is to say, ESP teaching must reflect on the activities of the discipline and not necessarily be related to the content (p. 4).

In her article ‘‘what is English for Specific Purposes?’’, and based on her personal experience of teaching ESP, Smoak (2003) stated the following:

> ESP is English instruction based on actual and immediate needs of learners who have to successfully perform real-life tasks unrelated to merely passing an English class or exam. ESP is needs based and task-oriented. Teaching ESP is demanding and time-consuming and different for every group of students. (Smoak, 2003, p. 27).

Furthermore, she stated five valuable lessons she has learnt from her personal ESP teaching experience listed as follows:

- ESP is not teaching a set of lists of technical vocabulary.
- Assumptions and intuitions about language in ESP teaching context are not accurate.
- Needs analysis requires observing the language in a real context.
- Material should be authentic and appropriate. (Smoak, 2003, p. 28).

In the same vein, Lorenzo (2005) believed that ESP “concentrates more on language in context than on teaching grammar and language structures’’ (prag. 2), he assumed that to perform real-life tasks; the focus in ESP should be based on language at ‘use’ rather than merely teaching language structure such as vocabulary, grammar, or tenses.

In the same line of thought, Basturkmen (2006) delineated that:

> ESP is understood to be about preparing learners to use English within academic, professional, or workplace environments and a key feature of ESP course design is that the syllabus is based on an analysis of the needs of the students. (Basturkmen, 2006, p. 18).

Basturkmen, thus, regarded the needs of the learners as one of the crucial components when teaching ESP. Again, needs can clearly identify the objectives and the purposes for which English is being taught. Next to that, the analysis of the students’ needs may determine the language skills as well as the content of the syllabus that the teacher will use.

Brown (2016) indicated that to define ESP, it seems necessary to ask what ESP is not. He argued that ESP is, in fact, not what has been called TENOR (Teaching English for No Obvious Reasons) or sometimes meaning ENOP (English for No Obvious Purposes)(p. 5). Brown (2016) explained TENOR or ENOP via the example of international students who come to the United States to carry out their studies at the university and who suddenly find

difficulties to communicate the content with their teachers or friends. According to Brown, this communication gap could be that in their countries of origin, they were learning English for no obvious reasons. However, if these students had studied English for academic purposes along the line with their English courses, they might have been better prepared for their own learning purposes. In the same perspective, Brown (2016) considered that NA and ESP ‘‘are inextricably intertwined’’ (p.5), and necessary. He claimed that: ‘‘if there is no needs analysis, there is no ESP’’ (p. 5).

Brown (2016) stipulated needs analysis as compulsory for the formulation of the ESP courses; additionally, ESP cannot exist without knowing the specific needs of learners. By the same token, a further question should also be posited such as: why the institution or the organisation or the teacher do NA. All in all, Brown avowed that NA and ESP are intertwined concepts.

To sum up, the above definitions provided by different scholars converge upon the same conclusion, most of them linked ESP to learners’ needs, the nature of language, and the context. However, the concepts that they usually disagree with are the nature of language i.e., (registers, discourses, jargons, and so on) and at how it should be taught (methodology). Alternatively, the majority of the authors have strongly conceded that for devising ESP courses, learners’ needs should be the primary concern. Moving forward in this chapter, and for providing a thorough understanding of the acronym ESP, the investigator, in the following description, discusses the meaning of the word ‘’Special’’ or what is most often called ‘’specific’’ in ESP.

1.1.1. The Meaning of the Word ‘Special’ in ESP

The meaning of the letter ‘S’ in ESP has long been subjected to fuzziness between either English for ‘Special’ or English for ‘Specific’ purposes. However, Munby (1978) claimed that many scholars attempted, but not necessarily, to use the word ‘Specific’ instead of ‘Special’ for the acronym ESP; besides, the interpretation of the term ‘Special’, in many cases, means ‘ unique’, that is to say, ‘ not General’. In fact, the term ‘Special’ refers to the language associated to the purposes for studying it. It specifies distinctive features of the target language needed to attain particular learners’ purposes.

Likewise, Mackay and Mountford (1978) stated 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. (In Mountford, 1978, p. 4)

According to Mackay and Mountford (1978), special language pertains to the contextual jargon that embedded all the technical words and expressions of a particular language. However, the word specialized denotes the purposes for which learners want to learn the language; that is to say, the acronym 'special' in ESP means the purposes for learning the target language and not to the special jargons, register, or discourse. In the same line of thought, Harding (2007) delineated that 'specialism' in ESP has not much in common with other disciplines for instance, a plumber, a doctor, a meteorologist, and a mechanic have different language needs that the teacher should necessarily identify to plan ESP courses so as the syllabus. The aforementioned job titles need the understanding of technical specialized vocabulary, use of documentation, graphical, diagrammatic, and number-based information sources. Learners thus are required to interact, practice, operate with the public, reflect on their competences, evaluate their own performance, and work collaboratively. These common job areas require different learning styles, a different genre of texts, a particular discourse which must relate to the field of specialism. In recent time, the emphasis upon the word *Specific* has shifted to learners' *needs* and the *use* of language rather than just the *specialty* of the field (Yeught, 2016, p. 3). The following section unveils and discusses divisions that have shaped the field of ESP, but before that, two abbreviations of frequent occurrence in ESP mainly (EAP and EOP) will be highlighted in what follows.

1.1.2. English for Academic Purposes versus English for Occupational Purposes

EAP is the abbreviation of English for Academic Purposes, it is the learning or the teaching of English in academic contexts such as schools, institutions, universities, and centres. This instructional approach teaches students academic English so that to master a given set of skills such as participating in seminars, writing reports, taking notes, writing journals and conference papers.

In his definition of EAP, Hyland (2006) stated that:

> EAP is a field open to self-scrutiny and change, and for these reasons it offers language teachers an ethical, reflective, and fruitful field of research and professional practice and offers students a way of understanding their chosen courses and disciplines. (Hyland, 2006, p. 5)

Accordingly, EAP is generally taught to students who need to succeed in English in particular educational settings. Besides, the global growth in English for academic contexts, various disciplinary international programmes take vivid interest in EAP teaching.

EOP, on the other hand, is focused on improving students' English language skills related to the world of work. Kim (2008) asserted that EOP is concerned with acquiring the language and training adult learners to gain communicative competences and better performances needed at the workplace and in job-related contexts.

1.1.3. Divisions and Sub-divisions of English for Specific Purposes

ESP, as mentioned previously, is a branch of ELT which has its own sub-parts too. Most ESP books, articles, and educational specialists often roughly divide ESP into two main categories EAP, and EOP. Nonetheless, several scholars and educators offer a panoply of alternative sub-divisions in ESP such as (Carver, 1983; Hutchinson &Waters, 1987; Dudley-Evans & St-john, 1998; Robinson 1991, Brown, 2016). In the next description, the investigator discusses the divisions of Carver (1983), Dudley-Evans& St-john (1998) and Brown (2016).

Carver (1983) classified ESP into three major types:

1. English as a restricted language;
2. English for academic and occupational purposes;
3. English with specific topics (Carver, 1983, p. 2)

He explained "English as a restricted language'' with the example of English used by air traffic control or by waiters, who use it to communicate appropriately in a very fixed setting and in a special environment. A more elaborate distinction between general language and restricted language is explained by Mackay and Mountford (1978) in the following quote:

> . ..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. However, such restricted repertoires are not languages, just as a tourist phrase book is not grammar. Knowing a restricted 'language' would not allow the speaker to communicate effectively in novel situations, or is in contexts outside the vocational environment. (Mackay & Mountford, 1978, pp. 4-5).

On his side, Carver (1983) divided ESP into English for academic purposes (EAP) and English for occupational purposes (EOP). The rationale of this division is that the end purpose of both types is identical (Mizel, 2016, p. 19). However, Hutchinson and Waters' (1987) classification differs from that of carver (1983), they split ESP into three main branches English for Science and Technology (EST), English for Business and Economics (EBE),English for Social Studies (ESS). Each of these branches is further divided into two sub-branches. For instance, EAP encompasses English for psychology, whilst EOP includes English for secretaries (Hutchinson &Waters, 1987, p. 17). In fact, Hutchinson and Waters (1987) rejected the clear cut of EAP and EOP, they advanced that ''people can work and study simultaneously; it is also likely that in many cases the language learnt for immediate use in a study environment will be used later when the student takes up, or returns to, a job'' (p. 16).

The final type identified by Carver (1983) is English with specific topics. According to Carver (1983), this type of English is only obtained when the emphasis shifts from purpose to the topic. For example, scientists may need English for working in foreign institutions, or for reading studies, or for attending conferences. Yet, this type (i.e., English with specific topics) is regarded as an integral element in ESP courses or programmes, and not a separate part of ESP. Moreover, this type stresses on the situational language which is obtained from the interpretation of the results of needs analysis of the authentic language students need (Mizel 2016; Bilakcuglu, 2012).

The following figure 1.1 below represents the tree of ELT designed by Hutchinson and Waters (1987), it displays the major divisions in the field of ELT.

.

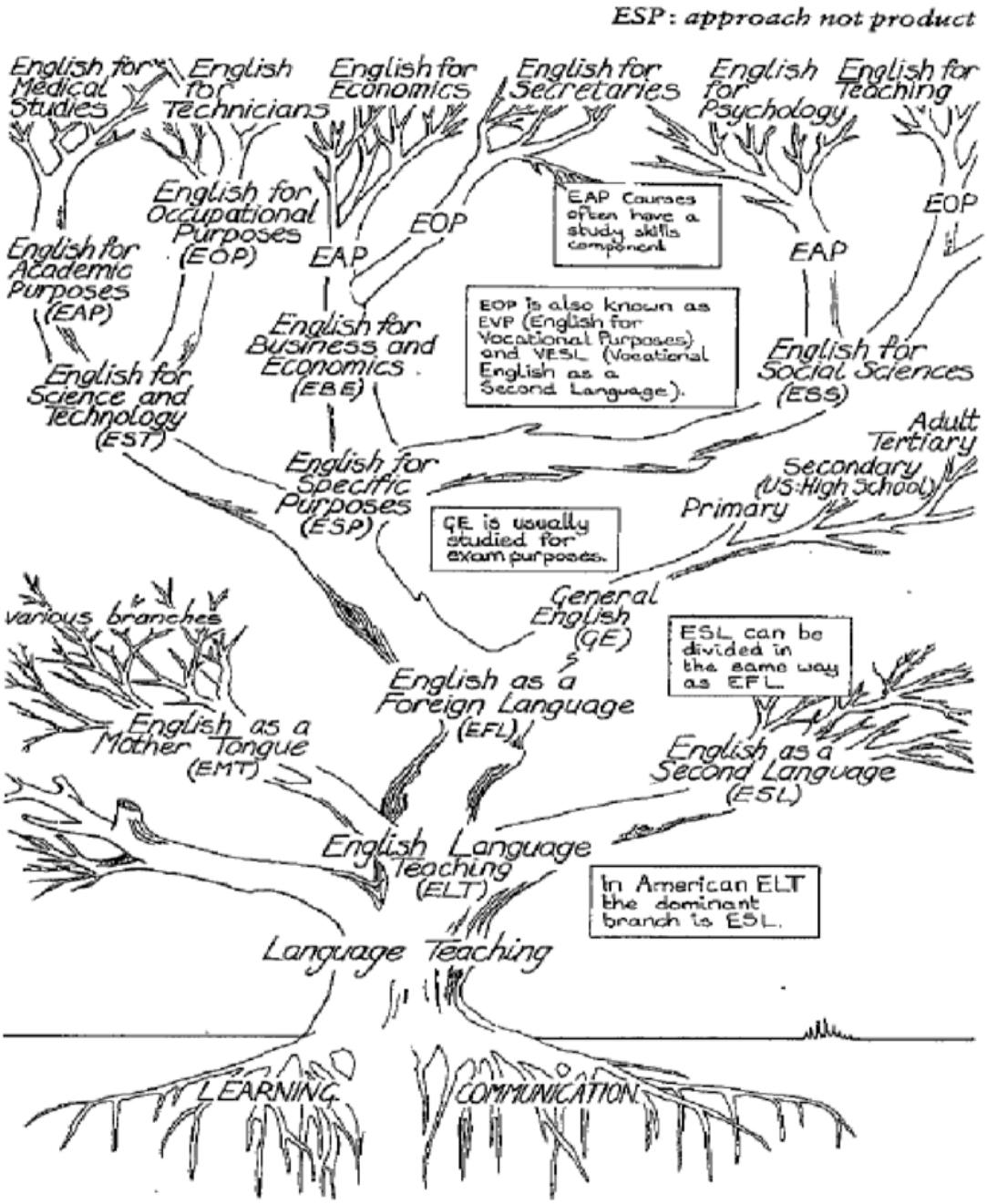


Figure1.1 The tree of ELT (from Hutchinson &Waters, 1987, p. 17)

Likewise, Dudley-Evans and St-john (1998), as illustrated in figure 1.2 below, divided ESP into two main branches EAP and EOP. In their EAP division, English for Science and Technology (EST) takes the lion share as compared to English for Medical Purposes (EMP) and English for Legal Purposes (ELP). The co-authors are with the opinion that ‘‘the term EOP refers to English that is not is not for academic purposes; it includes professional purposes in administration, medicine, law and business” (p. 7). Figure 1.2 below, EOP, as stated earlier, adheres to the English needed for professional purposes, this type English is

generally required for practising purposes such as, a business purpose or an occupational purpose (Dudley-Evan &St-john, 1998, p. 7). The forgoing figures (i.e., figure 1.2, and figure 1.3) illustrate Dudley Evans & St-john (1998), and Brown (2016) division and sub-division of ESP.

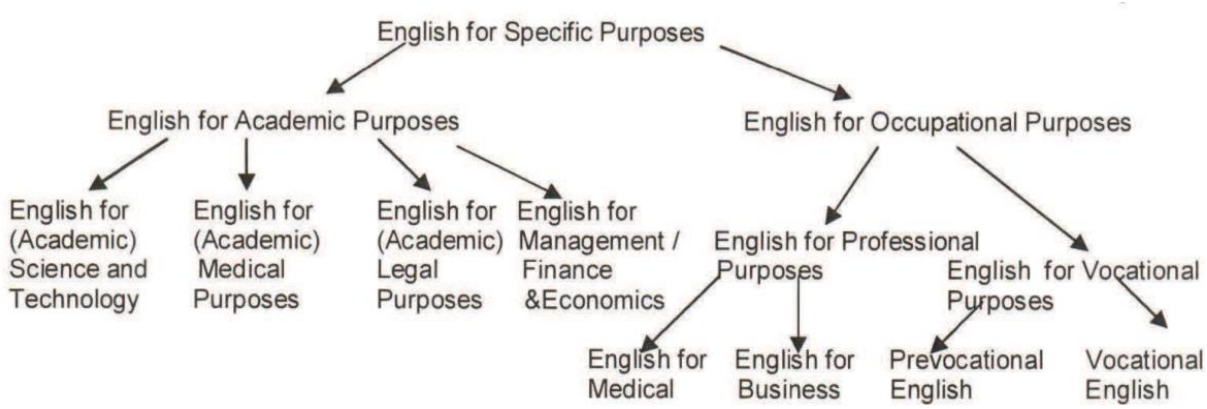


Figure 1.2 Classification of English for Specific Purposes via Professional areas (from Dudley-Evans & St john 1998, p. 6).

Sharing the same division with Dudley Evans & St-John, Brown (2016), as indicated in figure 1.3 below, breaks down ESP into two main areas EAP and EOP. On the one hand, EAP is further divided into three sub-branches: (1) Science & Technology (such as English for hard sciences and engineering), (2) Social Sciences, and (3) Humanities. On the other hand, EOP has four sub-branches: (1) Medical such as (English for doctors, nurses, emergency), (2) Hotel (such as English for receptionists, maids, concierge and bellhops), and (3) Construction such as (industry or job titled), and (4) other fields.

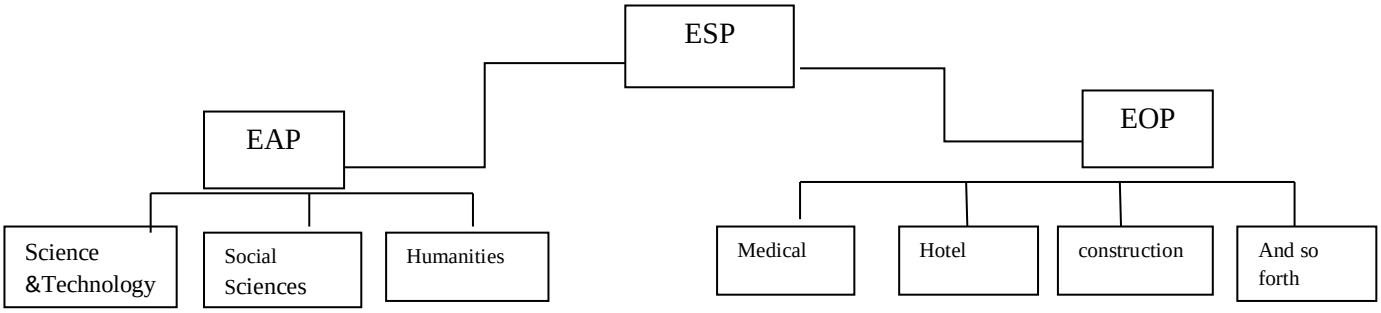


Figure 1. 3 Subcategories of ESP (from Brown 2016, p. 7)

In fact, Brown (2016) figured out two primary problems in ESP division:

a. It makes these categories (EAP, EOP) look like they are independent and mutually exclusive.
b. It raises the problem of how specific ESP should be. (Brown, 2006, p. 7).

To sum up, it can be said that ESP has been traditionally classified into two main categories: English for Academic Purposes and English for Occupational Purposes. However, a further sub-category of ESP; namely, EST (English for Science and Technology) is also explained in this chapter.

1.1.4. English for Academic Purposes (EAP) or English for Occupational Purposes (EOP)

Dudley-Evans et al (1998) classified ESP into two categories EAP and EOP (p.48-as illustrated in figure 1.2), they advanced that the problematic about these categories fall into two points. First, the focus on '*common-core'* in EAP. Second, the concentration of particular features of a specific discipline. They equally raised the question of whether the disparate disciplines in science and technology (such as Geology, Biology, Mechanical Engineering) could share common features with other disciplines (such as Humanities and Social sciences).

Dudley-Evans et *al* (1998) further added that:

> It is not always clear whether we are talking about the needs of medical students (EAP), or practising doctors, or consultant in hospitals (EOP); each one of these groups needs awareness of and an ability to use different genres (p. 49).

On the one hand, medical students need to read books, articles, journals, and write reports or short clinical essays, and these are EAP. On the other hand, practising doctors also have different needs. For instance, they may need English to prepare slides and implement presentations for conferences. Moreover, they may need English to interact with patients if working in an English -speaking country and these, however, are EOP. Similarly, Pettinari (1982) pointed out that medical English is one type of EST. Still more, he added that culture and social discourse may have an influence than in other types of EST (as cited in Dudley-Evans & St john, 1998, p. 49).

Brown (2016) shared a similar opinion with Dudley-Evans *et al* (1998) vis-a-vis the notion 'common-core'. In Figure 1.4 below , Brown (2016) demonstrated how EST, Social sciences and Humanities might have 'common-core' of EAP, these subcategories have their distinct rhetorical structures, vocabulary items, grammar structures, organisational principles and other features. The following Figure demonstrates how these different subcategories overlap between each other.

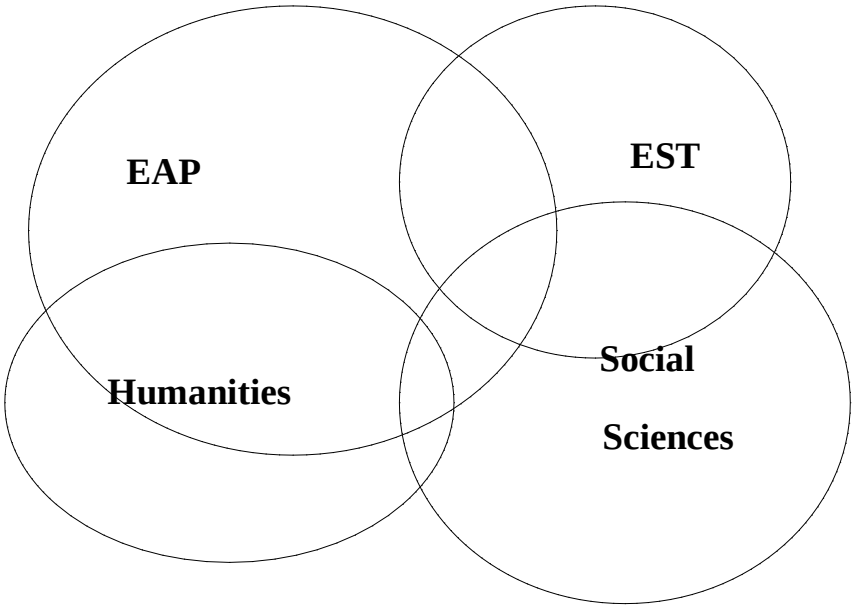


Figure 1.4 Venn's Common Core and Overlap in EAP (from Brown, 2016, p. 9).

In fact, it seems complicated to provide a clear cut of ESP, especially when some of these three subcategories can overlap with each other. For example, English for Social Sciences shares enormous features with EST and Humanities such as Literary and philosophical analyses. Hence, Brown (2016) asserted that it is important to think of the varieties in English specific purposes, as shown in Figure 1.4, while at other times; it may also be useful to draw on 'common-core' principals and notice how English for specific purposes may overlap or conflict with the English of other purposes of the other disciplines. However, Dudley-Evans et al (1998) believed in meeting students' needs; therefore, they asserted that it sounds better to deal with subject-specific work needs in a specific discipline rather than in broad disciplinary areas.

1.1.5. English for Science and Technology

In the last few years, the rapid expansion of science and technology have made English for science and technology the focal of interest for many ESP researchers (e.g. Barber, 1988; Bazerman, 1984; Halliday, 1993; and Swales, 1971). The following diagram represents McDonough's (1984) division of ESP ; it shows that EST is a subdivision of EAP. Much like McDonough's division; Dudley and Evans-St john (1998) considered EST as a sub-part of EAP (see. Figure 1.1).

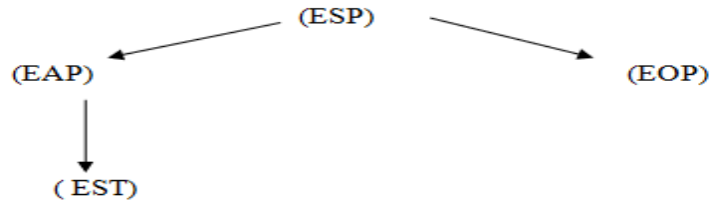


Figure 1.5 Subdivisions of English for Specific Purposes (from McDonough, 1984, p. 6)

Many researchers fell into the query that EST can be viewed as a distinct branch on its own but also can be a sub-branch of ESP. Brown (2016), as shown in figure 1.6, further divided and sub-divided EST into English for Hard Sciences and Engineering, which in its turn, is further sub-divided into civil, Mechanical, Electrical, Chemical, Aeronautic, and others. The following figure describes Brown (2016) division and sub-division of EST.

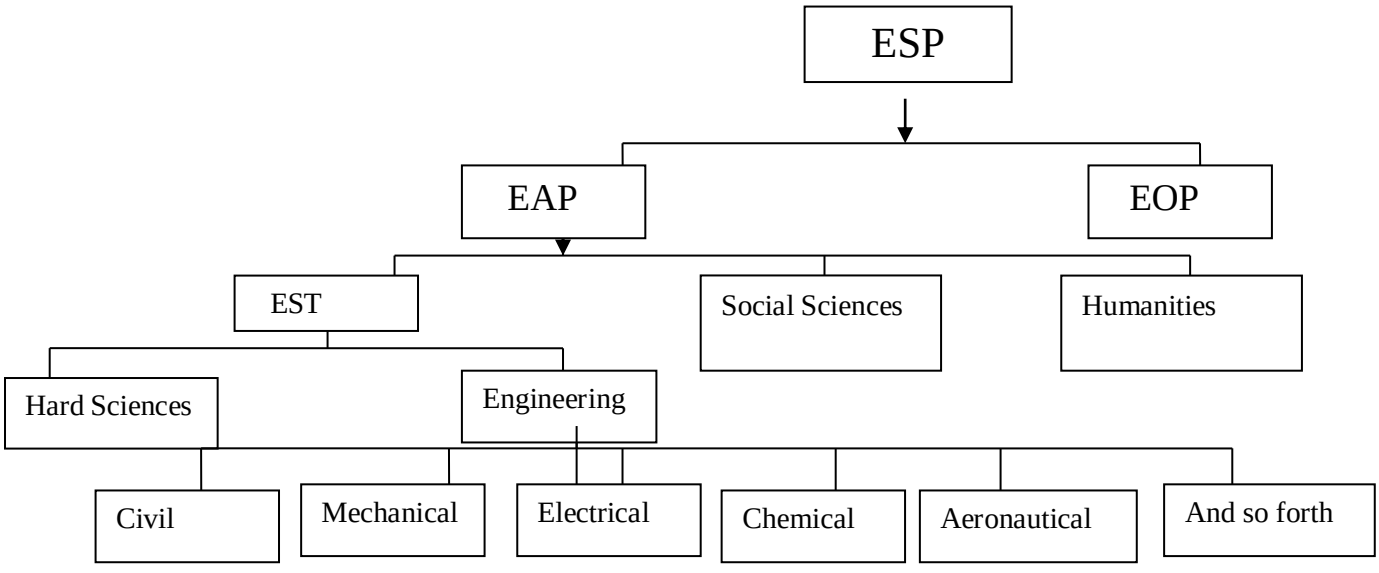


Figure 1.6 Further Sub-Division of EST (from Brown, 2016, p. 8)

In the same line of thought, Swales (1985) viewed that "English for science and technology has always set and continues to set the trend in theoretical discussion in ways analyzing language and the variety of actual teaching materials" (p.16). Yet, valuable interpretations of the acronym EST is found in literature; however, contradicting views seem to have disparate arguments. Following this note, another division of EST is provided by Swales (1985) which is described in what follows.

Swales (1985), as illustrated in figure 1.7 below, suggested and extended the division of EST, but here it is in accordance with topics of the subject-matter of the field.

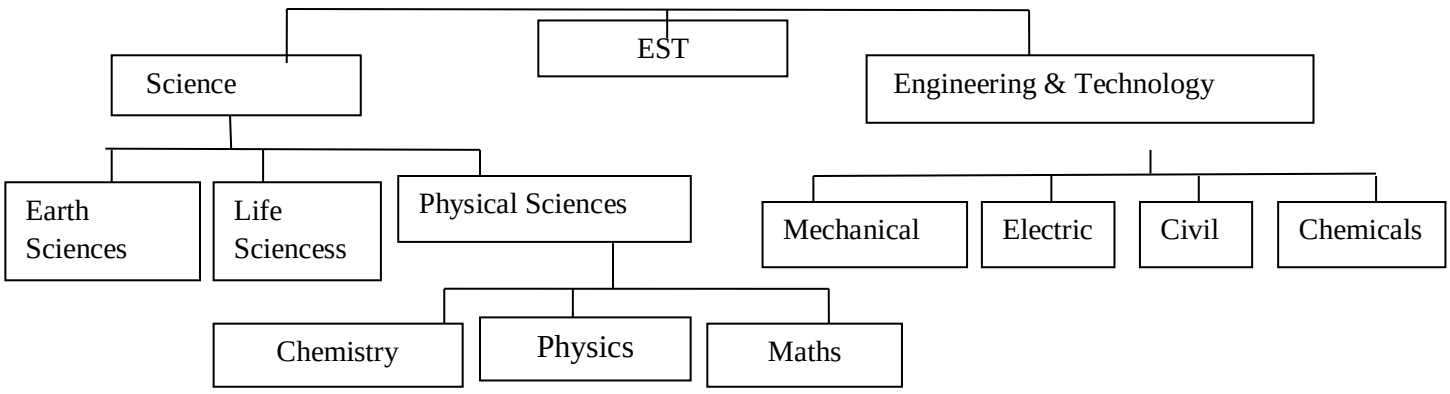


Figure 1.7 English for Science &Technology (from Swales, 1985, p. X)

1.1.6. English for Specific Purposes Versus English for General Purposes

According to Hutchinson and Waters (1987), ELT can be broadly divided into ESP and EGP. A comprehensive definition of ESP encompasses the teaching of English to learners who need English for work or study. Thus, it is a learner-centred approach because it considers learners' needs and the communicative skills more than necessary. In contrast, EGP provides basic language skills primarily at schools or higher education where the students' professional or occupational orientations and needs are not clearly defined. Hutchinson and Waters (1987) eloquently argued that "What distinguishes ESP from general English is not the existence of a need as such but rather an awareness of the need. " (p. 53).

In contrast with EGP learners, ESP learners are usually adult learners who have prior basic knowledge of the English language (Hutchinson &Waters, 1987), they need English that caters for their academic or professional or scientific purposes. In this regard, the ESP courses should be designed in accordance with the purposes that learners need to accomplish. However, in educational programmes, general English courses are for no defined purposes, but rather to make EGP learners gain language competencies and succeed in examinations.

When comparing EGP courses to ESP ones, ESP courses are more specific. Actually, ESP teachers have to design tasks carefully, choose materials appropriately, and adopt adequate teaching methodologies that must go in line with the ESP course and students' expectations (Robinson, 1991). In this sense, the ESP teacher's task is harder and more complicated than the EGP teacher. According to Dudley-Evans *et al* (1998), the ESP practitioner has five functions to perform: teacher, course designer and material provider, researcher, collaborator, and evaluator (p. 14). In Algeria, EGP courses start at an earlier stage, generally, at middle school. GE teachers are the provider of knowledge, they represent and teach a set of language structures such as: grammar, lexis, syntax, phonology and others. In vein with this argument, teacher-centred practices is possible in GE courses whilst in ESP; it is learner-centred. Additionally, in EGP, learners' needs are not clearly stated; in contrast, the analysis of the needs of learners are imperative in ESP.

To sum, it can be added that what make ESP different from GE is the needs of the learners or the roles of teachers, especially in the process of planning of the courses and selecting the content. To dive more in this field, the following discussion aims to provide readers with the nature and course design process in ESP.

1.2. English for Specific Purposes Course Design

ESP is a practical discipline that aims to help a particular group of learners learn. To live up to the needs of the learners, the ESP teacher is involved in much work such as designing and preparing specific ESP courses. Basturkmen (2010) described ESP courses as follows

> ESP courses set out to teach the language and communication skills that specific groups of language learners need or will need to function effectively in their discipline of study, profession or workplaces. Because ESP focuses on teaching specific language and communication skills, ESP courses design usually includes a stage in

> which the course developers identify what specific language and skills the group of language learners will need. (Basturkmen, 2010, p. 17)

As Basturkmen (2010) indicated in the quote above, ESP courses are designed for the objective to teach specific language skills and communicative skills that learners need. Therefore, in designing an ESP course, the ESP teacher is primarily concerned with the identification of the target language skills but also what his/her learners will do in the target situation.

According to Hutchinson and Waters (1987), course design

> … entails the use of the theoretical and empirical information available to produce a syllabus, to select, adapt or write materials in accordance with syllabus, to develop a methodology for teaching those materials and to establish evaluation procedures by which progress towards the specified goals will be measured. (Hutchinson & Waters, 1987, p. 65).

The above quote indicates that course design in an ESP context is essential determinant in the teaching process. ESP course design often involves collecting and interpreting data, preparing tasks and activities, selecting a teaching methodology and adopting materials, forming the syllabus, and finally evaluating if the goals and the objectives are achieved. Accordingly, to prepare effective ESP courses, the ESP teacher needs to be familiar with the factors and obstacles that affect this process so that to avoid any confusions.

In figure 1.8 below, Hutchinson and Waters (1987) suggested three factors affecting the ESP course design, these factors are summarised as follows

- Language description (the ESP teacher should consider the structural, functional and discourse level of the language).
- Learning theories (the ESP teacher should consider the psychological learning dimensions and their implications in ESP).
- Needs analysis (The ESP teacher is required to know students' needs and conditions while learning).

The following figure exposes the aforementioned factors affecting the ESP course design from the perspective of Hutchinson and Waters (1987).

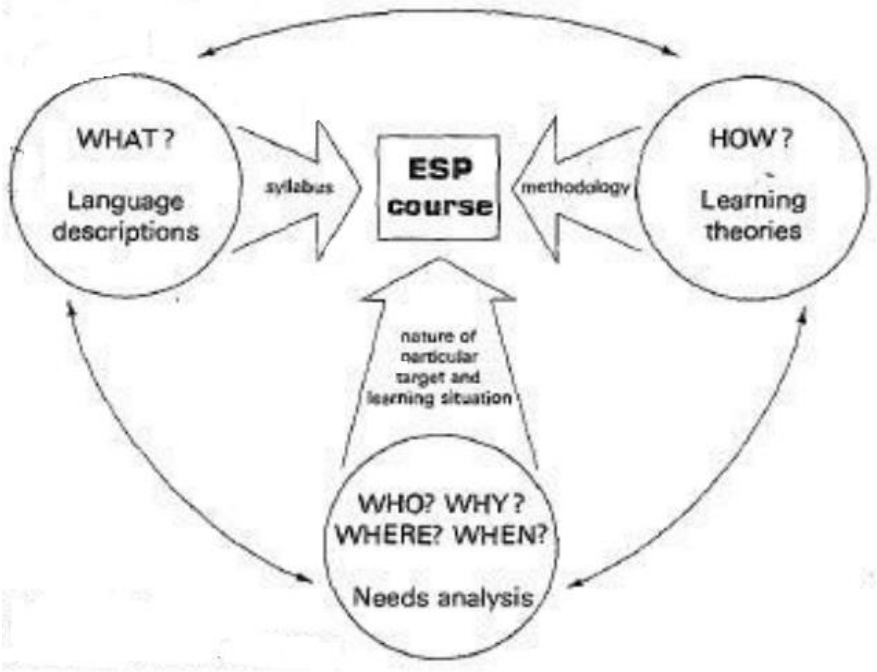


Figure 1. 8 Factors Involved in ESP Course Design (from Hutchinson &Waters, 198, p. 22).

Planning a course or designing a syllabus entails the comprehension of the different levels of preparation. In Graves' (1996) view, course design, as illustrated in figure 1.9 below, should be based on the following

1. Needs assessment (or what refers to needs analysis),
2. Specifying goals and objectives,
3. Conceptualizing content,
4. Selecting and developing materials,
5. Organizing the content and activities,
6. Evaluating.

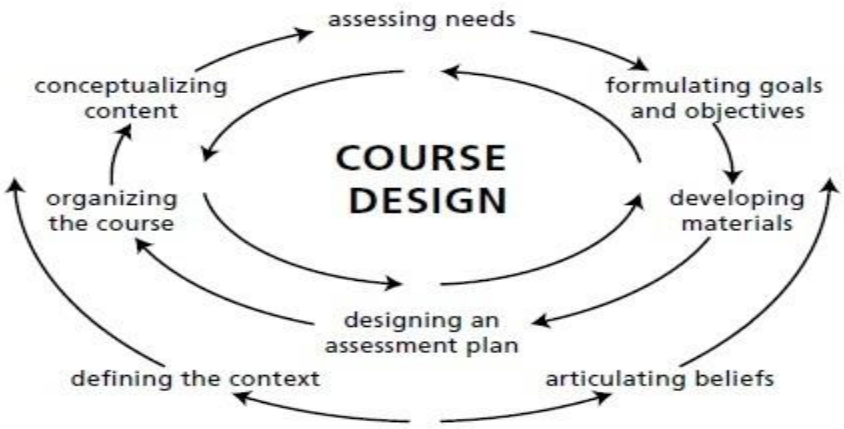


Figure 1.9: Graves' Model of Syllabus Design (2000) (from Nation and Macalister, 2010, p. 136)

1.2.1. The Needs Analysis Process

Needs analysis is the process of obtaining data about what the learners know, are able to do, and what they need to learn and do. Graves (1996) categorised needs analysis into ' *objective*' and '*subjective*' needs. Subjective needs include information of "... attitudes towards the target language and culture, towards learning, and towards themselves as learners; student's expectations of themselves and of the course; students' underlying purposes- or lack in studying English" (Graves, 1996, p. 13). However, objective needs refer to information about learners' pre-knowledge, level, country, family, spoken language, and their proficiency level in speaking.

Many linguists and authors interpreted the term 'needs' differently. Brown (2016) viewed ' *needs*' as synonyms to "wants, desires, necessities, lacks, gaps, expectations, motivations, deficiencies, requirements, requests, prerequisites, essentials, the next step " (p. 13). However, Hutchinson and Waters (1987) conceptualized needs analysis from two perspectives: '*target needs'* and '*learning need'*. The target needs are 'necessities' (i.e., what the learner needs to function and succeed in the target situation), 'lacks' (i.e. the gap in learners' actual level and the desired proficiency), and 'wants '(i.e., learners' goals to attend an ESP course. Learning needs allude to the knowledge and the abilities that learners need to perform effectively in the target situation. In fact, the concept of needs analysis is a pre-requisite in course and syllabus design. Within this chapter, a detailed overview of needs analysis will be provided too.

1.2.2. The Specification of Goals and Objectives

In ESP, goals and objectives can be formed from needs analysis (Hutchinson & Waters, 1987). Moreover, setting up goals and objectives is essential to determine why the course is being taught and what the learners will need to get from it (Nation & Macalister,2010). Ellis and Johnson (1994, p. 221) defined course objectives as ‘‘the goals of a course in English, as indicated by the needs analysis, and expressed in terms of what the learner should be able to do’’, whereas “..goals are general statement of the overall long term purposes of the course’’ (Graves 1996, p.17). According to Ellis and Johnson, ESP course is set “to enable learners to function adequately in the target situation”. In ESP, goals address the language and the communicative skills that students need. In addition, Chen (2010) argued that, in ESP, communicative goals are the prime concern since they will be employed in real life English tasks.

1.2.3. Content Conceptualization

Conceptualizing content refers to the ways in which the teacher grades the content, selects activities or tasks, and delivers that content. In recent years, the shifts in applied linguistics and with the development in teaching approaches especially with the advent of ESP, teachers face several options to decide on what methodology to follow and what content to select. In this vein, Graves (1996) pointed that “now the choices teacher makes are much context-dependent and so involve a number of factors such as who the students are, their goals and expectations in learning English”(p. 20). In other words, the choice of the content is related to the context, the subjective, as well as the objectives needs that are discussed above.

1.2.4. Materials Selection and Activities Development

After implementing needs analysis, setting up goals and objectives, and selecting the content, the next step for the ESP teacher is to think of the materials and the techniques to be included in his/her course; besides, the teacher should consider the congruency of the selected materials with the course objectives, goals, and learners expectations. In ESP, materials can be videos, TV/radio programmes, computers, CDs, users’ manuals, overhead transparencies,

and so forth. According to Dudley-Evans et al (1998), using materials is significant in ESP teaching (p.171). Additionally, the co-authors set four benefits for using materials.

- It can be viewed as a source of knowledge,
- It can be viewed as learning support,
- It can be used as motivating and stimulating learning tools,
- It can be used as a reference.(Dudley-Evans and St john, 1998, p. 17)

1.2.5. The Organisation of Content and Activities

To sequence activities, tasks and grade content, the teacher has to consider the following questions:

- Which tasks can I get the student to do today?
- Will I get the students to do tasks individually or in pairs or group?
- Should I teach items before the learners get to know them in the reading passage?
- Shall I use handouts or write this on the blackboard?
- Should I have pre-read debate or should I get the learners to talk about the text after the reading?
- Will I have a strong balance of the activities in my lecture? (Bouabdallah, 2015, p. 61)

In the same line of thought, Graves (1996) introduced two principles for sequencing courses: *building* and *recycling*. Building involves grading activities from simple to complex and from more concrete to more open-ended; however, the recycling material principle occurs when "students encounter previous material in a new ways, in a new skill area, in a different type of activity, or with a new focus*"*(Grave, 1996, p. 28). For example, materials explored in reading skills activity may be recycled in role play activity.

1.2.6. Evaluation

There are as many definitions to evaluation as there are authors in the field. Some scholars view evaluation as the process of asking questions then acting on the responses, others viewed evaluation as the payback, the results of current activities or future influencing ones. In ESP, "evaluation is concerned with the effectiveness and efficiency of learning; with

achieving the objectives" (Dudley-Evans & St john, 1998, p.129). Further, the co-authors conceptualized evaluation from two perspectives: *formative* and *summative* evaluation. The former takes place during the life-time of the activity, it consists of a series of mini-evaluation and it helps in shaping the course, the latter takes place at (or after) the end of the activity, it is valuable for evaluating long term courses (ibid, p. 128).

Typically, evaluation is an integral part of a course so as it can quantitative or qualitative. Quantitative evaluation involves using tests or questionnaires that provide percentages and numbers for individual items; however, qualitative evaluation includes the use of other methods such as interviews or discussions (Dudley-Evans & St john, 1998, p.129).

The most crucial and necessary thing before planning ahead the course is considering in details the question of the integration of the four language skills, grammar as well as technical vocabulary in the ESP course. In the subsequent discussion, the researcher will review separately language skills in ESP.

1.3. Language Skills in ESP

In EFL instruction, teaching emphasises much more on the four language skills. In ESP instructions, the teaching of the language skills is to provide students with the basic necessary receptive and productive language skills that allow them to communicate and use the linguistic knowledge determined by their needs. Actually, teaching the language skills in ESP vary from one ESP teaching context to another; however, it depends highly on learners' needs. In this vein, Dudley and St-John (1998) maintained that

> The growth of needs analysis, a trend that ran parallel with the rise of the skills approach, identified priorities amongst the four skills for a given situation...The basis of the approach is that, in addition to language work, there is a need to address the thought processes that underpin language use. (Dudley & St John, 1998, p. 24)

The above quote indicates that the skills that ESP learners need changes from one context to another. Thus, teaching skills will inevitably change from one situation to another. In fact, needs analysis enables teachers indentify the specific language skills with the particular

register and styles of the course. Additionally, “skills are generally learned more effectively when taught with other skills in an integrated manner’’ Dudley-Evans St John (1998, p. 120).

1.3.1. Listening skills

Listening is the ability to listen and at the same time understand what is said. Also, successful professional communication depends greatly on listening skills. Many researchers are with opinion that listening is a prerequisite to learning a language and that, apart from being a vital performance skill, it is a valuable channel for acquiring a second language (Lynch, 2009; Nation & Newton, 2009; Rost, 2002; Rost, 2005). In fact, teaching listening skills in ESP instruction share common features in ESL instructions. Goh (2013) delineated that

> ESP listening as a construct has many similarities to ESL listening. It involves the same cognitive processes that draw from a number of similar knowledge sources to process spoken input, and requires the use of the same core(or « macro ») skills that enable effective attention to information in accord with purpose the for listening. (Goh, 2013, p. 57)

In ESP context, students may need to listen to lectures, seminars, meetings, or speakers. Thereby, they are required to be good listeners so that grasp the correct meaning of the words to understand the whole utterance or the main ideas. In all, the ability to follow speakers, either native or non-native in a professional or an academic context is pivotal. Therefore, listening is, then, of prime importance for academic and professional purposes. Likaj (2015) illustrated the role of listening with an example of air controllers and naval forces who have to recognise specific expressions and vocabulary of their field of specialism to communicate effectively with their colleagues, thus the mastery as well the training of good listening comprehension skills in the context of ESP is strongly recommended. Similarly, Dudley-Evans & St John (1998) reported that doctors attend conferences and listen to presentations, business people attend meetings and listen to policy, and technicians listen to instructions (p.102). In this respect, teaching listening skills in technical fields is of immense value.

For effective listening teaching instructions, teachers must use comprehensible techniques, free from ambiguity so that learners learn with less difficulty (O'Malley, Chamot

& Küpper, 1989; Rost, 2002), and the language must go hand in hand with students' comprehension level (Spada and Lightbown , 1999 ; Safein Salem, 2017). By the same token, teachers are invited to examine their students' understanding of the spoken communication which could be done through various techniques. For instance, the teacher can make eye contact on the students while he/she talks to deduce their non-verbal interaction such as (physical expressions, movement, and gestures) and verbal interaction (such as verbal channelling: huh, really, right, yes). Another way to check your students' listening comprehension is by asking questions, doing exercises or writing small passages (Schleppegrell & Brenda 1986).

There are several reasons for developing ESP learners listening skills. Schleppegrell et al (1986) listed three objectives for developing listening comprehension skills stated as follows

a. When students are familiar with vocabulary and the content, they will understand and answer questions in the lecture.
b. Students can understand spoken language, common expressions, numbers, percentages, fractions, decimals; besides, they will be able to write those numbers when they hear them in context.
c. Students will be able to listen and do instructions given in the classroom such as assignments and activities.(Schleppergrell et al, 1986, p.23)

1.3.2. Speaking Skills

Speaking is the natural process of language production, and it is one of the most complex skills involved in foreign language teaching. In this regard, Thornbury (2005) claimed that *"*so natural and integral is speaking that we forgot how we once struggled to achieve this ability-until, that is, we have to learn how to do it all over in a foreign language" (p. 1). In ESP, students use speaking in different academic and professional events such as giving oral presentations, attending seminar discussions, and responding or sharing opinions., selling products, and workshops. Intriguingly, Feak (2013) asserted that "in some ESP context, specifically English for academic purposes EAP, written genres rather than oral genres have been considered as more central to professional success'' (p. 35). According to Feak (2013), EAP is more involved with note-taking and showing understanding of the content, thus speaking is less maintained.

Teaching Speaking in ESP aims to make learners produce accurate language, select appropriate vocabulary, and find professional lexis in target situations. However, some studies have revealed that ESP learners show discontent with their abilities in speaking due to several linguistic deficiencies (Mazadayasn & Tahririan, 2008; Myles, 2009; Gan, 2012; Jamal Hossain, 2013; Polyakov, 2014). Unlike, today, it is becoming much easier for learners to develop cognitive language performances, and this is due to the advent of technological inventions such as smart phones, movies, TV series, the internet and free online courses (Murray, 2005; Zho & Wei, 2018; Mercer, Mennessy & Warwick, 2019, Rebenco, 2019; klimavo, 2020). Accordingly, the role of the teacher in teaching speaking can be seen less influential. Despite the advent of the technological materials for developing speaking skills, it is the teacher's duty to maintain motivation amongst students, improve their retentions and engage them in a variety of activities to practise speaking with confidence and comfort, and this may eventually result in better achievements.

To increase students speaking performance, Schleppergrell et al (1986) suggested the followings

- To increase the students' ability to speak, increasing listening comprehension is required
- To increase students' language proficiency, speaking practical activities (debating, interpreting pictures, and giving directions) should be used.
- Pronunciation is not a goal and not overstressed but rather standard in the world.
- Role play is effective to stimulate students' conversations.

1.3.3. Reading Skills

Reading is a basic skill in teaching; besides, it is an integral part in foreign language learning. Reading is, in fact, the primary channel via which learners can develop their cognitive skills, that is to say, developing the ability to: think, analyse, describe, scan, relate, criticize, predict writing, it can also enhance learners 'communicative skills. Li and Munby (1996) believed that reading comprehension strategies used in general purpose English may not fit specialized English reading, thus learners need "to vary their strategies as the reading requires"(p. 210).

In this respect, Schleppergrell et al (1986) proposed two types of reading skills strategies: (1) identification skills (for example, decoding), (2) higher level of cognitive skills (for example , analysing , predicting , synthesizing and so forth). To develop the aforementioned types, the teacher is required to incorporate two further reading skills strategies, namely, intensive and extensive reading. Intensive reading, on the one hand, deals with the ability of students to analyse short passages and scan the language skills (vocabulary , grammar , lexis and so forth). Extensive reading, on the other hand, refers to the ability of students interpret long passages and work out the main idea of a given text. There are several key reading skills strategies that ESP, more particularly EAP students must follow up if they are ever to reach certain purposes, among which are skimming, scanning, relating diagrams to texts, predicting and sequencing the structure of the text, understanding elliptical writing, and reading notices and instructions (kennedy & Bolitho, 1984).

Generally speaking, in language learning, reading is often conceived as the easiest skill. In this line of thought, Jordan (1997) stated that ‘‘ in any self -assessment or questionnaire –based survey, students almost always cite reading as the skill causing them the least difficulty.’’(as quoted in Paltridge & Starfield, 2013, p. 77). Conversely, many research in ESP contexts have addressed students’ difficulties with regard to reading (Freese, 1997 ; Faiza, 2010 ; Spence & Liu, 2013 ; Rostami & Zafarghandi, 2014). Since students have different abilities in reading, ESP teachers ,then, need to apply handy reading strategies and provide varied activities to build students’ knowledge of the rhetorical features of the target context (Hirvela, 2013). Above all, the selection of adequate reading strategies is of paramount importance. Dudely Evans and St-john (1998) suggested three key stages in designing a reading ESP course: the selection of text, the extracting and recording of information, and the use of information that has been gathered.

1.3.4. Writing Skills

Writing is a means of communication that allows students to think and produce ideas and put them on paper. It is a process of setting arguments, organizing knowledge and conveying meaning in a well-structured text. Besides, writing is critical and essential skill in foreign language teaching, it is perhaps the most critical skill that needs more effort and takes much time to acquire. According to Hyland (2013)

> Writing in English assumes an enormous importance for students in higher education and on professional training courses. Countless individuals around the world must now gain fluency in the convention of writing in English to understand their disciplines, to establish their careers or to successfully navigate their learning. (As quoted in Paltridge& Starfield , 2013,p. 9)

Flognfeldt (2016) considered writing skills as ‘‘a process that ends with a product’’(p.262). Based on her critical reflection of 15 project reports about writing, Flognfeldt (2016) found multiple key factors involved in writing skills process , these factors consist of : process , product , tools , motivation and assessment. According to Flognfeldt (2016), these elements, as illustrated in figure 1.10 below, are very effective in guiding the writing process activity.

Figure 1. 10 Concept Map of the Professional Theme of Writing (from Flognfeldt,2016,p.263)

Writing skills in ESP aims at equipping students with the competencies to write in particular target genres. In fact, writing is incorporated into ESP courses to enable learners to write effectively and proficiently. Likewise, Schleppegrell et al (1986) stated five objectives to teaching ESP students the writing skill. They are summarised as follows

1. Students can summarise materials that they have read.
2. Students can take notes when reading and during lectures.
3. Students can produce coherent passages on familiar topics.

4. Students can write standard format and short letters.
5. Students can write for multi-varied disciplinary purposes.

Furthermore, Dudley-Evans et al (1998) argued that ESP students need to develop their writing skills to gain academic or professional performances (such as to exploit legal texts, write emails, write articles paper...etc). In the same line of though, successful writing, according to Nunan (1991), depends highly on the followings

- to master the mechanics of letters;
- to master punctuation and spelling;
- to use the grammar to convey someone's intended meaning;
- to be able to organize content at the level of the paragraph/ reflect on a piece of given new information or a topic;
- to polish and revise one's initial efforts;
- to select an appropriate style for a particular audience. (p. 37)

Similarly, Kennedy and Bothilo (1986) asserted on the importance of coherence in ESP writing, they stated that

> Some adult students do not experience too many problems with coherence as there is classroom evidence to suggest that the ability to organize writing coherently is largely transferable from mother tongue. Conversely, an absence of this ability in English in an adult student is bad news for the ESP teacher as it may signal lack of practise in writing coherently in any language (pp 86 -87)

Coherence is a strong aspect in academic writing, because it facilitates and demonstrates comprehension for readers. However, successful academic writing never occurs in the vacuum, it depends heavily on writing tasks and practical activities that ESP teachers should imply in their programmes. Meanwhile, for successful writing, student need to have knowledge about the different clues and strategies involved in reading such as palnning, drafting and revising (Reid, 2001).

1.3.5. Grammar in ESP

Grammar is concerned with language structures and language functions, it is further agreed that ESP and EGP make use of similar aspects of grammar. Ur (1991) defined grammar as ‘‘.....a set of rules that define how words (or parts of words) are combined or changed to form acceptable units of meaning within a language’’ (p.75). Therefore, mastering grammar rules can make discourse coherent, accurate, and easy to understand.

Harmer (2002) noted that there are two approaches to teaching grammar, namely the deductive approach and the inductive approach. He explained that ‘‘There are basically two ways in which a learner can achieve understanding of the rule, the deductive (rule-driven) path and the inductive (rule-discovery) path’’(p.49). Deductive approach depends largely on performing exercises and using of examples, it deals with the teaching of grammar rules in which students are required to discover and learn the rules. However, the inductive approach to teaching grammar is based on the assumption of grammar rules from organisational principles. In other words, students, in this approach, discover rules and explore structures from language use. This approach is very effective in learning, it makes learners become active thinkers; likewise, it provides them with more opportunities to discuss and interact in the classroom.

Even though ESP courses are not meant to teach grammar, certain grammatical functions in the area of EST are given much weight; some of which include passive-active distinctions, classifications, definitions, definite articles, relative clauses, modals (Trimble, 1985). For successful instruction in L2 learning, Ellis (2008) stated ten principles, among which is the need to ensure the development of a rich repertoire of expressions and competences in grammar. He further elucidated their significant role in catering fluency in ESP communication. Likewise, teaching grammar promotes reading comprehension of ESP learners. This claim is best manifested by Atai (2003), who stated that “ in English for specific purposes (ESP) context, providing readers with some knowledge about structural patters and grammatical features of the corresponding academic or occupational discourse may enhance comprehension of ESP texts” (p. 25).

There are controversial issues regarding the function and the place of grammar in the field of ESP. Coffey (1984) reported that “ there is no significant way in which the language of science differs from any other kind of language’’ (as cited in Hutchinson& Waters, 1987). In this context, Chen (2016) posited two roles of grammar in ESP classroom: (1) it enhances

students comprehension input, and (2) it monitors students output. The former stands for the students' ability to decode the knowledge they have learned. For example, when reading ESP texts, students analyze language structure; and solve complex sentences to comprehend the general meaning of the text. The latter, however, depends on the students 'background knowledge in grammar, and it refers to their ability to monitor oral and written expressions that heavily.

1.3.6. Vocabulary in ESP

Vocabulary, whether written or spoken, is essential to communicate and interact with others. By means of lexis, people can interpret opinions, share knowledge and express facts. Thus, vocabulary is a crucial aspect at any language. In this line of thought, McCarthy (1990) pointed that

> No matter how well students learn grammar, no matter how successfully the sounds of L2 are mastered, without words to express a wider range of meanings, communication in an L2 just cannot happen in any meaningful way.(as quoted in Xhaferi, 2010, p. 232)

According to McCarthy (1990), grammar is valuable in second language learning, thus the necessity to build up vocabulary and expressions is more than essential. In ESP, teaching technical vocabulary becomes an inseparable part of the ESP syllabus, but also a daunting task too. Coxhead (2013) noted that the teaching of vocabulary is first driven by the primary question of what type of vocabulary the ESP learner needs?. Accordingly, when undertaking needs analysis, the ESP teacher has then to decide on the type of activities and the teaching techniques that he/she should be exploited in the ESP course. Likewise, Dudley-Evans *et al* (1998) posited that teaching vocabulary in ESP shares the same teaching principles in EGP. Further, it is vital to distinguish between the vocabulary needed for comprehension (i.e., deducing its meaning from the context or the sentence structure), and the vocabulary needed for production purposes (i.e., vocabulary of storage and retrieval techniques). Besides, ESP teachers have to be acquainted with the core vocabulary of the field of specialism.

In terms of instructions, Xhaferi (2010) claimed that the lexical approach is convinient to the teaching of vocabulary in the field of ESP. Additionally, vocabulary, as aroused by Xhaferi (2010), is best taught in context rather than in isolation. Sharing the same opinion,

Schleppergrell et at (1986) indicated that ‘‘Vocabulary should be taught only in context, never in word lists to be memorized with dictionary definitions ’’(p.18). Thus, students can best memorize vocabulary when it is taught in the context. In other words, learners learn effectively more words when they are exposed to a variety of real life tasks.

It has often been said that teaching technical vocabulary should not be the solely concern of the ESP teacher (Hutchinson & Waters, 1987; Higgins, 1966; Strevens, 1973). Dudley Evans & St-John, 1998). However, ESP teachers must include the teaching of technical vocabulary within the ESP courses and ensure that it is exploited in context. Moreover, It is worth mentioning that being aware of the purposes and the various approaches to teaching the four language skills is desirable in ESP. Thus, integrating grammar and technical vocabulary within context help learners understand and practice the language more effectively.

1.4. ESP Materials

In Longman Dictionary of Language Teaching and Applied linguistics, Jack *et al* (2013) defined materials as

> Anything can be used by teachers or learners to facilitate the learning of a language. Materials may be linguistic, visual, auditory, or kinesthetic, and they may be presented in print, audio or video form, on CD-ROMS, on the Internet or through live performance or display. (p. 354)

According to them, materials take different forms and they are used to facilitate the teaching and the learning of tasks. Further, materials are a reference source that help teachers design tasks, organise activities, and develop effective courses, which in turn, could motivate learners and get them involved into the learning task. In fact, the use of materials can help learners discuss, write, and explore language with its various forms. Moreover, materials can also enhance the students’ thinking process through the examination and the exploration of texts of different genres. Doing so, students will be able to scan the different forms, structures and functions of the target language.

1.4.1. The Purpose of ESP Materials

Materials, of course, are indispensable components in ESP teaching practices .They are necessary tools used to facilitate the teaching and the learning process for teachers and learners. In addition, materials can equip students with the language instruction they need in their field; furthermore, they can motivate and raise their curiosity and thinking processes. In Algerian universities, ESP is often taught as a foreign language course; additionally, the ESP classroom is perhaps the only *source* where learners can practise and learn technical language. Therefore, the use of materials in ESP classes is an effective source and valuable opportunity for making learners exposed to real life language tasks.

Hyland (2006) argued that ESP materials are used to facilitate the learning of the language and also as a source to provide most of the input in the target language. Further, he claims that teachers have to ensure the closeness of the materials with the learning profiles and needs of the learners. In the same line of thought, Hyland (2006) listed four roles of materials in EAP instructions which are as follows

1. Language scaffolding (i.e., this function implies that materials help students to understand the language and enable them write, listen, discuss and analyze it).
2. Models (i.e., materials provide functions and structures of the language).
3. Reference (i.e., this includes web-based, dictionaries, encyclopedia materials which are useful for self-study).
4. Stimulus (i.e., materials trigger students' interaction, enable them to use language creatively, and stimulate their thinking process) .

1.4.2. ESP Materials Selection

In many ESP teaching settings, teachers sometimes use the same materials for different classes rejecting the various factors that may affect their selection. Accordingly and very often, learners lose interest in learning and get heavily bored in the classroom. For this reason, a good selection of ESP materials plays a crucial role in drawing students' attention and increasing their understanding and interest of the lectures. Dudley-Evans& St john (1998) outlined three questions that teachers should ask before the selection of materials listed as follows

1. Will the material inspire and motivate the students?
2. Will the material suit the learning objectives?
3. How well does the material support the learning? (p.173)

1.4.3. ESP Materials Evaluation

Evaluation is the act of judging the fitness or the shortcomings of something in a particular situation and of a particular purpose. In this regard, Hutchinson and Waters (1987) claimed that ‘‘Evaluation is, then, concerned with relative merit. There is no absolute good or bad – only degrees of fitness for the required purpose ’’(p .96). In fact, ESP materials evaluation is the measurement and the examination of their worth in particular courses. Although, there is no specific methodology to evaluate the effectiveness of the materials, there are some techniques that teachers may employ such as checklists analysis, questionnaires , observations, or interviews. This can enable teachers identify gaps, avoid complexity, and make judgment of their lectures (Bocanegra-valle, 2010).

1.5. The Notion Needs Analysis in ESP

Needs analysis is a crucial component in ESP; in other words, ESP is nothing without needs analysis. In fact, needs analysis is undertaken to develop the language course content or design a language programme; be it for GE or for ESP context. In this perspective, many scholars and educators have acknowledged the centrality of needs analysis in educational practices e.g (Munby 1978 ; Hutchinson & Waters 1987 ; Tarone & Yule 1989. Robinson 1991 ; West 1994, Jordan 1997 ; Dudley-Evans& St-john 1998).

1.5.1. An Overview of Needs Analysis

Needs analysis refers to the procedures involving the collection of information of a group of individuals. The objective of this collection is to designing and validating a comprehensive course or curriculum equated with the requirements and expectations of the learners. In this thought, Brown (1995) defined needs analysis as ‘‘ the activities involved in gathering information that will serve as the basis for developing curriculum that will meet the learning needs of a particular group of learners’’ (p. 35).

Many scholars approached the concept of needs analysis differently (Munby, 1978; Hutchinson & Waters, 1987; Berwick, 1989; Robinson, 1991; Hamps-Lyons, 2001). As a research area, needs analysis began in the early of 1970s in response to the emergence of the communicative approach to language teaching. The proponents of this approach have

advocated the control of the content to be taught; that is to say, all changes in language teaching should be concerned with the *what* (what to teach) and the *how* (how to teach).

In fact, the massive need to make language courses more relevant to the needs of learners led to the emergence of Language for Specific Purposes (LSP), and then English for Specific Purposes (ESP). This latter was not limited to the teaching of the linguistics features but rather the various purposes for which learners are undertaking the language course (i.e., the *why* (why learners are learning English). Thus, it can be said that needs analysis is an essential component in ESP language programme development.

Furthermore, Basturkmen (1998) reported that NA is ‘‘the identification of the difficulties and standard situations by the observation of participants functioning in a target situation in conjunction with interviews and questionnaires’’(p.1). Thus, needs analysis is the act that involves observing the constraints of the students in a given learning context or by using questionnaires or interviews .

1.5.2. Types of Needs

Needs analysis in ESP is defined by the reasons for which learners are learning the language. Likewise, learners' needs analysis may demand answering some queries such as who the learners are, what is their level of proficiency, what is their current ability in language, why they need the language for, where they need the language, how far are they motivated, how familiar they are with the subject matter, and the tasks that will effectively address these enquiries.

In fact, the term need in needs analysis means too many different thing to many different people. For instance, the following terms can serve as synonyms for needs: wants, lacks, expectations, desires, necessities, gaps, motivations. When undertaking needs analysis, the teachers or the needs analyst should identify clearly the type of needs he/she want to focus on. According to Brown (2016) the term needs or what he called *needs viewpoints* can be divided into four types which are stated as follows

(a) The democratic view: whatever the most people want,

(b) The discrepancy view: whatever is missing,

(c) The analytic view: whatever logically comes next

(d) The diagnostic view: whatever will do harm if missing.

Figure 1.11 below shows Brown's (2016) classification of needs. He classified needs into four main views, namely, democratic view, discrepancy view, analytic view and diagnostic view. Each view of these needs is explained in the following description.

Table 1.1 Purpose of NA: Options for Defining Needs and Analyzing them (from Brown, 2016, p. 14)

Needs Viewpoints	Definition of needs	Related synonyms
Democratic view	Whatever elements of the ESP majorities of all stakeholder group want.	wants ; desires, expectations ; requests ; motivations.
Discrepancy view	The difference or discrepancy between what they should be able to do in the ESP and what they currently can do.	Deficiencies ; lacks ; gaps ; requirements.
Analytic view	Whatever elements of the ESP students should learn next based on SLA theory and experience.	Next step ; x+ 1
Diagnostic view	Whatever elements of the ESP will cause harm if they are missing.	Necessities ;essentials ; pre-requisites.

The democratic view of needs analysis views needs as whatever elements the majority of students want. Thus, the investigator of needs should be interested in *students' wants, desires, expectations , requests and motivation*. Moreover, Brown (2016) maintained that in order to not fall under the problem of restriction (i.e., the interest should be on what learners want). However, this democratic view broadens its concept and include what other people

think about these needs (such as teachers, administration, and so forth) which will eventually shape the needs much better.

As shown in figure 1.11, the discrepancy view refers to what the students should be able to do in ESP, and what they currently do. In this regard, the analyst would typically analye the students' deficiencies, lacks, gaps, and requirement. This view can help the analyst to investigate the current abilities of learners, and also describe where the programme he wants the student to end up with.

In the analytic view, the needs of students are whatever elements should be learned next or what comes next. However, the diagnostic view considers that needs of students are whatever elements of ESP will cause the most harm if missed. The analyst would then investigate students' necessities, essentials, and any prerequisites. It can be conducted by investigating the ESP teaching situation that students are in.

For flexibility purposes in needs identification, Brown (2016) is with the opinion that when deciding on NA, the needs analyst can incorporate two or three or all of the above viewpoints explained earlier.

According to Hutchinson and Waters (1987), the rationale behind needs analysis is to collect possible information of the target needs and learning needs. Target needs refers to ''what the learners need to do in the target situation''(p. 55) while learning needs encompass what learners are required to do to learn effectively. In the same vein, Dudley-Evans et al (1998,pp. 121-126) stated that needs analysis is the process of establishing the *what* and the *how* of a course .

1.6. The Notion Syllabus

Teaching languages or learning a language is complex endeavour. In fact, effective language learning depends heavily on the selection and preparation of well -adequate courses. The selection and the ordering of the courses are usually referred to the term syllabus, thus it can be said that effective teaching and learning depend greatly on pre-defined syllabuses.

1.6.1. Curriculum versus Syllabus

Before reviewing the notion of the syllabus, it is more than necessary to review the difference between the terms curriculum and syllabus. From what is found in literature, Rogers (1989) as cited in Richards (2001) made a clear distinction between syllabus and curriculum, saying that the former highlights the ordering and the organisation of the linguistic content to be covered in a given course while the latter has a far broader scope comprising ‘‘learner consideration, knowledge considerations, and instructions considerations’’(p. 29). In the same line of thought, White (1998) considered that the terms syllabus and curriculum are used interchangeably. According to White (1998) curriculum refers to the total content, methods and objectives of a school programme or an educational system; whereas, syllabus represents a particular presentation of content of an individual subject.

The varied conceptions of the terms syllabus and curriculum seem to reach no settlement. For instance, Print (1993) also differentiated between syllabus and curriculum. According to him, a syllabus entails a list of content knowledge that includes a set of objectives and learning activities. By contrast, curriculum includes the entire teaching/learning process, (aims, goals materials, equipment, examinations and evaluation procedures). Alternatively, Nunan (1988) claimed that syllabus design reflects on the *what* and the *how*. The *what* is concerned with the grading and the selection of content, while the *how* refers to the methodology or the techniques by which the content will be taught (pp.6-7).

Based on what is outlined above, it can be said that syllabus is a document that outlines what takes place inside the classroom including the content, the aims, and sometimes the teaching methodology, while curriculum refers to the plan that describes the whole philosophical and social factors needed for the planning of an educational programme. The next section will be devoted to the description of the word ‘syllabus’ and its different types in language learning programmes.

1.6.2. The definition of Syllabus

Syllabuses are certainly necessary tools for every teacher and every learner. In language programmes, syllabuses are the roadmap that describe what is to be learned and what should be attained at the end of the instruction. Yalden (1987) stated that

> The syllabus is now seen as an instrument by which the teacher, with the help of the syllabus designer can achieve a certain coincidence between the needs and aims of the learners and the activities that will take place in the classroom.(p.86)

Yelden (1987) considered the syllabus as a day-to-day document that should accompany teachers in the teaching/ learning process. Further, the syllabus, according to Yelden, highlights the aims and the objectives of the courses. They include the different language items to be explored in a given classroom.

Sharing the same opinion, Nunan (1991) pointed out that syllabus is " a statement of content which is used as the basis for planning courses of various kinds...The task of the syllabus designer is to select and grade this context''(p.2). The syllabus uncovers the courses in a given teaching/ learning situation. Likewise, the syllabus is regarded as ''a plan of what is to be achieved through our teaching and our students' learning'' (Breen, 1984.p.49). However, Wilkins (1981) considered that syllabuses ''are specifications of the content of language teaching which have been submitted to some degree of structuring or ordering with the aim of making teaching and learning a more effective.''(pp.83-89).

All in all, it is worth mentioning that syllabuses mean different things to different authors. Despite the diverse interpretation dispensed to the term syllabus, this latter seems to have multi-definitions. In fact, syllabuses encompass how the language will be taught, and at the same time reflect upon the linguistic components and the teaching materials needed in a particular context.

1.6.3. Syllabus Frameworks

In language teaching programmes, the syllabus generally lists the elements to be covered in a language course, it also provides the instructions and the content of the courses. Years ago, syllabuses have been categorised into two different types: synthetic and analytic syllabuses. Wilkins (1976 as cited in Dean Brown, 2016, p.46) distinguished between *synthetic and analytic syllabuses*. He claimed that the former are ''organized in terms of tasks derived from the description of the language ''(p.3), while the latter are ''organized in terms of the purposes for which people are learning and the kinds of language performance that are necessary to meet the purposes''(p.13). In the same vein, Long and Crookes (1993) , as demonstrated in figure1.12 below, classified syllabuses into two main branches: Synthetic

syllabuses and Analytic syllabuses. Synthetic syllabuses include: structural, functional-notional, lexical, relational, skills based, situational and topical syllabuses, while the analytic syllabuses include: task-based, procedural, process, content-based, learner-centred and natural approach. The following figure 1.12 illustrates Long and Crookes (1993) classification of syllabuses. In the one hand, analytic syllabuses encompass (task-based syllabus, procedural syllabus, process syllabus, skill-based syllabus, content-based syllabus and natural approach). Synthetic syllabuses, in the other hand, include other types such as (structural syllabus, functional-notional syllabus, lexical syllabus, relational syllabus, situational syllabus, and topical syllabus). Figure 1.12 below demonstrates the classification of syllabuses from the point of view of the aforementioned co-authors (Long & Crookes, 1993).

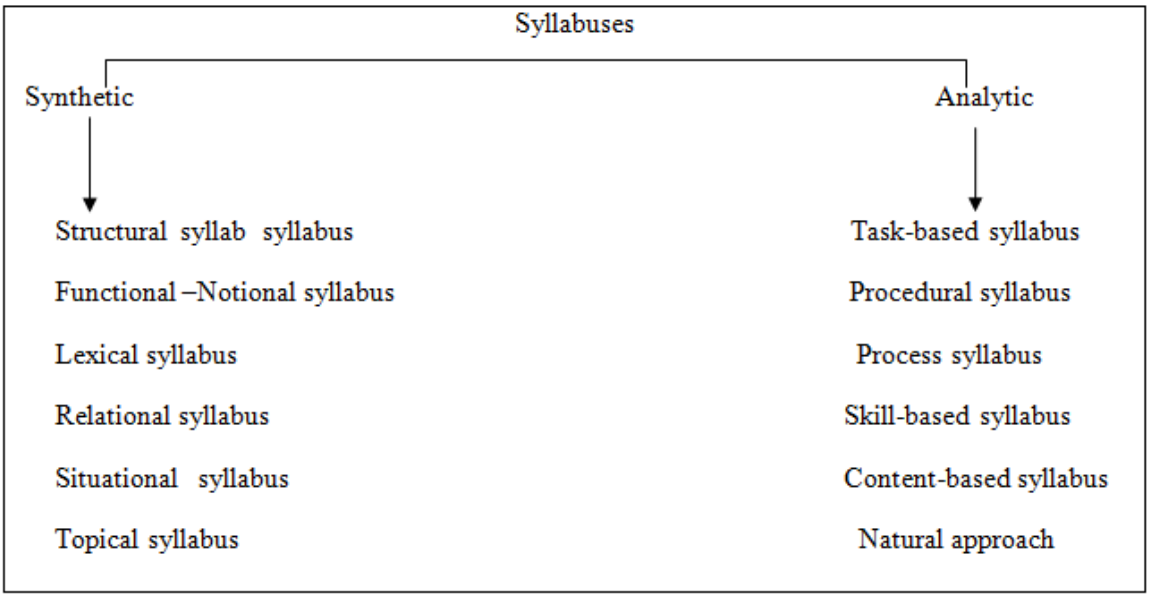


Figure 1. 11 Classification of Syllabuses (from Long and Crookes (1993).

These types of syllabuses are commonly influenced by factors such as theories of language, theories of learning, and beliefs about the subject area. Richards (2001) considered that the movements in language teaching methods and approaches had greatly contributed to the foundation of new syllabuses. In fact, the approaches to language teaching (such as grammar translation, direct methods, communicative approach) led to the formulation language syllabuses. In, table 1.1 below, is a brief illustration of two samples of syllabuses, namely, traditional syllabuses and communicative syllabuses.

Table 1. 2 Traditional Syllabuses (author's data)

Traditional Syllabuses	
Structural Syllabus	**Lexical Syllabus**
This type focus of the grammatical items of the language. These items are expected to facilitate learning and develop the learner's communicative skills.	This type focuses on the teaching of target vocabulary, depending on the learners' needs.

In 1970s, the emergence of the communicative approach led to the development of communicative syllabuses which in it turn triggered the development of other syllabuses frameworks such as task-based learning and competency-based teaching. Samples of these types of syllabuses are summarised in table 1.2 below.

Table 1. 3 Communicative Syllabuses (author's source)

Communicative Syllabuses	
Functional syllabus	- focuses on language functions such as requesting, complaining, describing, presenting..etc
Situational syllabus	- describes the language needed for particular situations such as, in the airport, in the restaurant, in the hotel and so forth . In this type, learners practise the language in its real context.
Topic or content-based syllabus	- topics are used to teach the four language skills.

Competency-based syllabus	- focuses on competencies, knowledge and skills that learners are expected to master.
Skill-Syllabus	- designed around the different abilities involved in using the language skills.
Task-based syllabus	- focuses on the use of particular tasks that particular groups of learners need to perform outside the school. - viable in ESP context because it favours real life tasks and promote oral discussion.
Text-based syllabus	- -designed around the texts related to specific contexts of learners.
The Integrated- syllabus	- combines elements of different syllabuses. For example : grammatical items presented in functional activities.

1.7. Current Approaches to ESP Teaching

Arguments from authors and educators have affirmed that there is not one particular method to teaching a language (Parabhu, 1990). In fact, such declarations made up an end to the dispute over teaching approaches, but their declarations did not yield to persuasive conclusions. In ESP, Hutchinson and Waters (1987) reported that teaching ESP does not require a particular teaching method. The truth is that the teaching of ESP varies from one teaching environment to another; therefore, to select and choose an appropriate language teaching approach; the ESP teacher is required to analyse the teaching context, investigate the needs of the learners, and check the availability of the teaching materials and resources. After that, he/she can make final decisions about the appropriate teaching method to use.

In literature, ESP is considered as an approach to language teaching; however, teaching in ESP may also involve the inclusion of other approaches such as, the content based , task-based, competency-based, text-based, project-based teaching and so forth. In what follows is the description of prominent approaches of frequent use in the field of ESP .

1.7.1. Content-Based Approach

Content based approach (CBA) is a language teaching approach that involves the integration of both language and content in a language course. Krahnke (1987, p.66) as quoted in Richards & Rodgers (2001) defined CBA as ‘‘..the teaching of content or information in the language being learned with little or no direct or explicit effort to teach the language itself separately from the content being taught.’’(p.204). To put differently, in CBA , language is used as a means to understand the content ; additionally, teachers, in CBA, make less effort in teaching the linguistic items. Within the CBA, learners in turn acquire the language pertained to their particular field or profession through specific subject matter content. Cammarata (2010) claimed that the CBA is not considered as a methodology to curriculum development. Rather, it is associated with the what to be included in the curriculum, and how to link the content instruction with language learning (p.92) .

CBA aims at combining the content knowledge with the language instruction. In ESP context, language is regarded as the medium for learning the content and the content is used a medium for learning the language. Thus, language activities are incorporated with the subject matter to be taught.

Unlike previous approaches to language teaching, CBA is an effective teaching method, because it combines content or the subject speciality of learners with language learning. In fact, when using CBA approach, students can have access to language in a meaningful context, and this may stimulate learners thinking processes and motivate them to learn the language and successfully achieve and accomplish content-based tasks .

1.7.2. Competency -Based Approach

Competency-based is an educational movement that takes competence as the starting point to design, elaborate and innovative educational programmes. This approach emerged in the 1970s in the United States and was largely adopted in its educational curricula.

To better understand this method, it is necessary to distinguish between the two terms *competence* and *competency.* The former describes the quality of a particular tasks or job outcomes while the latter describes the human performance in real life skills or workplace tasks.

Moreover, Competency based language teaching (CBLT) is an example of the competency based method. In this line of thought, Richards and Rodgers (2014) defined the CBLT as follows

> CBLT, as mentioned, is an application of the principles of CBI to language teaching. Such an approach has been widely adopted by the end of the 1970s, particularly as the basis for the design of work-related and survival-oriented language teaching programs for adults. (p.151)

According to Richards and Rodgers (2014), the CBLT approach adopted its principals from the CBI, and it is used for the elaboration of programmes. Additionally, the CBLT refers to the teaching of language in social contexts. That is to say, language is used as a medium of interaction between people. In addition, the CBLT does not use a specific methodology, it seeks at identifying the nature of language that learners need in their particular field; then it relates these needs and goals to course design .

Up to this point, it is worth mentioning that the CBLT shares similar standard with ESP. Firstly, both movements use needs analysis to figure out the language skills learners need mostly. Secondly, it exploits particular tasks that aim at preparing competent students who can apply their learning targets in everyday life competencies. Actually, many research work about implementing CBLT in ESP teaching have shown many positive learning outcomes.

1.7.3. Task-Based Language Teaching

Task Based Language Teaching (TBLT) supports the use of tasks as the principal core of the language course. Thus, tasks are central in this approach so as suitable for young and adult learners. Branden (2006,p.3) as quoted in Richard and Rodgers (2014) defined TBLT as‘‘ An approach to language education in which students are given functional tasks that invite them to focus primarily on meaning exchange and use language for real-world , non-

linguistic purposes''(p.174). In other words, TBLT does not emphasis on the teaching of linguistics items, rather it uses real world tasks to learn the language.

The TBLT takes some of its principles from the CLT movement. In TBLT language activities, learners are exposed to real communication. Besides, many tasks can be exploited in pairs or in groups, and this promote the language learning. ''The claim is that language learning will result from creating the right kinds of interactional processes in the classroom, and the best way to create these is to use specially designed instructional tasks'' (Richard, 2006, p. 30). This quote maintains that for effective learning, the teacher is required to prepare innovative learning tasks that support and go in line with learners' needs.

Even though TBLT receives positive feedback among many educators and researchers, it was subjected to criticism for those who favour the traditional approaches to language teaching (Li ,1998; Butler,2005 ; Swan ,2005 ; Seedhouse 1999 , 2005). Despite the many critics of the TBLT, research in TBLT provides evidence that this approach is suitable to an ESP teaching environment, because it entails the design of specific language tasks, and encourages communicative interactions in the classroom.

1.7.4. Text -Based Approach

Text based approach (TBA) or what is most commonly called genre based approach is based on the understanding of different texts. Texts, in TBA, refers to ''structured sequences of language that are used in specific contexts in specific ways'' (Richard, & Rodgers, 2014 ,p.200), thus texts are meaningful structures that occur in specific written contextual forms such as scientific writing, letters, magazines, newspapers, poems, broadcast, telephone conversation and so forth. In order to learn a language, this approach asserts on the importance of labelling different types of texts and exposing them to students. Besides, the labelling of texts should be in accordance with the context of learners and learners' needs.

From the above descriptions of Text-Based Approach, it can mention that this approach has much in common with ESP teaching approach. Both movements (i.e., TBA and ESP) reflects on the identification of specific texts and they both start with the identification of needs analysis which at the end lead to developing suitable syllabi units and purposeful learning .

1.7.5. Project-Based Approach

Many authors have reported on project-based learning programmes. This approach shares common features with the task based approach. It is simply defined as a team work or collaborative work between learners, it provides cooperative investigations and allows learners to take part in real tasks issues such as discovering solutions, solving problems or presenting results (Kavlu, 2015) .

Simpson (2011) as cited in Kavlu (2015) claimed that ‘‘ the project-based approach opens the door to communicative competence, authentic learning, learning autonomy, cooperative and collaborative learning, higher order thinking skills, language proficiency, self-efficacy and self esteem’’(p.69). That is to say, the project-based approach (PBA) enables students to interact with each other; moreover, it promotes the level of attention and concentration since it engages learners in real communicative tasks. In addition, PBA helps students to develop other cognitive skills such as thinking, reasoning, analysing and delegating skills. PBA is, however, a fully learners-centred approach which depends heavily on students’ attitudes, abilities and learning styles. Accordingly, the teacher, in the PBA, is not dominant, but his/her focal role is helping learners investigate the content creatively and gain the necessary knowledge. All in all, PBA is based on working in groups .

Undoubtedly, this approach would be beneficial in an ESP teaching context. First, it is a learner centred approach, likewise is ESP. Next to that, this approach aims to develop the communicative language skills while working collaboratively. In the same vein, speaking and fluency in academic and professional contexts are crucial and necessary skills. It can be said that the PBA can be used in ESP, because it increases learners’ self-esteem and provides them with better opportunities to learning language collaboratively.

1.8. The Role of the ESP Teacher

It is difficult to indicate the functions of the ESP teacher as compared to general English language teacher. However, in ESP, the role of the teacher tends to go through constant changes. This fact facilitates identifying the functions of the teacher in this field.

Robinson (1991) claimed that "the role of the ESP teacher is a controversial issue" and ''there is no single ideal role" (p. 79).To put it differently, the ESP teacher performs many roles. Furthermore, Dudley-Evans and St John (1998) used the label *practitioner* rather than *teacher*, and then established five roles of the ESP teacher as it is demonstrated in figure1.5 below. These roles are : teacher, a course designer and materials provider, researcher, collaborator, and as an evaluator. Each role is explained in what follows.

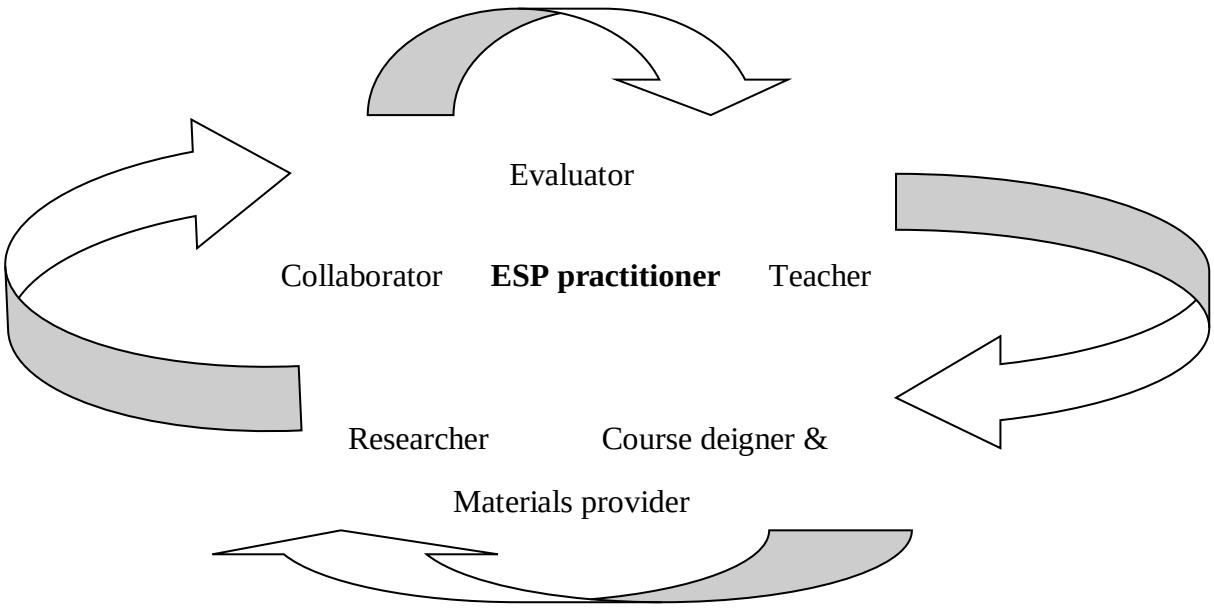


Figure1.12 The Functions of the ESP Practitioner

1.8.1. The ESP Practitioner as a Teacher

ESP teacher and EGP teacher share common roles such as teaching the English language. However, when the context changes and becomes more specific, the methodology of teaching changes and the ESP teacher is no longer 'the primary knower' of the content of the carrier discipline. Instead, the ESP teacher assumes the role of the classroom teacher, the consultant, the adviser, and the negotiator. In this line of thought, Dudley-Evans and St John (1998) pointed out that "we believe that teachers remain the classroom organisers; they have clear objectives for the class and a good understanding of the carrier content of the teaching material" (p. 14). Consequently, the ESP teacher, above all, is required to perform the role of the language educator.

1.8.2. The ESP Practitioner as Course Designer and Materials Provider

Several researchers are with the opinion that the ESP teacher is a language teacher who should literally help his /her learners learn the linguistic features of the language and the skills that students need in their fields. Besides, the ESP teacher principal role is to design and set up courses to learners. Sometimes, it is hard for the ESP teacher to find particular textbooks or specific materials; accordingly, he is required to provide the materials and select the content that should go with the specific and different needs of the students. The content should be relevant, suitable with the students' needs (Dudley-Evans and St John, 1998).

1.8.3. The ESP Practitioner as a Researcher

The ESP practitioner should undertake research and be updated on current research studies and investigations in different areas of ESP. He has to incorporate the findings of research into his /her own teaching situation. According to Dudley-Evans & St John (1998)

> An ESP practitioner has to go beyond the first stage of Needs Analysis –Target Situation Analysis (TSA) which identifies key target events, skills and texts – to observe as far as possible the situations in which students use the identified skills, and analyse samples of the identified texts. As part of this process, ESP teachers generally need to be able to carry out research to understand the discourse of the texts that students use.(p. 15).

Hence, ESP teachers have to explore and review research work of the latest language teaching techniques and strategies in ELT in general, and ESP in particular.

1.8.4. The ESP Practitioner as a Collaborator

Knowledge and experience are necessary for the ESP practitioner. Dudley-Evans and St John (1998) stated that "Most ESP teachers have a language teaching background and do not have first-hand experience of the content and the context of the other discipline" (p. 60). Therefore, 'cooperation' and 'collaboration' with subject-specialists is highly recommended, because it is one way through which the ESP teacher gains knowledge, and explores new strategies or content that could be integrated in the ESP lectures. For example, an ESP teacher who had never worked in business; he/she might be, but not necessarily, be unfamiliar with sales negotiations or budget-setting meetings. Additionally, learning those skills is time consuming. For that reason, The ESP teacher can seek guidance from specialists or trainers in the target field.

In this vein, Ghafournia and Sabet (2014) pointed out that

> The counselling role of ESP teachers should be not restricted to classroom setting. ESP teachers should develop an accepting attitude towards content teachers to get useful insights about the academic content, which they are going to teach.....ESP teachers should closely collaborate with content teachers to design the syllabus and get better teaching tips which enable them to fulfil the learners' needs more effectively.(p. 7)

The above quote indicates that to achieve the ESP teaching learning objectives, the ESP teacher should be day-to-day on recent research, he/she has also to be open-minded for collaboration and consultation with experts and educators which by the end could help him/her prepare effective ESP courses. Another important point is that subject specialist teachers can provide ESP teachers with insightful guidelines vis-a-vis the content or instructions and that may facilitate the designing of the teaching syllabus or the courses.

1.8.5. The ESP Practitioner as an Evaluator

In ESP, evaluation is of essential importance; in fact, the ESP teacher is required not only to evaluating the students' performance, but also evaluating the merits or the

shortcomings of the ESP courses. Hutchinson and Waters (1987) argued that "Evaluation helps to assess how well the needs that have created the demand for a course are being served" (p. 156). In the same vein, Dudley-Evans & St John (1998) stated that "In many situations, the evaluation forms the basis of 'negotiation' with students about their feelings about the course, their needs and priorities"(p. 17). The ESP teacher, then, evaluates the students' achievements that can be carried out through testing students by using tests such as placement tests or achievement tests or others. Besides, the teacher evaluates whether the courses accord with the needs of learners and overall teaching objectives.

1.9. The Benefits of ESP

Knowing foreign languages is important and essential for all people; however, knowing English, in particular, is indispensable. English is the language of information and technology. The linguist Graddol (2006) reported that 80 % of the world's electronic storage is in English. Additionally, the spread of globalisation across many countries and territories gives English the status of a global language. Furthermore, interactions and international exchanges in different fields such as economy, politics, and science demand knowing English that serves professional purposes rather than for non-defined purposes. Therefore, learning English for specific purposes is highly recommended. ESP makes communicators feel more comfortable to use the appropriate language and the right vocabulary in the right context, and this is beneficial, useful, and very helpful, especially at work.

In recent time, interest is tremendously moving towards to the teaching and the learning of English for specific purposes, because this latter tends to develop the language skills, but also caters for the acquisition of professional skills in the area of expertise of the learner. According to Wright (1992), ESP has threefold benefits: the learning speed, the learning efficiency, and the learning effectiveness.

First, the learning speed means that the ESP learner acquires the linguistic items (language and skills) following same speed as native speaker does. In addition, ESP can provide intensive courses which in turn accelerate the learning process. Second, learning efficiency involves a comprehensive determination of students' needs, and a pre-identification of linguistic components (discourse, register, and genre) ; that is to say, better preparation of

ESP courses. Finally, learning effectiveness refers to the successful acquisition and effective use of the target language in job-related tasks or activities pertaining to a particular discipline.

In the same vein, Wright (1992) proposed further benefits to ESP described in what follows

- GE courses deal with various topics at a superficial level; however, ESP deals with specific identified topics.
- GE deals with many skills; in contrast, ESP carters to specific learning needs.
- Unlike ESP, no need analysis is conducted in GE.
- The acquisition of skills in GE is minimized and slow.
- .Learning irrelevant items makes GE learners not ready to function in international employment contexts.(p.5)

Taking all these views together, it seems that ESP is beneficial for the following reasons
(1) It focuses on the needs of the students.
(2) It develops the learners needed skills.
(3) It is the teaching with definite purposes.
(4) Unlike GE, it deals with very defined purposeful topics.

Conclusion

This chapter discussed some directions and perspectives necessary for understanding ESP in the practical part. It is devoted to the review of ESP, and it included (1) definitions of ESP, (2) its division and sub-divisions,(3) ESP vs EGP (3) ESP course design, (4) ESP language issues, (5) ESP materials, (6) the notion needs analysis in ESP, (7) the notion syllabus in ESP (8) approaches to teaching ESP (9) ESP teachers roles and its benefits. The following chapter investigates the field of work and the research design, it describes the procedures used to conduct the study.

Chapter Two:

Work Field and Research Plan

Introduction

The present chapter introduces the methodological approach and the research design used to conduct this study. In fact, this chapter is divided into two parts, the first part presents a short discussion of the structuring of Higher education in Algeria followed by a description of the ELT and the ESP situation in Algeria. However and in order to describe the setting of this study, an overall description of the Faculty of Life and Natural sciences and coverage of the ESP teaching/ learning situation in the department of biology is then provided.

The second part of this chapter summarises the research approach by which this study is carried out. This part elucidates several elements, including the research design, data collection, analysis procedures and the sample of population. In fact, the this part aims at providing the reader with the rationale for using the case study approach, giving insightful justifications for the choice of the instruments in data collection.

2.1. Higher Education in Algeria

Algeria is one of the countries that provide all members of its society the right to free education at different levels. The government is also responsible for supplying students at the university level with services and facilities such as transport, grants, and accommodation. However, there was successive educational amendments in the Algerian higher education system in the last few years. The researcher intends through the following description to classify these educational pedagogical movements into twofold action, namely the period of the Pre -LMD (i.e., Licence, Master, Doctorate)system and the period of the LMD system .

2.1.1. The pre- LMD (i.e., Licence, Master, Doctorate) System in Algeria

Since the independence of 1962 and with the establishment of the Ministry of Higher Education, the Algerian educational system went through ongoing reforms in its different levels. In fact, these reforms occur due to the changes in socio-economic needs, and due to the pressure of globalisation in political, technological and scientific worldwide arena . Moreover and despite the Algerian independence, it is also reported that the French colonial leaders still want to enact and relabel the Algerian educational sector through some Algerian intellectual servants who sill sustain and subordinate to the European system .

Pedagogically speaking, the first reform of 1971 brought out deep changes and restructured the philosophy of the educational system around aspects such as democratization, Algerianization, Arabization, and scientific and technical orientation. According to Meziane and Mahi (2010) this educational transformation was characterised by

- adopting institutes instead of faculties.
- adopting curricula that engage in an active process of Algerianization and Arabization.
- training large number of individuals at lower costs.
- offering different types of training for students and teachers as well researchers according to the market needs .
- relating the theoretical and applied training according to the contextual needs.
- adopting a four year bachelor system as well magister and doctoral d etat instead of the certificate system.
- introducing the system of semesters and modules.(p. 269)

The following figure prescribes the classical Algerian higher education, it demonstrates the number of years to hold each degree.

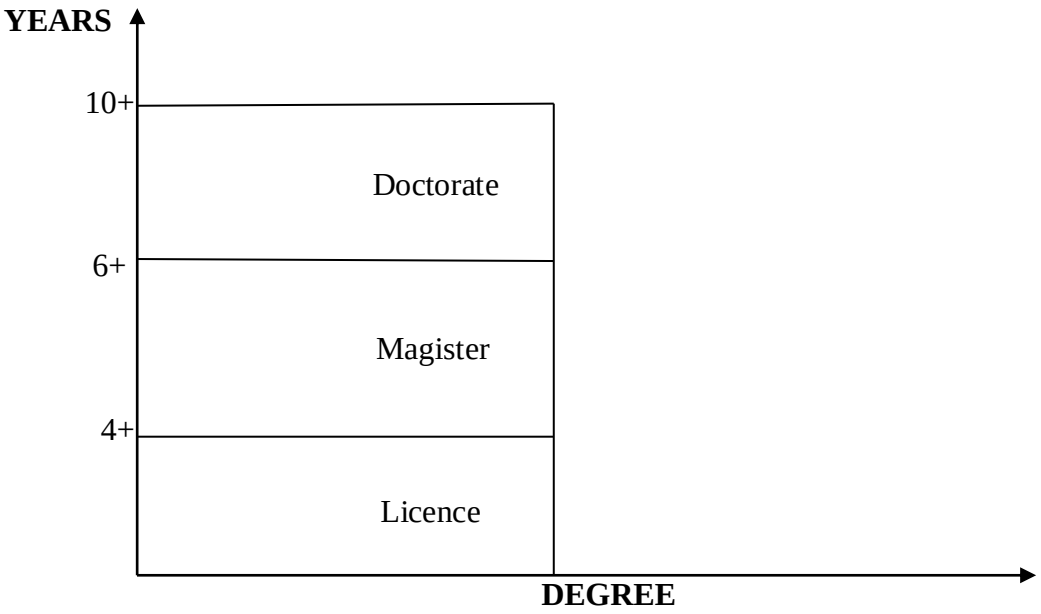


Figure 2.1 The Pre- LMD structure of Algerian Higher Education

Despite the efforts carried out by the Ministry of higher education to achieve the objectives of the 1971 reform, this latter (i.e., the 1971 reform) confronted many challenges and received lots of criticism and rejection. This was due to the random selection of its infrastructures and the neglect of the linguistic background of the Algerian indigenous society. Accordingly, another reform took place in 1999 in which the Ministry of higher education decided to return back to the old structural reform of the university that entails the faculty system rather than institutes. Again, it was noted that these reforms did not correspond with the social -market demands and what the university actually produces. In this line of thought, Djekoun (2006) summarised the major difficulties facing Algerian higher education as follows

- lack of motivation and large number of students .
- bad management and weaknesses occur when designing educational curricula.
- communication gap exists between the university and the society.
- significant failure rate due to the wrong identification of the students'needs and society soci-economic needs .
- extensive focus on the management of the university.(2006,p.271) as cited in Mesziane and Mahi (2010)

To better cope with the socio-economic international growth, the government and policymakers have launched an alternate reform plan. This time, they adopted the European educational system known as the LMD system. The target of this new system (i.e.,LMD system) is to reshape and modernize the architecture of the Algerian higher educational system by promoting cooperation and facilitating mobility at global scale.

2.1.2. The LMD System in Algeria

In recent years, Algeria dispensed significant budget to implement the LMD system and also tried progressively to unifying the universities into one functioning system. In fact, the LMD system resulted in positive outcomes in Europeans higher education. However, the LMD reform in Algeria was viewed as a replacement of the old classical system, and it was regarded as a kind of an informal adoption of tools, principals of the ready Eurocentric framework.

Before taking a final decision and putting the LMD system into practice, the government and the National Evaluation Committee grouped number of consultants, among

them academic qualified teachers and even students from about ten universities, to negotiate and evaluate this system. One year of discussions and debate between the engaged members ended up with an agreement to implement and promote this project to harmonize the national education and ensure employment by linking the social with the economical needs. A first piloting experience of this new system started in Universities such as Annaba, Bejaia, Constantine, Mostaganem and Tlemcen. Currently, almost all Algerian Universities are applying it (Bereksi, 2015) .

The LMD system, as illustrated in figure 2.2.below, consists of three cycles : the Licence (or Bachelor) in three years of study(six semesters) , the Master degree in tow years (four semesters) and finally the Doctorate degree in three years of study (six semesters) . The following figure describes the structure of the LMD system in Algerian higher education.

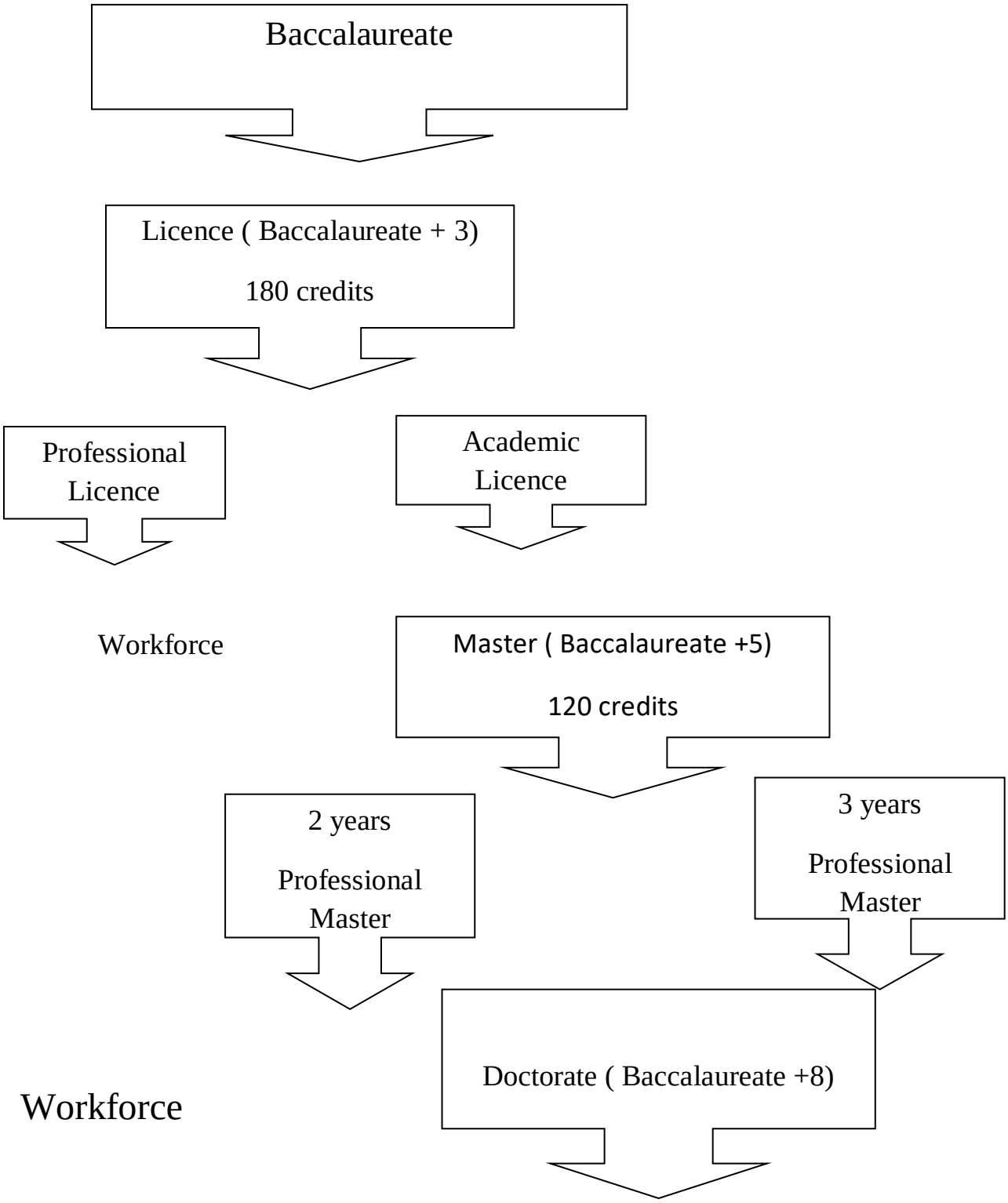


Figure 2.2 : The Structure of the LMD System in Algerian Higher Education

(Author's source)

As aforementioned, the Licence degree includes three years of study after getting the Baccalaureate. In turns, the Licence in the LMD system offers two types of programmes : academic bachelor and professional bachelor. The first programme aims at preparing students for the next academic diploma (i.e. ,Master degree), whereas the second programme provides students with high technical skills and interactions needed at the workforce. Success in the Licence degree requires collecting 180 credits at a rate of 30 credits per- semester.

However, the Master degree corresponds to an additional two years of study after the Licence degree. It encompasses scientific and technical training programmes that cover either a research Master for students interested in continuing the Doctorate level, or a professional Master oriented towards life workforce.

Finally, the Doctorate degree is the culmination of the university education and stands around at least three years of study after the Master degree. The Doctorate is a training that ends up with a thesis that is to be defended in front a jury.

2.1.3. English as a Foreign Language in Algeria

Algeria, like many other countries, witnessed inevitable changes due to the concept of globalisation that has expanded into several domains such as politics, economy, culture, technology and education. Broadly speaking, the concept of globalisation gives birth to the spread of English as a lingua franca. Today, English is used not only for communicative purposes but also is viewed as the language of scientific research. Due to the necessity to master the English language, the Algerian authority conceded the need to promote the teaching of English in its different educational sectors, thus provide international job market opportunities for the members of the society.

In fact, the teaching of English in Algeria is dated back to the post-world war period; that is to say, English was, first, introduced during the French colonialism. At that time, English was mostly taught under the practice of the French teachers. However, after the independence of Algeria, English was taught, but as a foreign language.

Though French is not the native language of Algerians, the majority of them can understand and speak this language. In fact, the dominance of French language is still privileged at the level of higher education. The faithfulness to the French language has negatively influenced students and researchers' progress, because French is no longer serving science and technology domains. As earlier stated, the awareness of the paramount

importance of the English in international scale, Algeria has opted and has favoured the teaching of English as a part of the official Algerian educational curricula at different levels, including middle schools, secondary schools, and universities .

At a tertiary level, Algerian pedagogues are completely aware of the vital role of English, particularly after the growth of technology and occupational mobility in the world. Today, English is taught during four years in middle schools and for three years in secondary ones. Whereas at the university, English is a subject to be learned at varying contextual levels depending on the departments and the specialities.

Currently, English is taught at different departments either as the main subject such as in the English departments or as a compulsory module in other departments such as biology, medicine, architecture, mathematics and so forth. The purpose of integrating English courses in these departments is to enable learners get access to research and scientific articles written in English. In the past, these branches used to teach general English courses, that is to say, students study English for no obvious purposes, and perhaps this has resulted in students' weak level of proficiency. In this vein, experts in education have recognised the mandatory need to introduce a branch for teaching ESP at the university, and thus provide learners with the necessary skills needed in their area of research. Thereby, ESP courses have been launched at Algerian universities to allow students keeping pace with the latest studies and scientific research.

2.1.4. ESP in Algeria

There is no hidden fact that English is the world first international language, and also an essential communicative vehicle for academic or professional progress. Therefore, learning of English is spreading fast. Besides, it is required among politicians, business leaders, or academic professors who need to communicate with international colleagues, but also other professions such as the nurse, the hotel receptionist, the tourist guide and many other people who perform different tasks . Moreover, the increased of academic and occupational mobility in the world have resulted in the need of specific English language teaching namely the teaching of ESP.

In the Algerian context, the Ministry of Higher Education and Scientific Research admitted the fundamental need to incorporate ESP courses, particularly, at university level.

Hence, they founded three ESP centres in Oran, Blida and Constantine. These centres are supplied with the necessary pedagogical equipment obtained from the British Council (Bencherif, 1993). The purpose of the Algerian-British cooperation is to develop professional ESP advisory service for teachers, and provide them with opportunities to carry out further investigations and studies in Great Britain.

In fact, the three ESP centres are in charge of training teachers to elaborate and deliver ESP lectures in technical departments. Regardless of the different needs of students and researchers to acquire English that fulfils defined purposes rather than English for no obvious purposes, the Ministry of higher education did not agree to grant these centres a legal status, thus two ESP centres of Blida and Constantine closed. Still more, the remaining one of Oran is not fully achieving its initial aim; it is assigned for superficial missions such as borrowing books to students, and organising seminars or study days. In addition, this ESP centre (of Oran) acts under the supervision of the CEIL (Centre d'Enseignement Intensif des Langues) (Benyelless, 2009).

2.1.5. The University of Oran

The University of Oran is one of the largest universities in Algeria. It is located in the western part of Algeria, more precisely, in the Wilaya of Oran. The university was first founded in November 1961, and was a supplementary division of the University of Algiers. However the University of Oran became an independent university in 1967. Up to now, it delivers courses for post-graduation; likewise, annually thousands of students graduate in different specialities from inside and outside the country. In addition, Oran University performs scientific and pedagogical supervision for many closer Western and Central universities of Algeria. (Oran1 University, 2017)

In the 60th anniversary of the National Declaration of Independence (1954-1962), the university of Oran was divided into two main structures: (1) the university of Oran1 under the name of Ahmed BEN BELLA, (2) the university of Oran2 under the name of Mohamed BEN AHMED, both universities include the system of Faculties and Institutes as it is illustrated in figures 2. 3 and figure 2. 4 below.

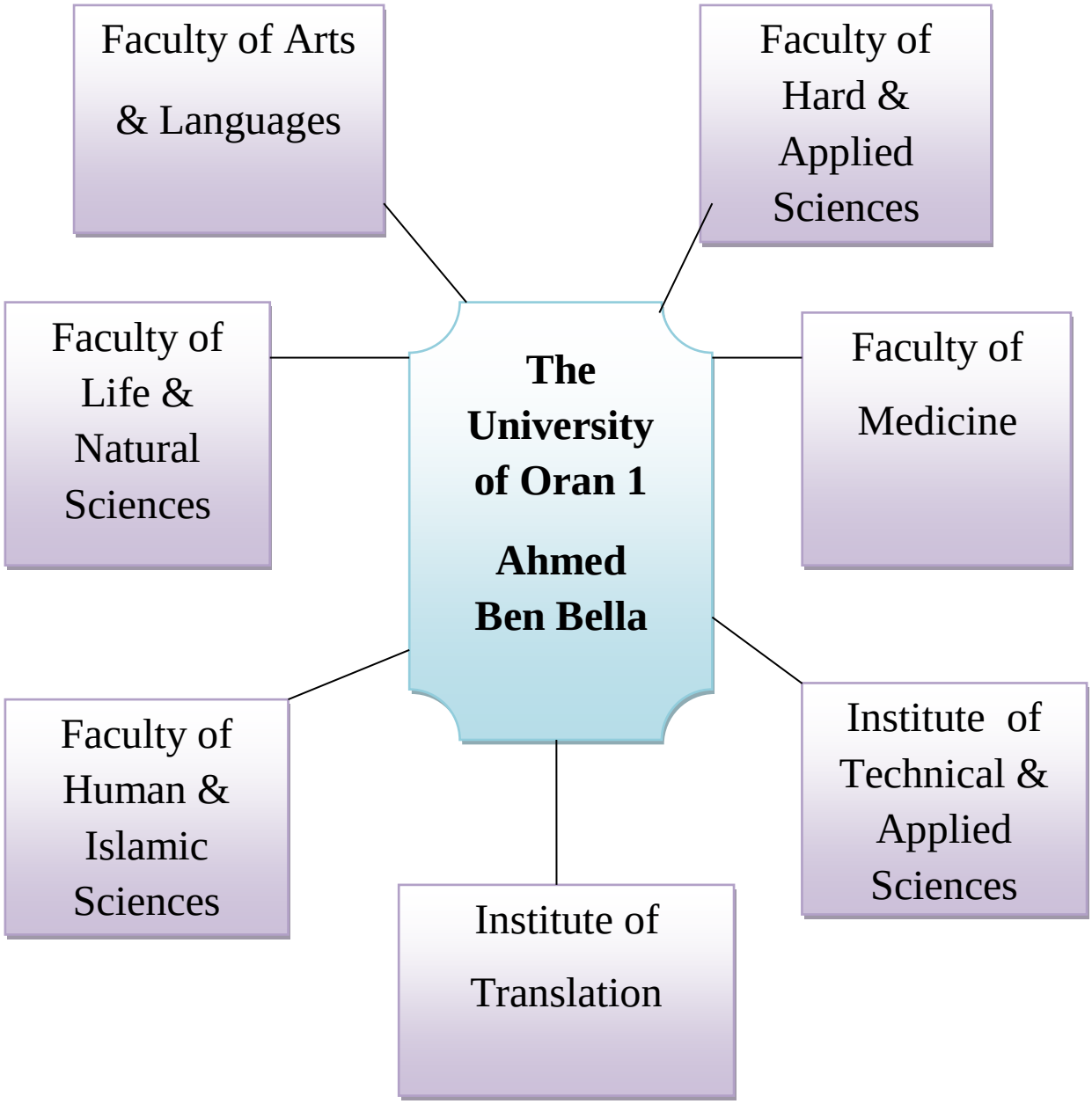


Figure 2. 3 The Structure of the University of Oran1 (Ahmed BEN BELLA)

Author's data

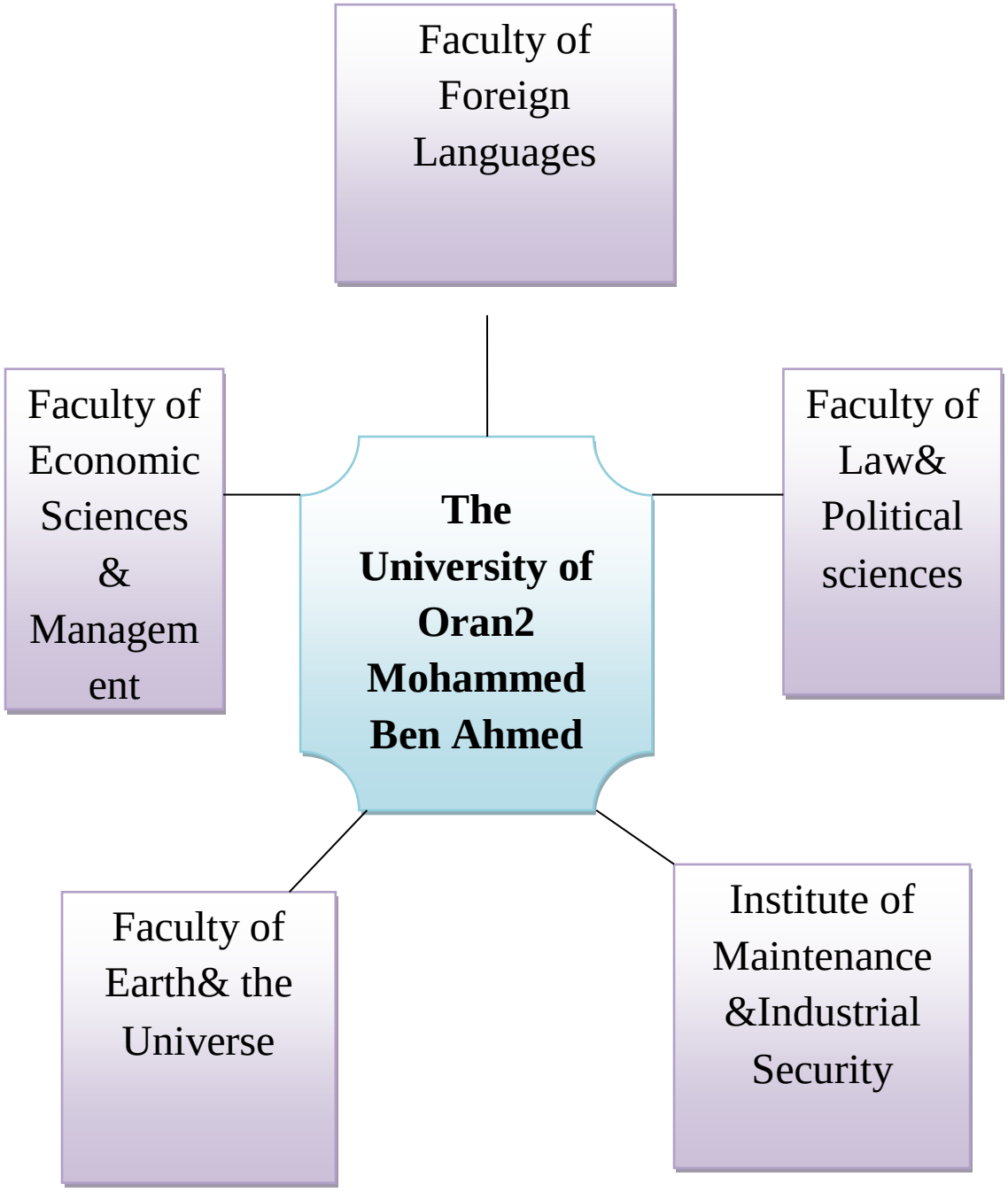


Figure 2. 4 The Structure of The University of Oran2 (Mohammed BEN AHMED)

Author's data

2.1.6. The Faculty of Life and Natural Sciences

The Faculty of Life and Natural Sciences is one among the four faculties of the University of Oran. In fact, this Faculty was established on the 23rd of August 2003, and is located in Belgaid (Mohamed BEN AHMED, University of Oran2). Pr Bensahla (The Dean of the Faculty) pointed out that the Faculty adopted, first, the LMD system during the academic year 2005-2006 and that it is interested in the living world such as animals' physiology, plants, microorganisms and other diverse aspects. Besides, the Faculty is divided into two major departments: the department of biology and the department of biotechnology. However, each department has its own branches and sub-specialities. Our current research investigation is in the department of biology explores the structures and the functioning of the department of biology of the University of Oran1.

2.1.7. Department of Biology

Biology is a field that investigates the life of the living organism, more particularly, their physical structures, chemical processes, molecular interactions, physiological mechanisms, development and evolution. Biology deals with how cells build an organism. In other words, the biology field determines organisms' functions from genes, heredity, creation, and evolution. Additionally, this field is divided into two categories: first, theoretical biology uses mathematical methods to formulate quantitative research. Second, experimental biology uses empirical experiments such as testing, hypothesising, or validating experiments.(Oran1 University , 2019)

As shown in figure 2.5 below, the department of biology is one part of the Faculty of Life & Natural Sciences. This department receives Baccalaureate holders from scientific streams, it compiles a group of students, researchers, teachers, administrative and technical staff. The students, as aforementioned, are distributed in multi-disciplinary specialities such as Biochemistry, Genetics, and Molecular Biology (Oran1 University, 2019). The following figure demonstrates the structuring and the division of the Faculty of Life and Natural Sciences at the University of Oran1.

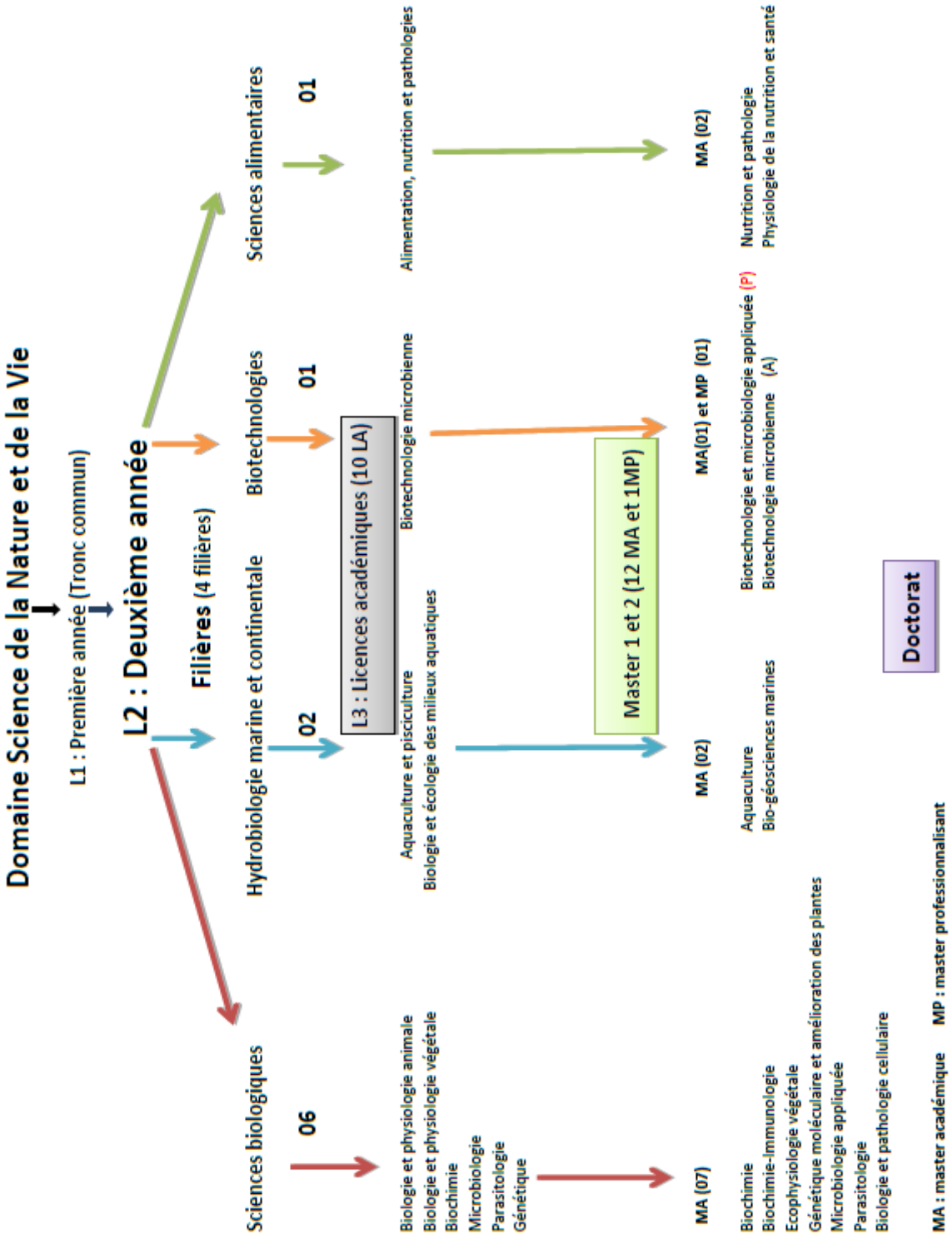


Figure 2.5 The Structure of the Faculty of Life& Natural Sciences.

(University of Oran1, 2017)

2.1.8. The Status of English in the Department of Biology

English is the de facto language of science, it is a required language to gain access to the vast scientific literature in the World. Thereby, scientists have to learn English to be in line with the recent scienctific research community worldwide. Likewise, biologists need English (i.e., English for specific purposes) to achieve tasks either in academic or professional areas. They also need English to communicate in different scientific contexts such as delivering oral presentations, participating in a conference, speaking with foreigners partners, writing academic articles. Hence, it is very important for a biologist to master not only the language but also the biological terminology and the science content in English.

The present research study explores the teaching status of English in the department of biology at the University of Oran1. Despite the significant need of English for biologists, English, under the current investigation, is taught as a compulsory annual module labelled ESP. However, the time allocated for the teaching of this module is one hour and a half per week, and most of the time it is programmed in late hours of the day.

In fact, the teaching of English in the biology department is given little importance compared to other subject matter teaching modules. Besides, ESP courses are provided to large groups of students, sometimes groups from one level but from different specialities are grouped in one lecture session,and this has significantly impacted on students' attendance and comprehension level .

In the biology department, English courses start at a varying level and with varying specialities. For example, students of Licence enrolled in the Faculty of Life and Natural Sciences are introduced to ESP lectures starting from the first semester of the first year. In other words, ESP courses are launched before students' final orientation in the field of specialism. Another fact worth mentioning is that the department of biology does not provide teachers of the module of English with prescribed programmes or any teaching materials, supporting aids that may facilitate the teaching process. Accordingly, the ESP teacher finds herself responsible and in charge of planning courses, designing the syllabus, finding the material, and selecting a pertinent methodology. Moreover , the researcher has noticed that this department has got one English teacher who is operating alone and in charge of the Licence and Master levels.

2.2. Research Methodology

This study explores the ESP teaching situation by investigating the ESP teachers obstacles and the needs of the learners in the department of biology of the University of Oran1. The results obtained from this exploration will be the backbone for developing a pertinent syllabus that match up with the needs and expectations of this research population. To conduct this research investigation, the researcher has, first, to properly decide on the type of research methodology she is going to undertake. Although the choice of a research methodology is challenging and difficult task, it is important to consider that selecting an appropriate research methodology could be one main factor of the failure or the success of any research project .

Generally speaking, research methodology is the philosophy that the researcher selects to conduct his/her invesigation, it guides researchers in enunciating the problem, collecting necessary data, analysing facts and drawing conclusions (Khothari,2004). Likewise, Mouton (2001) claimed that '' To satisfy the information needs of research project, an appropriate methodology has to be selected and suitable tools for data collection and analysis have to be chosen.'' (p.133). All in all, the research methodology is the approach chosen to studying your topic, it includes constraints, dilemmas and ethical choices that researchers need to think of while undertaking their research projects.

Further, the research methodology is the summary of principles and procedures used by the investigator in his/her study. In the same vein, research methodology addresses the research problem, the population, the setting, the tools for data collection, and data analysis methods. Therefore, the researcher should select carefully a framework for his/her research project so that to avoid any error or any misleading understanding of the entire study.

2.2.1. The Study

This present research is a case study conducted in the department of biology at the University of Oran1. According to Robinson (2002), case is ''A strategy of doing research which involves an empirical investigation of particular contemporary phenomenon with its real-life context using multiple sources of evidence.''(p. 146). This type of strategy explains phenomena that focus on one area, a person, a family, an institution or even the entire community. Similarly, Bell (2005) pointed out that ''the case study approach can be particularly appropriate for individual researchers because it provides an opportunity for one

aspect of a problem to be studied in some depth.''(p.10). In fact, case study research has been used in multi-disciplines such as social science, education, law and business. It investigates particular problems of particular issues. Likewise, Yin (1984) defined the cas study as ‘‘an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used.''(p. 23). To large extent, case studies are used in different disciplines, especially in the field of education, they examine phonomenon in their real setting by using multiple tools over a period of time.

Over the last 40 years, the scope of case study research went through constant changes. Consequently, a set of definitions and many approaches are proposed to the case study research. In fact, many procedures are suggested to conduct the case study approach; however, proponents of case study research were with the opinion that case studies examines real contextual phenomenon using a systematic approach (Harrison, Briks, Franklin & Mills, 2017).

To understand critical aspects in case study research, researchers should take into consideration some fundamental elements. These elements are evident in the approaches of (Merriam, 2009; Stake 1995, 2006 ; Yin ,2014), and are explained in table 2.1 below. Moreover, to ensure and justify the validity and the cridibiltiy of this framework study, these elements must follow alignement that occurs in table 2.1 below.

Table 2 .1 Case Study Elements and Description (adapted from Harrison *et al*, 2017, p. 31)

Element	Description
The case	Object of the case study identified as the entity of interest or unit of analysis Program, individual, group, social situation, organization, event, phenomena, or process
A bounded system	Bounded by time, space, and activity Encompasses a system of connections Bounding applies frames to manage contextual variables Boundaries between the case and context can be blurred
Studied in context	Studied in its real life setting or natural environment Context is significant to understanding the case Contextual variables include political, economic, social, cultural, historical, and/or organizational factors
In-depth study	Chosen for intensive analysis of an issue Fieldwork is intrinsic to the process of the inquiry Subjectivity a consistent thread—varies in depth and engagement depending on the philosophical orientation of the research, purpose, and methods Reflexive techniques pivotal to credibility and research process

In-depth study	Chosen for intensive analysis of an issue Fieldwork is intrinsic to the process of the inquiry Subjectivity a consistent thread—varies in depth and engagement depending

	on the philosophical orientation of the research, purpose, and methods Reflexive techniques pivotal to credibility and research process
Selecting the case	Based on the purpose and conditions of the study Involves decisions about people, settings, events, phenomena, social processes Scope : single, within case and multiple case sampling Broad : capture ordinary, unique, varied and/or accessible aspects Methods : specified criteria, methodical and purposive ; replication logic : theoretical or literal replication (YIN, 2014)
Multiple sources of evidence	Multiple sources of evidence for comprehensive depth and breadth of inquiry Methods of data collection : interviews, observations, focus groups, artifact and document review, questionnaires and/or surveys Methods of analysis : vary and depend on data collection methods and cases ; need to be systematic and rigorous Triangulation highly valued and commonly employed
Case study design	Descriptive, exploratory, explanatory, illustrative, evaluative Single or multiple cases Embedded or holistic (YIN, 2014) Particularistic, heuristic, descriptive (MERRIAM, 1998, 2009) Intrinsic, instrumental, and collective (STAKE, 1995, 2006)

In addition to the elements listed in table 2.1 above, Hitchcock and Hughes (1995,p . 317) as cited in Cohen, Manion and Marison (2007) suggested further features to the case study method. These features are as follows

- It proposes vivid descriptions of events related to the case.
- It follows a systematic narrative description of events related to the case.
- It connects the events and provides an analysis of them.
- It focuses on individuals or groups of people, and diagnoses how they perceive the events.
- It focuses on specific aspects relevant to the case .

- Researcher are integrally involved in the case.

- It provides a rich writing report of the case (p. 253).

Case studies are generally helpful to conduct in-depth analysis. Actually, there are several types of case study research; some of it are illustrated in table 2.4 below. Each case study type is different from the other; however, possible overlap can occur between some types, differences or overlapping depend on the objectives of the research project.

Table 2.2 Classification of Case Studies (adapted from Qi,2009,p.24)

Classification	**Types**	**Description**
Yin (1984)	Exploratory	It is used to prepare information before the investigation, the main purpose is to to identify research questions and types of data collection.
	Descriptive	It is used to provide narrative accounts.
	Explanatory	It is used to examine the data both at surface and deep level.
McDonough(1997)	Interpretive	It is to interpret the data by developing conceptual categories.
	Evaluative	It adds judgment to the phenomenon found in data.
Merriam(1988)	Descriptive	It provides narrative accounts.
	Interpretive	It develops conceptual categories to examine initial assumptions.
	Evaluative	It Explains and judges.
Stake (1995)	Intrinsic	It examines the case for its own sake.
	Instrumental	It examines certain pattern of behaviours
	Collective	The researcher coordinates sources from several data.

In addition, case studies, like other research methods, go through design and planning processes. Adelman et al., (1980) listed some tips whilst conducting case studies. They are stated as follows

- Using primary and secondary sources
- Cheking data
- Using triangulation.
- Collecting data .
- Data analysis and interpretation of the findings.
- Writing the report. as cited in. (Qi, 2009, p.28)

In the same line of thought, Morison (1993, as cited in Cohen et al., 2000) suggested that case studies should start with orienting decisions, research design and methodology, data analysis , then presenting and reporting the results.

Case studies, like any other research approach, have their strengths and weaknesses. Nibset and Watt (1984) as cited in Cohen et al (2007) listed the strengths and the weaknessess of the case study approach and are illustrated in table 2.5 below.

Table 2. 3 Strengths and Weaknesses of Case Study (adapted from cohen et al ,2007,p. 256)

STRENGTHS	WEAKNESSES
• The results are more easily understood by a wide audience (including non-academics) as they are frequently written ineveryday, non-professional language. • They are immediately intelligible; they speak for themselves. • They catch unique features that may otherwise be lost in larger scale data (e.g. surveys); these unique features might hold the key to understanding the situation. • They are strong on reality. • They provide insights into other, similar situations and cases, thereby assisting interpretation of other similar cases. • They can be undertaken by a single researcher without needing a full research team. • They can embrace and build in unanticipated events and uncontrolled variables.	• The results may not be generalizable except where other readers/researchers see their application. • They are not easily open to cross-checking, hence they may be selective, biased, personal and subjective. • They are prone to problems of observer bias, despite attempts made to address reflexivity.

Many reasons stand for choosing the case study approach as a research method to our study. First, recent research in education showed positive attidues towards using case studies to understand certain aspects in real practice. Second, case study explores identifiable phenomena in their usual context. Third, case study, as noted in table 2. 5 above, is a bounded system. In other words, it deals with variables that are systematically connected with each other. This connection will help the investigator to explain certain complexities that might occur between variables in real-life setting. Finally, in case study, we can employ multiple tools such as interviews, observations, group meetings and so forth .

2.3. Research Approach

A second important research approach adopted in the present work, is a combination of qualitative and quantitative approaches. The purpose, here, is to increase the quality of information gathered, and also an optimal way to provide more understanding of the studied phenomenon. The following outlines provides a brief distinction between these two approaches.

2.3.1. Qualitative Approach

Qualitative approach deals with attitudes, experiences and behaviours. It is employed to get in-depth facts from participants and eliminate possible errors when dealing with numerical details. This type of research aims to find out the desires and motives of human behaviours that may enable researchers understand human-specific behaviours such as of likes and dislikes.

Gray and Airasian (2000) as quoted in Yilmaz (2013, p.311) reported that qualitative approach is ‘‘the collection of extensive data on many variables over an extended period, in a naturalistic setting, in order to gain insights not possible using other types of research’’ (p .627), qualitative research is used to gain insightful understanding of certain opinions, reasons, motivation and help reveal the target population perceptions of certain topics which can not be reached via other types of research.

As aforementioned, the qualititaive research is a naturalistic approach that investigates and interprets social phenomenon in their natural setting. Additionally, this research paradigm explores a social dynamic reality through a flexible, holistic and content sensitive framework. Another fact to mention is that the purpose of this research method is to describe phenomenon by gathering thoughts, feelings and opinions from relatively small sample of people (Ylimaz,2013).

Moreover, the qualitative research is regarded as an inquiry process that investigates and explores problems, and reports on detailed views from participants. This type of research is usually conducted in a natural setting (Bacon-Shon,2013).

In general, qualitative research focuses on the nature and the quality of things. It gathers data and views from small samples of people that are not easy to analyse. In this case, the researcher should be skillful in interpreting these data, thus provides readers with relevant arguments that in one way or another may prove the credibility of the research, and justify your theme.

Despite the difficulty in analysing the results of the qualitative approach, this latter is typically essential for elucidating some aspects that are impossible to attain via other research types. To avoid any ambiguity while dealing with the quantitative approach, the researcher should seek guidance from experts in the field of psychology.

Like any research, the qualitative research has its own strengths and weaknesses. In what follow is the description of the advantages and the limitations of this approach.

Table 2. 4 Advantages and Limitations of Qualitative Research. Source : The Author

Advantages of qualitative researh	**Limitations of qualitative research**
• It can provide rich details, • A real contact with participants, • It fits many situations that require detailed understanding. • It investigates real settings.	• It can not be generalised since it investigates a small size of participants. • Accusation and unreliability can be confronted. • Conclusions must be headlined carefully.

.

2.3.2. Quantitative Approach

Quantitative approach is a form of research based on the measurement of numerical data that can be turned into usable statistics. It is conducted to formulate facts and quantify attitudes, opinions, behaviours from large scale sampling. In fact, many educators and researchers provide different definitions to quantitative research .

Yilmaz (2013) claimed that quantitative method ‘‘is based on positivism or objective epistemology, relies on quantitative measures for collecting and analysing data, and aims to make predictions and generalisations’’(p. 323). Typically, quantitative research is regarded as an objective research model that explores measurement of phenomena such as time, weight and predictions. This research uses more than one data to provide accurate and precise analysis of the topic and answer the enquiry .

In addition, quantitative data collection methods can be approached via tools like surveys, questionnaire, observations, and structured interviews. In this vein, Dawson (2002) reported that ‘‘Quantitative research generates statistics through the use of large-scale survey research, using methods such as questionnaires or structured interviews’’(p.15).

Moreover, Creswell (1994) stated that quantitative research is a type of research that deals with ‘‘explaining phenomenon by collecting numerical data that are analysed using mathematically based methos ’’ (p.27). In a different way, quantitative method explains things which could be a question, a problem, a theory or any other enquiry form. Next, quantitative research collects *numerical data* which are usually analysed using mathematical statistics.

Even though the quantitative design is more popular, this research approach has its drawbacks. Table 2.7 below summarises the strengths and limitations of this approach.

Table 2.5 Advantages and Limitations of Quantitative Approach (Source : the Author)

Advantages of quantitative research	**Limitations of quantitative research**

• It uses a large scale sample and this allows making generalised conclusions. • It uses numerical and statistics analysis, and this is often reliable • It is often preferable in studies that need systematic and stansard comparisons.	• It provides unclear explanation regarding human experiences or perceptions. • It is relevant to answer what and to what extent but can not always explore why or how. • Sometimes, it gives false misconceptions of homogenity in a sample.

Both qualitative and quantitative approaches have different methodological paradigms . In fact, the objectives of the research work will dictate the appropriate research method for the study. To further distinguish between qualitative and quantitative approaches, a comparison is outlined in table 2. 8 below.

Table 2. 6 Quantitative Versus Qualitative Research approaches (Adopted from Mack *et al*, 2005 :03)

	Quantitative	Qualitative
General Framework	✓ Seeks to confirm hypotheses about phenomena. ✓ Instruments use a more rigid style of eliciting and categorizing responses to questions. ✓ Uses highly structured methods such as questionnaires, surveys, and structured observation .	✓ Seeks to explore Phenomena ✓ Instruments use a more flexible, iterative style of eliciting and categorizing responses to questions. ✓ Uses semi-structured methods such as in-depth interviews, focus groups, and participant observation.
Analytical Objectives	✓ Quantify variation. ✓ Predicts causal relationships. ✓ Describes characteristics of a population.	✓ Describe variation . ✓ Describes and explain relationships. ✓ Describes individual experiences. ✓ Describes group norms.
Question Format	✓ Closed	✓ Open-ended
Data Format	✓ Numerical (obtained by assigning numerical values to responses).	✓ Textual (obtained from audiotapes, videotapes, and field notes).
Flexibility in Study Design	✓ Study design is stable from beginning to end.	✓ Some aspects of the study are flexible (for example, the

	✓ Participant responses do not influence or determine how and which questions researchers ask ✓ Next Study design is subject to statistical assumptions and conditions.	addition,exclusion, or wording of particular interview questions). ✓ Participant responses Affect how and which questions researchers ask. ✓ Next Study design is iterative. That is, data collection and research questions are adjusted according to what is learned.

Over the years, research methodology is subjected to conflicting arguments with regard on how to select an appropriate method for your investigation. In this line of thought, Dawson (2002) pointed out that

> what you will find ; however, is that your instincts probably lean you towards one rather then the other. Listen to these instincts as you will find it more productive to conduct the type of research you feel comfortable. Especially if you are to keep your motivation and levels high. (p.16)

Many often, researchers find constraints while running into the question of what research method should they use in the research project. In fact, it is not possible to prescribe or list guidelines that can help researchers select one best approach. Therefore, the researcher should listen to his/her instincts and follow what keeps motivation and confort up.

The researcher, in this case, should bear in mind that no particular approach is better than the other, and that both approaches (i.e., qualitatite and quantitative) have their strengths and weaknesses. Thus, it is important to trust the instincts in choosing the paradigm that goes in line with the purposes and objectives but most importantly not your preferences. It is also necessary to seek guidance from the supervisor about the research methodology.

To explore the ESP teaching situation and diagnose learners'needs and the obstacles confronting the ESP teachers in the department of biology of the University of Oran1. The researcher finds it crucial to select both research approaches because both types are suitable for case study research .

The qualitative approach will enable the investigator to describe and narrate the real-life setting of the participants. Moreover, the study is exploratory in nature and is appropriate to answer research questions that start with "*What"*or "*How"*; that is to say, it is a means to look at the teachers and the students practices, preferences, behaviours, attitudes, experiences and how they view particular issues and cases.

Ultimately, the quantitative approach helps the researcher collects data in a form of numbers and also determine certain predictions to our research. Due to the nature of this study which makes use multi data instruments, the researcher thus deems that the combination of both methods is important to find answers to the research questions and also crosscheck results.

2.4. Data Collection

Data collection is an important part in any research study. It is the gathering of information that addresses the research questions that the researcher has formulated. In fact, data collection is nothing more than planning to obtain desirable information regarding some enquiries of the research project.

No matter the field of study, data collection can be utilized in disciplines including education, psychology, sciences, social sciences, humanities, and others. Moreover, data collection is placed at the heart of any research design. The goal is to capture vivid quality of evidence, thus ensuring a reliable collection that can subsequently be transfered into rich sources that could be later analysed.

Regarding data collection instruments, there are several tools that researchers can adopt to collect the necessary data. However, the decision about which tool to use is guided by the nature of the investigation and the type of research questions. As mentioned earlier, there are distinct data instruments for data collection, among which are stated as follows

- Using questionnaires / Schedules

- Conducting tests

- Recording the events

- Interviews

- Observing phenomenon and reporting details

- Focus groups interviews

- Case studies

- Portfolios

- Diaries

- Documents and others

Collecting data follows a certain systematic method that must be correctly handled to sustain consistency of the dissertation. Neverthelss, accurate data collection is essential to avoid any likelihood of errors within the investigation. One way to guarantee and provide credible outcomes to your research project depends highly on appropriate and on adequate data instruments selection.

To shed light on the current ESP teaching situation in the department of biology of the university of Oran1, the researcher opts to use four data instruments: teachers' semi-structured interview, students' questionnaire, teachers' questionnaire and classes observation. In what follows is a detailed description of the tools selected to undertake the research study. Also, the researcher finds it crucial to define the setting (i.e., where the study took place) and the sample population (i.e., with whom) .

2.4.1. The Setting

The present research investigation is conducted in the Faculty of Life and Natural Sciences and more particularly at the department of biology of the university of Oran1. The objective of the study is to explore the obstacles that ESP teachers mostly confront while teaching ESP, and also indentifies the needs of the learners. Based on the results obtained from data collection (i.e., students and teachers' questionnaire, teachers' semi -structured interview and class observations) a methodology to designing a syllabus and a contextual syllabus model with some ESP lectures samples is devised to this research population.

2.4.2. Sample Population

Selecting an appropriate sample in any research project is of vital importance. According to Schofield (2006) as cited in Sapsford and Jupp (2006 , part 2) ‘‘the aim of sampling is to save time and effort, but also to obtain consistent and unbiased estimates of the population status in terms of whatever being researched’’(p. 26). The overriding thing to mention is that the term sample and population have quite different meanings. Sample is a set of elements selected from the empirical investigation, whereas population is a group of people whom the research project is about.

When undertaking a research, population is generally too large to investigate. In that case, the researcher is required to break down the population into smaller groups, these latter refers to samples. In fact, choosing a sample for research is not always an easy task. In fact, two sampling methods are found : probability sampling and non-probability sampling .

On the one hand, the probability sampling is based on the fact that every member gets a fair chance of being selected. In other words, each person has a zero of non- probability selection. This method (i.e., probability sampling) gives the best to create a sample that represents truly the population (Parveen &Showkat, 2017). On the other hand, the non-probability sampling are selected in a way to be representative of the population. Additionally, if this sampling reflects the characteristics of the population, then results obtained of this method (i.e : non-probability sampling) is credible and valid.

To achieve the objectives of this study, two groups of samples were selected (i.e., second and third years students studying in the departments of biology), and teachers were selected from different universities, notably from the universities of (Oran,Tiaret, Mostaganem, and Saida). In the sampling of population, two criteria were taken into account, randomness and quota.

- **Randomness** : it is a random selection of subjects from informants such as gender, level, speciality; that is to say, no preferences or limits are given to any category .
- **Ouota** : it is a representative sample that covers the most features of all the population. .

The inspiration to choose theses two groups of samples was drawn from a number of scholars (e.g., Dudely-evans and St-jhon 1998 ; Richards ,2001 ; Kennedy& Bolitho,1984 ; Robinson ,1991). The purpose is to collect in-depth information of the current ESP teaching /

learning situation and students' language needs. The following discussion provides a detailed description of the two samples profiles (i .e., students and teachers).

2.4.3. Students' Profile

This research concerns third and second -year students of the department of biology of the University of Oran1. The investigator selection was made on a quota basis of all the other existing levels (i.e., post-graduate students) within the same department. The students enrolled for a Licence degree had received a baccalaureate from scientific streams and have studied a common core year in their L1(i.e., first year). The subjects they were taught in that year were: Cellulaire biology, chemistry, mathematic, history of science, methodology physics and others. Once they achieved the first year (i.e., end of the first year), specialities are offered to them to choose and register in one particular field of speciality. Accordingly, specialism in the department of biology commences at second year of enrollment.

Regarding the sample size (i.e., third and second year students), the researcher believes that taking a large sample is sufficient to undertake the needs analysis questionnaire. In addition, the participants studied English in middle and secondary schools, hence responding with less stress. Moreover, English courses in the department of biology start from the first semester of the first year of enrollment. Accordingly, the research sample is supposed to be interesting because the students have already studied the ESP course in their first year level.

2.4.4. Teachers' Profile

In order to avoid the shortcoming of the number of ESP teachers working in the department of biology, the researcher decided to add another group of teachers working in the biological departements from neighbouring universities such (University of Science and Technology of Oran, Mohamed Boudiaf, Higher School of Science and Biological Sciences Oran1) found in the same Wilaya of Oran. To conduct the questionnaire, other ESP teachers working in the universities of Tiaret, Mostaghanem and Saida were also included. All in all, (15) teachers with different qualifications and experiences were selected to answer the questionnaire, While (5) teachers with different qualifications and different experiences were selected randomly to conduct the semi- structured interview. Regarding the sample size of

teachers, it may be unsufficient but when looking to the teachers' responsabilities and experiences, it seems that they would share insightful arguments.

2.5. Research Instruments

Instruments refer to the various methods that researchers use to obtain data from the informants. In this line of though, several authors have listed many procedures that a needs analyst may undertake. For example. In ESP, Huctchinson and Waters (1987) suggested several means for data gathering such as interviews, questionnaires, observations or other informal consultation with learners or sponsors (p.58). Likewise, Jordan (1997) as cited in Brown (2014) proposed a long list of tools listed in the following

- Documentation;
- Tests ;
- Questionnaires;
- Forms / checklists;
- Interviews ;
- Record-keeping;
- Observation.

Perhaps the most systematic and complete list for needs analysis or data gathering in ESP is the one compiled by Brown (1995, 2001) and Long (2005) and it comprises 24 distinct procedures. These 24 procedures are illustrated in table 2 .7 below.

Table 2.7 Procedures for Needs Analysis (adapted from Brown, 2014, pp.65.67)

Types	**NA procedures**	**Definitions**	**Qual**	**Quant**
Existing information	Record analysis	Examination of files that are kept for students or teachers or various reports that are automatically generated within the institution, and so forth	✓	✓
	System analysis	A bit broader analysis of existing records that looks at different organizations or systems, often comparing them.	✓	✓
	Literature	Examination of the NA work that has gone before, usually as		

	review	reported in the NA literature on NA methods or actual NA that have been performed.	✓	
	Correspondence	Contacting NA experts or other people doing NA by email, phone calls, letter writing, and so forth.	✓	
Tests	Aptitude	Tests of examinees' general abilities to learn languages (with the highest chances of success)		✓
	Proficiency	Tests of examinees' general abilities in a specific language (English in this case), usually for purposes of deciding on admissions to a program.		✓
	Placement	Tests of the examinees' English abilities within the range found at a particular institution, usually for purposes of placing those examinees in levels of study.		✓
	Diagnostic	Tests of students' performance of course SLOs at the beginning of the course for purposes of determining the degree to which they had achieved the SLOs.		✓
	Achievement	Tests of students' performance of course SLOs at the end of the course for purposes of determining the degree to which they had achieved the SLOs		✓
Observations	Personal records	Diaries, journals, logs, blogs for stakeholders to record observations, events, experiences, and reflections in their workplace, classrooms, and so forth.	✓	
	Participants observations	An insider in a situation watches, experiences, makes notes, and analyzes the language in use, what is going on in the ESP classroom, and so forth	✓	
	Non-participants observations	An outsider to a situation watches, makes notes, and anlyses the language in use, what is going on in the ESP classroom, and so forth.	✓	
	Inventories	Counts of people, places, and materials goods that are likely to be important for the success of an ESP course	✓	✓

Types	**NA procedures**	**Definitions**	**Qual**	**Quant**

Interviews	Individual interviews	Questions and answer sessions with single individuals who are stakeholder, or potential stakeholders.	✓	
	Group interviews	Questions and answer sessions with groups of people who are stakeholder, or potential stakeholders.	✓	
Meetings	Advisory	Advisory meetings are designed to get advice from the group of stakeholders at the meeting	✓	
	Review	Review meeting are designed to get the group of stakeholders to review, give feedback, critique, and revise something developed for the NA.	✓	
	Curriculum component development	Curriculum component meetings are designed for help stakeholders working in a particular area of curriculum work together on common issues..	✓	
	Focus group	Focus group meetings are usually led by a moderator who follows a plan to help stakeholders interact to address a particular issue or set of issues.	✓	
	Interest group	Interest group meetings ar designed for help stakeholders with a particular position on an issue to develop arguments in favour of that position	✓	
	Conflict resolution	Conflict resolution meetings are designed to help stakeholders with different positions on an issue develop compromises that resolve their arguments.	✓	
Questionnaires	Biodata items	Questionnaire items that seek background information about the respondents.		✓
	Opinion items	Questionnaire items that ask respondents about their ideas, views, and opinions.	O-R	C-R
	Self-rating items	Questionnaire items that ask respondents about their rater their own abilities, knowledge, or skills.	O-R	C-R
	Judgmental ratings items	Questionnaire items that ask respondents for judgments (feedback) on very specific aspects of the NA that they can look at.	O-R	C-R

Target language analyses	Q sort items	Questionnaire items that ask the respondents to rank or prioritize aspects of the NA.		✓
	Written data analysis	Also known as text analysis seeks to understand the structure and other features of written texts collected as writing samples from the particular ESP.	✓	✓
	Spoken data analysis	Also known as discourse analysis seeks to understand the structure and other features of spoken English collected as speaking samples from the particular ESP.	✓	✓
	Interactional data analysis	Also known as conversation data analysis seeks to understand the structure and other features of language in real-life ESP conversational interactions.	✓	
	Computer-aided corpus analysis	Analysis of corpora, which are databases of written or transcribed spoken language, typically stored in a written form that can be analyzed by computers .	✓	✓
Intuitions	Expert intuitions	Insights that stakeholders with expertise in ESP teaching (especially teachers, needs analysts, and administration) come up with	✓	
	Non-experts intuitions	Insights that stakeholders with no expertise in ESP teaching (especially students, parents, employers and so forth) come up with	✓	

Due to the nature of this study, the investigator used four different research instruments: a semi- structured interview, a teachers'questionnaire , a students'questionnaire and classes observations. The purpose of using multiple tools is to gather as much as possible details and elicit the necessary information regarding the current ESP teaching/ learning situation in the department of biology. The description of the data collection instruments employed un this study is broadly explained and discussed in the following.

2.5.1. Interview

The interview is considered as one of the most important tools for data collection. It is an oral-verbal conversation with two people (the interviewer- the interviewee) or more (the interviewer – goup of pepole). This approach is used when the reasearcher wants to gain extensive data on few subjects. In this perspective, Richards (2001) claimed that ‘‘ Interviews allow for a more in-depth exploration of issues that it is possible with the questionnaire’’(p.61).

Answers of the interview can be either recorded by writing them down (immediately after the interview or in the interview), or tape-recording them, or using both strategies. Interviews are generally regarded as qualitative methods that many researchers adhere while conducting their investigation.

Moreover, interviews vary from being highly structured and unstructured to very informal ones. It is up to the researcher to decide on the type of interview to use in the research study. Interviews can be constructed differently in their format and structure, they are tailored in various ways; however, they can be grouped into three main types : structured, unstructured, and semi-structured interviews.

2.5.1.1. Structured Interviews

Structured interviews are generally carried out in a structured way and often used in surveys research. Furthermore, this type of interview involves using a set of pre-determined questions with a highly standardised recording techniques. In other words, this type of interview follows a rigid procedure while asking questions. In many ways, questions in structured interviews are asked in a specific way order. Structured interviews clarify issues for the interviewees; meanwhile, they can give them the opportunity to expand their views regarding certain issues. In addition, the researcher can further note their non-verbal responses to illuminate certain answers.

2.5.1.2. Unstructured Interviews

Flexible approach to questioning characterises unstructured interview. In a different way, this type of interview does not follow a systematic order, a predetermined questions, or a high standardized techniques of recording. Therefore, the researcher takes a less structured approach which relies on few fixed questions but generally viewed as a normal conversation. The unstructured interviews have relatively freedom to change the sequence of questions or by omitting others. They are largely used in exploratory or formulative research studies and are more favoured by qualitative researchers.

2.5.1.3 Semi-Structured Interview

Semi-structured interviews are halfway between the structured and the unstructured interviews. By keeping the structured format of questioning, this type enables the interviewer asks the interviewee further questions to pursue or to unveil an idea but in more details. The semi-structured interview offers a great deal of flexibility between the interviewer and the interviewee in regards to some conversational aspects. This keeps the researcher focused on gathering in-depth information from a number of participants .

2.5.2 Teachers' Semi- Structured Interview

A semi- structured interview is also used as a data collection instrument in this study. The use of this type of interview permits the investigator to get the necessary information and also covers the required inquiries from different teachers. Most importantly, teachers involved in this type of interview are most likely to feel at ease, thus profound and honest responses can be collected.

Moreover, semi-structured interviews are more privilidged when gathering data than other types. The advantage of the semi-structured interview is that additional questions that have not been predetermined at the beginning of the interview can be asked during the interview. In fact, probing questions during the interview permit the investigator to calrify

certain points that might be important for the research study. Actually, this technique makes teachers more comfortable to express themselves freely using their own words .

To sum up, the purpose of using this type of interview than the other types are as follows. First, the interviewer can possibly collect further details during the interview. Second , no ordering or a systematic approach is required to set the questions. Third, semi-structured interviews are flexible to conduct because they make both the interviewee and the interviewer feel at ease, and such help the researcher to gather varied types of information concerning teachers' experiences,beliefs, attitudes and problems with less difficulty .

2.5.2.1 The Interview Conduct

As stated earlier, one of the main qualitative data included in this study is the interview sessions with teachers, this tool is regarded as an important instrument for gathering data for the purpose of answering some questions that can not be explored via other means. For successful interview conduct, Philips and Stwarski (2008) indicated the following guidelines:

- The researcher has to pre-determine the questions of the interview.
- The researcher has to test the interview.
- The researcher is required to choose the participants carefully.
- The researcher is asked to provide clear instructions to the participants.
- The researcher needs to shcedule the interview.

To address the research objectives and ensure the validity of this study, the investigator found that since the number of teachers in university of Oran1(i.e.,one ESP teacher) is insufficient to conduct the interview with, it is necessary to add other ESP teachers working in other biological departments at neighbouring universities from the same town of Oran such as the department of biology in the University of Mohammed Boudiaf, and The Institute school of biological sciences. All in all, a total number of (5) ESP teachers were assigned to conduct the interview.

The primary stages involved in the designning of the ESP teachers' semi-structured interview, were identifying in advance a key list of questions that reflect on the purposes and the objectives of the study. After a thorough reviewing in literature, profound examination of documents, and attending courses in methodology, the researcher formulated the interview questions following guidelines and wording of some important sccholars such as (Nunan , 1999; Hutchinson& Waters ; 1987, Domyei,2007 ; Cohen et al, 2007 ; Dawson,2002 ; Dean Brown, 2014) .

After preparing the draft of the questions, the researcher asked two experienced ESP teachers holders of Magister degree to give a bird's-eye view on the structuring and the wording of the questions, then commenting on them. In fact, invaluable and insightful feedback were obtained. For avoiding misconceptions while carrying out the interview, some questions were modified.

When the final draft of the semi-structured interview was revised and ready to conduct, the researcher made an appointment with each teacher, and to avoid any kind of discomfort, the investigator asked each of the participants to suggest an appropriate place and a suitable time to conduct the interview. In a period of five weeks, the semi –structured interview was separately conducted with each teacher, and it lasted in approximately 30 minutes with each teacher.

The interviewer started the interview with a friendly greeting and a small talk rather than directly diving into the questions, it made the informant relaxed and comfortable. Moreover, in each interview session, the interviewer explained to the ESP teachers the goals as well as the purposes of the study, and that their participation will remain anonymous and confidential. After that, the researcher asked the participants for permission to an audio recording or allowing her to take notes .

During the interview, the interviewer began with warming up questions such as inquiring about teachers' degrees, status, and experiences, then moving towards more focused ones. However, some probing questions in the middle of the interview were also added to increase richness and in-depth responses. In general, the interviewer tried to be more neutral, she made effort to avoid showing any kind of feelings, intonations or facial expressions to enable the interviewee give the right answers not the ones they believed she would expect to hear .

The interview ended up by inviting each participant to comment or add any expression regarding the interview conduct and content. Teachers'feedback and remark were very important to improving the methodology of the interview process with the rest of the teachers. In the end, the interviewer has thanked all the teachers for their, time, cooperation and their insightful arguments, impressions, opinions and fruitful suggestions .

2.6.3. The Questionnaire

The second research tool used in this study is the questionnaire. Questionnaires are the most common research tool ELT researchers use. They are flexible, not expensive, time saving and easy to implement. Even though it is difficult to provide a precise definition of a questionnaire, Brown (2001) claimed that questionnaires are ''any written instruments that present respondents with a series of questions or statements to which they are to react either by writing their answers or selecting them from among existing answers''(p.60). Questionnaire is used in the study simply because it is an ideal tool for gathering broader information about students needs. In this perspective, Richards (2005) reported that

> Questionnaires are one of the most common instruments used. They are relatively easy to prepare, they can be used with large numbers of subjects, and they obtain information that is relatively easy to tabulate and analyse. They can also be used to elicit information about many different kinds of issues. (p.60)

Unlike interviews, questionnaires refer to precise written questions answered in a written form by a group of individuals. They are suitable to collect quantitative data from a large number of respondents and are easy to administer. In this regard, Burton and Barlett (2005) claimed that a questionnaire '' is clearly a useful method, if carefully planned, for gathering responses from a large number of people relatively quickly. As such, questionnaire may be seen as a useful means of obtaining quantitative data''(p.75). Nevertheless, questionnaires may also permit the collection of qualitative data.

Among the motives that make the the investigator choose the questionnaire as a data collection tool for the study is that this latter is convenient and widely used in educational research. It also enables collecting quantitative and qualitative data from the participants. Ultimately, it is a reliable instrument that researchers use to obtain data from large scale of individuals as well.

Additionally, questionnaires can be administered in many different ways. For example, they can be sent by emails, done face to face, or by other means. However and like any research instrument, questionnaires have srengths and weaknesses which are summarised in the table 2.7 below.

Table 2 .8 Strengths and Weakness of the Questionnaire (Author's source)

Strengths	Weaknesses
➢ Flexible and time saving. ➢ They are practical in the way they are administered. ➢ Questionnaires allow for anonymity. ➢ Questionnaire ensures uniformity in measurement.	➢ They can not be applicable to illiterate or semi-literate persons. ➢ Respondents may not answer. ➢ Answers would be superficial if the researcher is not in the field. ➢ Possibility of receiving ambiguous replies or omissions of others. ➢ They require extra research, documentation and extra training to be well designed. ➢ Open-ended questions require long time to be generated and analyzed.

To design a questionnaire, Burton and Barlett (2005) provided the following checklist

- Why did you choose to use a questionnaire in your research ?;
- Who will answer the questionnaire ?;
- How many individuals have responded ? ;
- How these respondents were chosen ? ;
- Checking factors that may influence the design of the questionnaire ;
- How will the questionnaire be distributed and collected ? ;
- How well is the questionnaire and what difficulties are encountered ?;
- What if there is anything you would change for next ?.

As aforementioned, questionnaires are certainly the most reliable tool to collect data from a large scale of individuals. However, designing relevant questions is not always an easy task to fulfil. Therefore, thinking of the placement of questions, and the ways they can be answered is of paramount importance. In fact, there are several forms of questions and responses in questionnaires, including rating scales, multiple choice questions, dichtonomies questions, open-ended questions, closed questions, and likert scale. In the present research work, three types of questions were employed: closed-ended questions and open-ended questions.

a) Closed-Ended Questions

In this type of questions, respondents have the possibility to select a given answer from a set of given questions. The closed-ended questions take diffrent forms such as dichotomous, multiple choice , likert scale, semantic differential , and rating scale. Bradhum e al (2004) reported that ‘‘closed –ended questions give the alternative answers to the respondent, either explicitly or implicitly’’(p.100). Furthermore, closed –ended questions are easier to collect and analyse.

b) Open-Ended Questions

This category of questions gives the correspondents more freedom to answer the questions in unlimited ways. Moreover, the participants feel free to express their opinions about topics and situations. This form of questioning allows for insightful and honest reponses; in other words, it provides reliable and visible data. Richterich and Chancerel (1980) claimed that such questions ‘‘do not call in advance for ready- made answers and therefore allow the person questioned more freedom of expression’’(p.59).

2.6.3.1. Students’Questionnaire

The students’questionnaire aims to collect second and third years students (enrolled in the department of biology of the university of Oran1) needs in ESP. The selection of the students as sample participants for this research was motivated by the fact that they are

mature enough to recognise their problems, lacks, wants, preferences and language needs in ESP.

2.6.3.2. Teachers' Questionnaire

The purpose of the teachers' questionnaire is to collect information about the ESP teaching status and to explore the needs of learners at the department of biology. Likewise, the questionnaire aims to figure out the obstacles and the constraints encountered by ESP teachers. The inclusion of teachers from other universities was due to the insufficient number of teachers working in the biological departments of the University of Oran. Thus, adding other teachers is very necessary to gather valid data and provide validity and credibility for this research work.

In fact, the formulation of content and questions of the questionnaires was inspired by three sources. The first source was the preliminary classes observation done in this study. The second inspiration was the information gathered from the semi-structured interviews conducted with the ESP teachers, and the last source was the rich published NA documents in (Hutchinson&Wtares,1987 ; Nunan ,1999, Munby,1978; Brown, 1995; Basturkman;2005; Robinson, 1991; Dudley Evans& St john, 1998).

2.6.3.3. The Piloting of the Questionnaires

In January 2019, the investigator has distributed the questionnaires for a preliminary piloting, and then asked three experienced teachers holders of Magister degree in the field of ESP to analyze the suitability of the questions, they were also required to explore the content of the questionnaires and comment on the structuring of the questions. Considerable changes and wording in the format of the questions were made in consequence to the insightful feedback obtained from these foresaid teachers. The aim of the first piloting of the questionnaire is to lift the issue of validity and reliability to the research study.

Another new version of the students' questionnaire was made for second piloting but this time was for a randomly 20 (third and second year) students of the department of biology. Mackey and Gass (2005) pointed out that ''questionnaires should be administered in learners' native language''(p. 96). Although the participants have studied English as second foreign language in middle and secondary schools, the researcher has associated the new questionnaire a

translated version in Arabic. She has used her own ability in Arabic as being her native language. The purpose of the second piloting was to increase comprehensibility of the items included in the questionnaire; and a good opportunity to determine the timing required to answer all the questions.

To collect feedback from the 20 students about the questionnaire, and at the same time ensure the final version of the questionnaire, a small sheet draft that contained three short questions was associated with the questionnaire. The questions included in this paper sheet are the following.

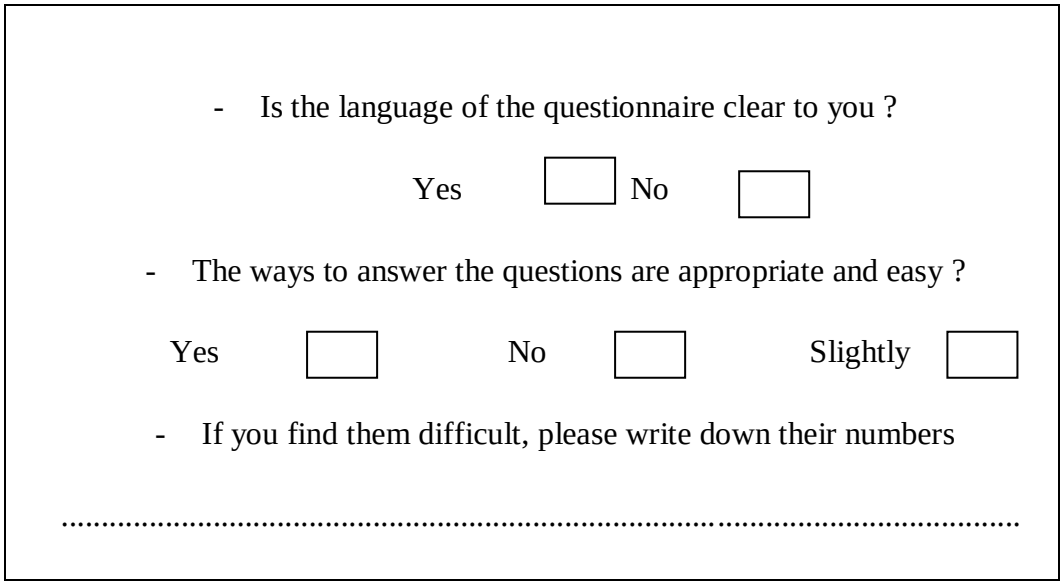


Figure 2.6 Feedback Sheet

The results obtained from the second piloting of the questionnaire indicate that some changes must be done. For example, some questions were seen unnecessary; thus, can be excluded from the questionnaire (such as how many years have you studied English? how old are you ?), while other questions were reworded and replaced with more simple ones. All in all, the second piloting of the questionnaire helped the investigator to detect errors and difficulties with the content of the questionnaire, and facilitate for her to know the timing needed to finish the questionnaire.

2.6.3.4. The Structures of the Questionnaires

The structure of the questionnaire refers to the number of rubrics that are put together in a particular way to construct the content of the questionnaire. The preliminary part of the

teachers and the students' questionnaire consists of an introduction that describes the purpose of the research study; meanwhile, it ensures confidentiality. While, the core-part of the teachers 'questionnaire is composed of two parts: (part 1, part 2). These two parts aim to collect the necessary information regarding the current teaching status of English at the department of biology, and the needs of learners as well. It also seeks to unveil the problems and the constraints that ESP teachers encounter while teaching English.

The core-part of the students 'questionnaire consists of two parts: (part A, part B). These sub-parts are necessary because they enable the researcher to gather information needed for the design of the syllabus such as: students' language needs, wants, lacks, attitudes towards the current ESP courses, learning styles, learning preferences, and their suggestions regarding the content, and the teaching materials.

2.6.3.5. The Parts of the Questionnaires

The investigator finds that it is crucial to provide a detailed description of the parts of the questionnaires, it is also fundamental for readers to understand the content as well the objectives behind each part of the questionnaire.

2.6.3.5.1. Teachers' Questionnaire Sub-Parts

- **Part 1**

This part is divided into two sections: section one and section two. In section one, the participants provide information about themselves such as teachers' qualifications, teachers' status and their teaching. However, section two aims to gather information about the teaching situation of English at the department of biology as well as the learners language needs.

- **Part 2**

This part consists of one section that aimed to unveil the difficulties and the problems that ESP teachers confront while teaching ESP at the department of biology. Additionally, this section explores the wishes and the suggestions that teachers recommend to better enhance the current teaching of ESP at the biological departments.

2.6.3.5.2. Students' Questionnaires Sub-Parts

- **Part A**

This part is composed of four sections; it aims at gathering information about the students' language needs. This latter refers to the linguistic needs that students lack, require and desire in the language skills such as: listening, speaking, reading, writing, grammar, pronunciation, vocabulary. It also investigates the students' objectives and purposes for learning English. In a nutshell, this part identifies students' weaknesses and abilities, thus the results obtained can be used to decide on the language components that should be included in the syllabus.

- **Part B**

Unlike part A, this section of part B explores the students' learning problems, attitudes towards the current ESP courses at the department of biology. In addition, it investigates students learning styles and preferences, that *how* they want to learn (the ways through which they learn better) and what they need to learn (language function, topics , activities and tasks , teaching materials , content). The results obtained from learning preferences can be used to decide on the type and content of the syllabus.

- **Part C**

The last part of the students' questionnaire provides students with opportunities to comment freely by proposing suggestions and recommendations to ameliorate ESP the teaching/ learning situation.

2.6.3.6. Types of Questions

In the present research work, the researcher has used at least three types of questions. These questions are formed on the basis of three levels set as follows

- The level of interest
- The level of proficiency
- The level of importance

For example the question that is used to reveal the level of interest is demonstrated in the following question.

8.Why do you want to learn English ? **Put a tick () in the right box, you can choose more than one answer** .

- To apply for specific jobs ☐
- To carry out research ☐
- To read a paper and take part in conferences ☐
- To write articles, and to read journals and books of biology in English ☐

The questions that refer to the level of proficiency are illustrated in the following example.

12. Please rate your current ability in each skill **(put a tick ( ) in the appropriate column)**

	Very poor	Poor	Good	Very good
Listening				
Speaking				
Reading				
Writing				
Vocabulary				
Pronunciation				
Grammar				

Others ?specify :.....

The level of importance are questions that describe that something has significance or value, here is an example.

21.How do you rate the importance of English in the following language functions in your biology field ?**(put a tick () in the right column)**

Language function	Very important	Important	slightly Important	Not important
.Describing a procedure of an experiment in English				
.Interpreting the results of a scientific investigation in English				
.Making hypothesis of a scientific enquiry in English				

These three levels (i.e., the level of interest, the level of proficiency, and the level of importance) were generally closed –ended questions. However, open-ended questions were also used such as the last question of the teachers' questionnaire that invites them to suggest or add any comment.

34. What can you suggest to improve the current teaching situation of ESP at the department of biology?

.....

2.6.3.7. Administering the Students' Questionnaire

When official permission from the head of the department of biology and the ESP teacher of third and second year classes was obtained, a total of 120 copies were anonymously administered to third and second year ESP students in the second half of the second semester. It was a suitable time, because students have already studied some ESP courses. In addition, the questionnaire was associated with a translated Arabic version to avoid any problems or any misunderstanding.

In fact, the distribution of the questionnaire was conducted with the presence of the ESP teacher, who was very supporting and very encouraging, especially at that stage. In effect, the investigator followed specific procedures when administering the questionnaire. She first greeted all the participants, explained to them the objectives and the content of the questionnaire. She asserted that their responses are of utmost need to accomplish this research work; meanwhile, she reassured them by the concept of confidentiality and anonymity. A detail description of the how to answer the questions was also provided. After that, the

students were kindly asked to answer all the questions of the questionnaire, then return back their copies when they complete it.

2.7.4. Classroom Observation

The fourth research instrument employed in this study is classroom observation. For eliciting what is really happening in the ESP course, the researcher finds out that direct and physical presence in the ESP teaching / learning situation at the department of biology may provide insightful data. Cohen et al (2007) reported that observation ‘‘offers an investigator the opportunity to gather live data form live naturally occurring social situations’’(p. 396). That is to say, observation enables the researcher to look in every day social behaviours.

The primary goal of observation is then collecting information from a real-context. Bacon-shone (2013) claimed that ‘‘Observation is the collection of existing data. It usually takes place in a real situation, not a contrived context’’ (p. 39). Observation is used in this study, simply because it is suitable to analyze how the ESP classroom is conducted. Classroom observation, in fact, yields to valid examination of issues such as the students’ characteristics, course conduct, teachers obstacles, teaching methods, materials and so forth.

Brown (2016) suggested four dimensions to class observation including: personal records, participants’ observations, non-participants’ observations, and inventories. Personal records take the form of diaries, journals, blogs, or computers files in which the participants record their experiences, thoughts and reflections in their classes or workplace. In contrast, participants’ observations require an insider watching by either recording videos or taking notes in a particular context. Additionally, the observer can keep track of what is being made (language use, types of activities, interactions). In this regard, Dawson (2002) reported that ‘‘Participants observation can be viewed as a methodology rather than a method, as it took shape within particular historical and social circumstances within anthropology and sociology’’ (p.101). As far as non-participants observation, it requires an outsider to watch observe and take notes of some aspects such as the language use, interaction, attitudes, tasks in a given situation. Finally, inventories observation is the procedure that normally involves counting people, places, and materials or goods. This kind of observation considers the following factors such as how many rooms? how many students? how many teachers

?computers ?desks per room ?. These elements are to some extent important for the success or the failure of a teaching/ learning situation and thus can also be observed.

Generally speaking, observation is viewed as an effective tool for data gathering. When doing observations in disciplines such as: education, social sciences, sciences, culture; researchers find themselves able to explore phenomena at real context which eventually enable them collect rich and systematic data.

2.7.4.1 . Advantages and Disadvantages of Observation

Observation is not always adequate to all the type of investigations. Like any other research instruments, observation has strengths and weaknesses summarised as follows

a. Strengths

- The investigator can gather information from a real-life context.
- Subjective bias is eliminated if the observation is done accurately.
- It might be is easy to conduct.
- It does not require the active participation of the respondents.
- It is ideal for respondents who are not capable of reporting on their feelings or verbal reports.

b. Weaknesses

- It is expensive method and time-consuming.
- The information provided by this method could be minimal.
- Unforeseen factors may interfere with observational tasks.

To undertake a successful observation, Philips and Stwarski (2008) suggested the following guidelines

- Observation needs to be systematic;
- It must be acknowledged;
- The observer should be subjective and less influential;
- Careful selection of the audience to be observed;

- The observer must be ready and well prepared for the observation.

2.7.4.2. The Field of Work

As far as this study is concerned, the researcher used classroom observation checklist as the last fourth needs analysis tool of the present study. This instrument is employed to gain insightful understanding and observed what is really happening at the ESP classes in the department of biology. This is to say, the observer will have a direct eye contact of the target sampling in the target context.

Richards (2005) pointed out that ‘‘Observation of learners’ behaviour in a target situation is another way of assessing their needs’’ (p.61). By the same token, the investigator believed that classroom observation checklist is a substantial tool for exploring learners’ needs, plus very effective to notice the content, the methodology of teaching, the types of the activities and the teaching materials of the ESP courses.

The researcher adapted a classroom observation checklist used in a framework study at the University of Setif (see appendix D). Actually, this model has been used in previous research study at the same university (Bouzid, 2012). Since video recording was not permitted in this study, the classes observation involve mainly watching students then taking notes of events of interest. In fact, class observation involves analysing the following themes

- The analysis of the course content and course conduct
- The analysis of language use (pronunciation, grammar, vocabulary)
- Classroom learning analysis (learners’ needs, attitudes and interactions)
- Classroom teaching analysis (teaching techniques, methods, materials)

Once the agreement was obtained from the ESP teacher, a time table for classes’ observation was scheduled. The goal of this observation was to analyse and gather information about the teaching and the learning situation and not assess the students or

evaluate the performance of the teacher. The main objective is to draw lines about the knowledge of the students in real setting and the one they seek and expect.

As noted earlier, classroom observation is not complicated to conduct, but it is rather time-consuming. In this line of thought, the researcher decided to start her observations as early as possible. Therefore, she began visiting the classes in the preliminary stages of this research project. However, prior to these classes observation, there was an official agreement from the head of the department of biology and the ESP teacher as well.

Further, the researcher found out that observing the whole target population of all the groups is rather difficult, and it requires much more time. Consequently, the researcher has decided to randomly observe five ESP classes (three classes: third year, and two classes: second year) from the large sampling of the population. According to Gay, Mills and Airasian (2003), sampling is the process of selecting a group of individuals in a way that these individuals represent the large group from which they were selected. In a nutshell, the researcher has observed a total of 20 ESP sessions in three months.

2.8. Data Analysis

Data analysis is a process that requires careful attention. Very often, many researchers find themselves confused about the type of analysis to use among other types of data analysis methods. In this regard, it is needless to say that the concept of data analysis is central to any research. Although data analysis is messy, ambiguous and time-consuming, it is viewed as a fascinating and creative process that brings order, structure and meaning to the collected data.

When analysing studies in disciplines such as education, business, social sciences and other domains, the concept of data analysis can be approached differently. As far as this study is concerned, the researcher decided to make a combination of qualitative and quantitative forms for data analysis process. In addition, many researchers reported that using more than one type of data analysis is typical for gaining reliable findings. The systematic integration of both qualitative and quantitative analysis methodologies helps to overcome the weaknesses of each method when it is used alone. Therefore, combining both approaches in data analysis can increase the credibility of the findings of the research project.

2.8.1. Qualitative Data Analysis

Qualitative data analysis refers to the collection of either verbal or narrative format. Analysing qualitative data consists simply of thinking of a qualitative data in the form of words. Wiersma (1995) assumed that qualitative research examines the words, the opinions and the attitudes of participants in a descriptive way. Similarly, Cohen et al (2005) stated that ‘‘Qualitative data analysis involves organizing, accounting for and explaining the data; in short, making sense of data in terms of the participants’ definitions of the situation, noting patterns, themes, categories and regularities’’(461).

As a matter of fact, qualitative data analysis is heavy when interpreting; besides, there is no single correct way to analyse qualitative data. Dawson (2002) provided four steps when processing qualitative data analysis stated as follows

- *Think* about the data from the moment you started collecting it;

- *Judge* the value of your data;

- *Interpret* your data as long as you progress in your research so that you can understand what is going on;

- Understand the *mechanical* process when analysing data .

By the same token, qualitative data favour the collection of natural data forms; that is to say, the collection of participants’ attitudes, opinions, behaviours ,experience and excluding any numerical or statistical data.

In the current study, qualitative data analysis consists of uncovering meaningful findings regarding the ESP teaching/ learning situation and likewise identifying the needs of students. These qualitative data are mostly obtained from the semi-structured interview and the classes observation.

2.8.2. Quantitative Data Analysis

Quantitative data analysis uses statistical and mathematical or computational techniques of the findings, which occur in a form of numerical data. This method is commonly applied in research in education; moreover, it is very convenient to analyse large

sampling by providing a general universal statement of a topic or an issue. In this line of thought, Dörnyei (2001) reported that quantitative research

> employs categories, viewpoints and models as precisely defined by the researcher in advance as possible, and numerical or directly quantifiable data are collected to determine the relationship between these categories, to test research hypotheses and to enhance the aggregation of knowledge. (p.192)

This method gives the work a scientific direction through the use of smart arts and graphs. It is believed that quantitative analysis facilitates for the investigator the task of data analysis and helps in the validation of the obtained findings.

This type is used to analyse closed and multiple choice questions of the teachers' semi-structured interview and the students' questionnaire. This method is really effective for analysing the linguistic needs and learning needs of the students. It is also adequate for identifying ESP teachers difficulties and problems in the department of biology.

2.8.3. Mixed Method Research

The mixed-method is a strong philosophy largely employed in the field of education. The mixed method is based on the integration of qualitative and quantitative approaches within one single research project. It is generally used when you apply multiple approaches in one single study. According to Graham (1989: 256) as quoted in Creswell and Clarck (2011, p.2)

> In this study, we define mixed-method designs as those that include at least one quantitative method (designed to collect numbers) and one qualitative method (designed to collect words), where neither type of method is inherently linked to any particular inquiry paradigm.

Graham (1989) viewed the mixed-method as a methodology that combines the opinions and the elements of qualitative and quantitative approaches. The mixed-method research is based on the possibility of mixing data at any stage.

In the study, once the qualitative and the quantitative data are analysed, they will be systematically integrated in an appropriate way by applying some of the seven techniques suggested by Brown (2016) shown in the table 2. 8 below.

Table 2. 9 Seven Techniques to Mixed Method Research (Brown, 2014, pp.147 ,148)

Mixed method techniques	**Definition**
Convergence	Discovering and showing how multiple data sources provide evidence that supports the same conclusion
Divergence	Inspecting and showing how multiple data sources contradict each other, and how these contradictions may lead to their conclusions.
Elaboration	Analyzing and showing how information from one data source may support the understanding of information from another data source.
Clarification	Investigating and showing how information from one data source may help illuminate or explain information from another data source.
Exemplification	Searching for information in one data source can be a conclusion drawn from another data source.
Inspiration	Being open to the possibility that information from one data source and information from another data source may bring entirely different directions.
Interaction	Shifting cyclically back and forth between qualitative and quantitative data sources. Looking for ways that conclusions of some or all of the above six techniques connect or interrelate with each other.

In the study, the researcher used a mixed-method approach to analyse and interpret the collected data. The combination of qualitative and quantitative approaches in one single case study approach, as shown in figure 2. 8, is effective strategy to explore the problem being addressed, and provide clear explanations of the research questions. Many scholars believed

that qualitative and quantitative data have value in their own way, but it is worth adding that the mixed-method approach provides extra value. All in all, adopting the mixed- method, we can avoid any ambiguity and supply better understanding of the findings.

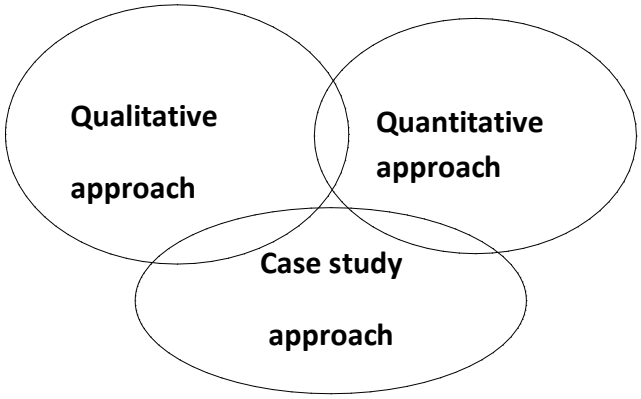


Figure 2. 7 Mixed Methods Research

Conclusion

In this chapter, the investigator discusses the concepts of methodology and research design of the study. She gives a detailed description of the research instruments, displays the data collection procedures, and summarises data analysis approaches of the research project. This chapter, in fact, provides explicit theoretical assumptions about the choice of the case study, and offers readers deep insights regarding the implementation procedures of the instruments, and data analysis methods. In the following chapter, the researcher represents and discusses the results obtained from each research instruments.

Chapter Three:

Compiled Data and Interpretation of the Findings

Introduction

This chapter introduces the analysis and the interpretation of the findings obtained from the different research tools used in the research work. The interpretation, however, involves the combination of qualitative and quantitative methods which may provide insights to the research questions raised in this case study work. In fact, the core stone of this part is to collect as much as possible information that the researcher will employ to design a contextual syllabus for this research population.

3.1.The Analysis of the Students' Questionnaire

To design an adequate syllabus for the target research population, it is necessary to analyse the needs (NA) of the target learners. To do so, a questionnaire was handed out to 120 students studying in second and third year levels. The collected data is described in what follows.

3.1.1. Students' Profile and Linguistic Background Analysis

Part A

Section one : Personal Information

Question One

Student level Second year ☐ Third year ☐

Table 3.1 The Level of the Students

Participants	Number	Number of the questionnaire returned back
Third year	60	57
Second year	60	42

Total	120	95

After the questionnaire was collected, about 92 of the student participants out of 120 gave back their responses. Most of the replies were received from the students enrolled in the third year.

Question Two

Gender Male ☐ Female ☐

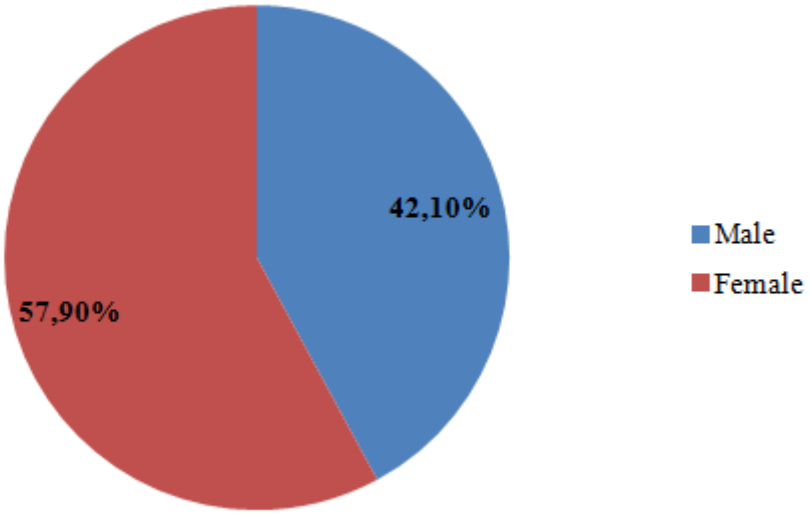


Figure 3. 1 Gender Distribution

Analysis of question two reveals that the participants are composed of 58% of females and 42,1 % of males. They all belong to the department of biology of the University of Oran1. What is marked in the above pie chart is that the number of female seats are defeated by the ones of males. In fact, female highest- ranking positions in Algerian higher education is generally nothing new ;however, gender issues change over time.

Question 3 : Students' Fields of Specialism

Many specialities are offered to students at the biology department of the University of Oran1. However, only those students enrolled in second year have the right to choose one

speciality to study. The different specialities that have marked our groups of participants are as follows : Biochemistry, Animal physiology, Genetics.

Section Two : Language needs

Question 4

4 .How long have you been studying English ? .....in years

Table 3.2 English Yearly learning

Years	**06**	**07**	**08**	**09**	**10**
Participants	5	7	28	50	5
Percentage	5,26%	7,36%	29,47%	**52,63%**	5,26%

Question 4 reflects on students' exposure to the English language during their learning cycles. It is aimed to decide on their actual level and needs. Results demonstrate that the number of years of English language learning among learners is ranged from 06 to 10 years. However, the most noticeable proportion with 52,63% from participants responses is 09 years. This Variety of English language learning ought to differences in English language proficiency and this latter will be explored in the following question.

Question 5

5. How can you describe your language level?

- Beginner ☐
- Intermediate ☐
- Upper- Intermediate ☐

Question 5 aims to explore the learners' language proficiency so that to design suitable syllabus that goes in line with their level and needs but most importantly helps them improve their English language proficiency.

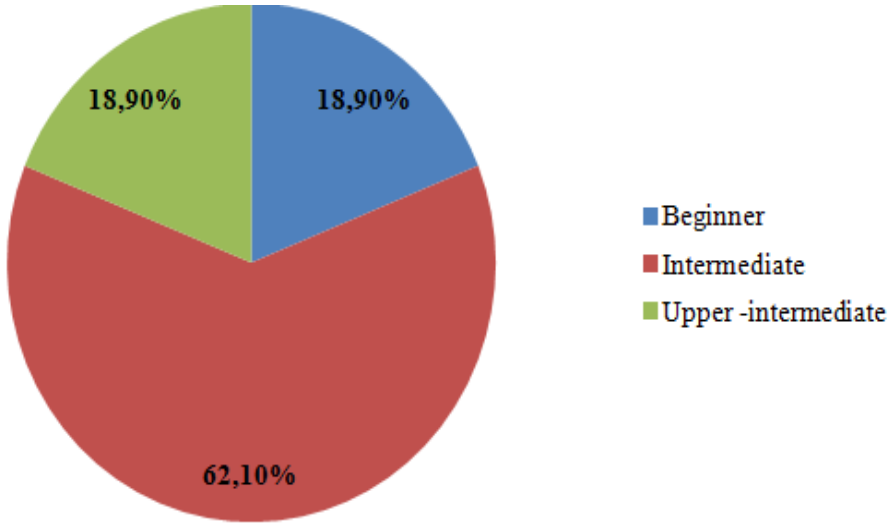


Figure 3. 2 Students Language Proficiency

Figure3.2 demonstrates that there is an equal proportion with 18,9% of the students who ranked themselves as beginners to upper-intermediate level students, while a significant number 62% of them reported that they have an intermediate level. Hence, it can be argued that participants maintained their language skills, which is probably due to their linguistic background at school.

Question 6 and Question 7

Q6. Do you think it is necessary to learn English ? Yes, No

Q7. If yes please , specify why ?

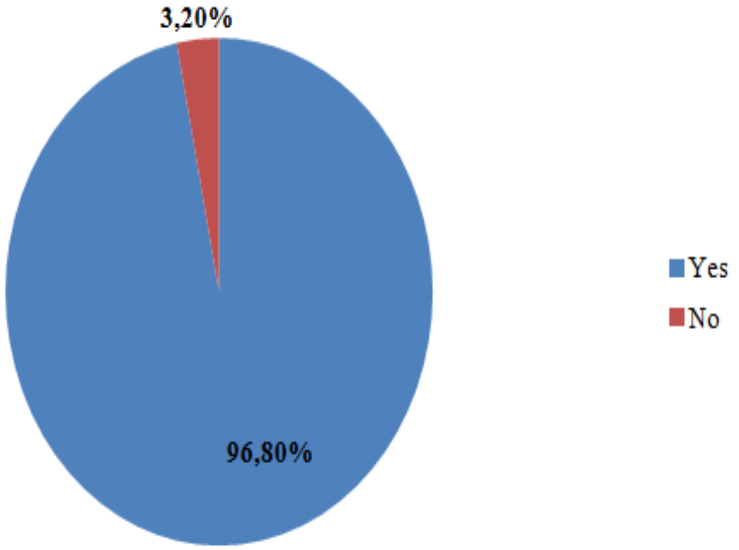


Figure 3. 3 The Importance of English

Results of questions 6 and 7 show that the majority of the students 97%, as shown in figure 3.3, agree that English is fundamental in education in general, and in their field in particular. They claimed that the mastery of English is a prerequisite to be in tune with the vast published articles and scientific research. Moreover, learners commonly believed that English is the vehicle of communication with foreigners in multi-national companies; thus, it is indispensable to learn English in its spoken and written forms. It can be argued that the participants are aware of the importance of English into their educational programmes, it seems that they recognised their needs of the English language.

Section 3 : Learning purposes

Question 8 and Question 9

Q8 **:** Why do you want to learn English ?

- To apply for specific jobs
- To carry out research ☐
- To read a paper and take part in conferences ☐
- To write articles, and to read journals and books of biology in English ☐

Q9 .Other , please specify

.....

The aim of question 8 and 9 is to have insightful feedback regarding learners' objectives for learning English, and to bring about the learning goals and objectives of the

new syllabus .In other words, these questions reveal why learners want to study English. The analysis of question 8, as shown in table 3.3 below, avowed that half of the participants want to learn English that would enable them read and write scientific papers or explore books related to their field of study. About 31,57 % of them stated that they need English to be able to participate, attend as well as give oral presentations in conferences that have a link with their area of specialism, whereas a slight majority 10,52 % and 7,36 % in successively wanted English for work opportunities abroad or for research. It follows then to say that biology learners need English for divergent purposes; however, most of them are conscious of their needs in English.

Table 3. 3 Language Learning Purposes

Language needs	**Responses**	**Percentage**
- Work opportunities abroad	10	10,52%
- For more research	7	7,36%
- Giving oral presentations and taking parts in conferences	30	31,57%
- Reading and writing articles, journals and books of biology in English	48	50 ,52%

Question 10 and Question 11

Q10 where do you think you think you need English mostly ?

- For your post -graduation ☐
- For employment opportunities ☐

Q11 Other, specify

.....

Since the participants have different learning purposes and different needs, their answers to question 10 and 11 are conceived differently. The data presented in table 3.4 below revealed close proportions in participants' responses. The lion share is with 55,78% of the participants who announced that they need English for post-graduation and future career , while 45,65% of them declared that English is needed for employment and job opportunities

abroad. In fact, English is undoubtedly the language of world ; therefore, it is very required in academic and professional practices.

Table 3. 4 Language Learning needs

English learning purposes	Number of students	Percentage
For post graduation	53	55,78%
For employment opportunities	42	45,65%

Section 04 : The language skills to be improved

Question 12 : Please rate your current ability of the following language skills

Question 13 : if others specify

Table 3. 5 Students' language Skills Rating

	Very poor	Poor	Good	Very good
Listening	4,21 %	21,05 %	40 %	24,73 %
Speaking	16 ,84 %	41,05 %	31,57 %	10,52 %
Reading	10,52 %	14,73 %	48,42 %	26,31 %
Writing	10,52 %	42,1 %	25,26 %	22,1 %
Vocabulary	12,63 %	41,05 %	35,78 %	11,57 %
Grammar	20,01 %	38,94 %	28,42 %	12,63 %

The aim of questions 12 and 13 is to investigate the language skills of the participants. Table 3.5 above shows deficiency in the productive skills (41,05% speaking, 42 % writing), but also a low rate 59% in grammar and 53 % in vocabulary. The top rated language skills are 65 % in listening and 74,73 % in reading. Results denote the low level of the learners in the productive skills, grammar and vocabulary. Additionally, the participants reported other difficulties such as problems with pronunciation, translation and words transfer. It can be said that in the designing of the syllabus, the author is required to take into consideration the language difficulties reported by the students.

Question 14 and Question 15

Question 14. What types of difficulties do you face in grammar courses ?

Question 15 . Other difficulties please, specify.....

Table 3. 6 Difficulties in Grammar

Difficulties in grammar	**Number of students**	**Percentage**
Wrong verb tenses and forms	19	20 %
Adverbs and adverbial phrases	33	34,73 %
Misuse of articles	19	20 %
Active and passive forms	14	14,73 %
Other difficulties in grammar	10	10,54 %

Regarding challenges in grammar, 20% of the participants reported the misuse of articles and wrong verb tenses. More specifically, 14,73 % claimed that they have confusions with passive /active forms, and 34, 73 % have problems with adverbs and adverbial phrases. 10,54% of them showed that they face problems with articles, connectors, adjectives, comparatives, and superlatives. It can be said that grammar is another area that should be addressed in the innovative syllabus.

Question 16

What are the skills that you would like to improve?

Listening ☐

Speaking ☐

Reading ☐

Writing ☐

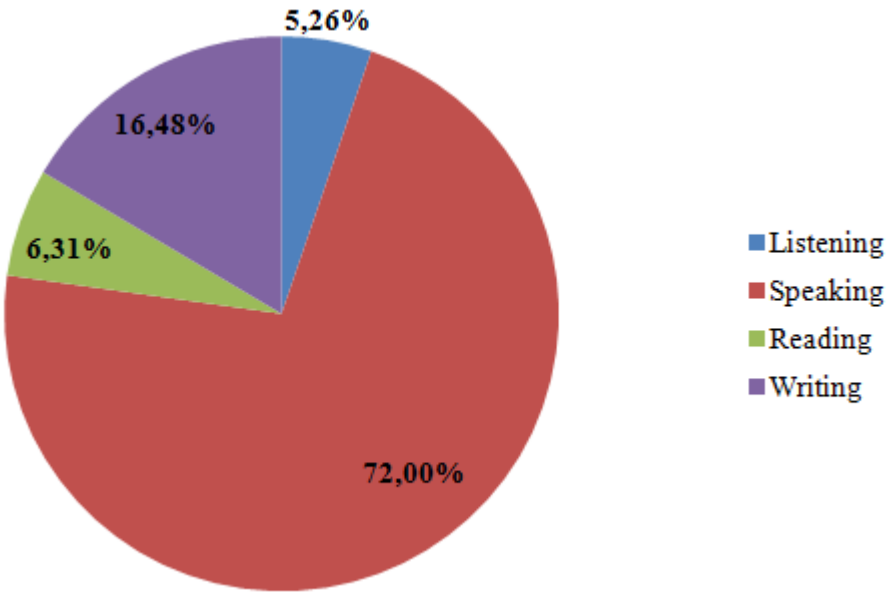


Figure 3. 4 Skills to be improved

Figure 3.4 reveals that 72 % of the participants scored speaking as the top skill that they need to improve, then followed by the writing skills with 16,84% . In contrast, listening and reading skills were given less consideration.

3.1.2. ESP Teaching Situation Analysis

Part B

Section 5 : Attitudes Towards the Current ESP Courses

Question 17 and Question 18

Q 17.Have you been asked at the beginning of the year about your needs in English ? yes ,

Q 18 .If yes , please explain.....

Question 17 looks at whether students needs analysis was conducted at the current ESP teaching /learning situation. Results, illustrated in figured 3.6 below, show contradictions. 37,9 % of the participants confirmed that they have been asked about their needs at the beginning of the year. In contrast, 62,1 % of the participants stated that they were not asked about their needs. These contradictory answers can be explained by the fact that

since there is only one ESP teacher in the department of biology, those students who did not admit undertaking needs analysis might have been absent in the needs analysis conduct. Besides, results to question 18 showed that the needs analysis was done via a teacher- group questioning.

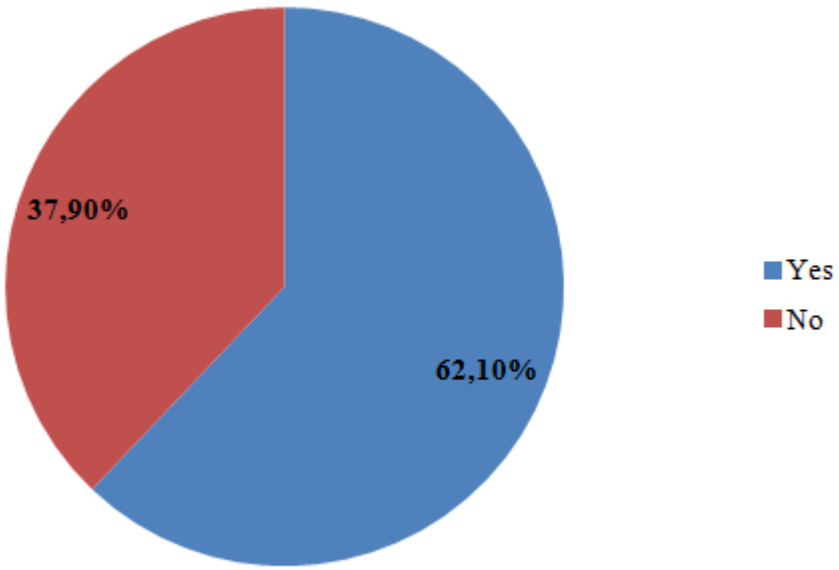


Figure 3 . 5 Needs Analysis

Question 19 and Question 20

Question 19 do you think that the current ESP courses satisfy your needs ? Yes, No

Question 20 If not , please what can you propose ?

Question 19 and 20 aim at exploring the students' satisfaction or dissatisfaction with the current ESP courses, and their attitudes towards their content and methodology. Results can be used to form facts to the new syllabus by presenting appropriate content, and an adequate teaching methodology that match with their learning styles and preferences. The data, in figure below 3.7, illustrates slightly different perceptions. An amount of 51,6 % of the participants indicated that the current ESP courses does not satisfy their needs while 48,4 % of them showed dissatisfaction. The satisfaction of the students with regard to the ESP

courses is a major cause of their motivation and interest in the subject. It could be argued that the current ESP courses at the biology department need to be reviewed.

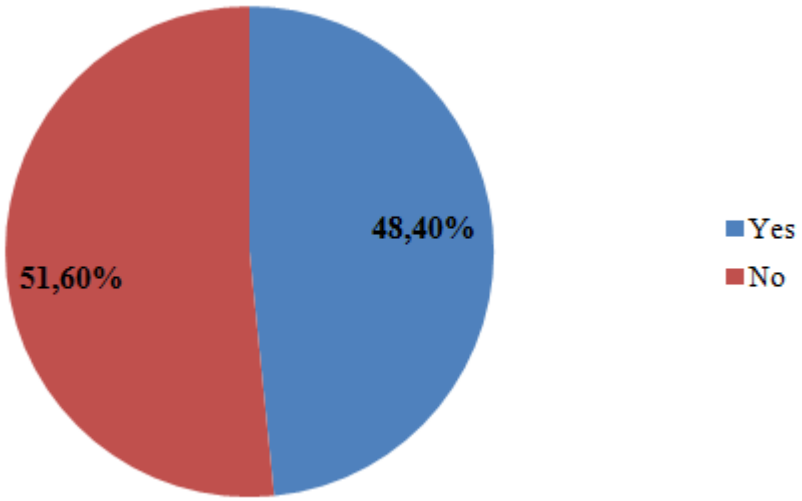


Figure 3. 6 Students' Satisfaction of the ESP Courses

Question 21 : What are the advantages and disadvantages of the current ESP courses ?

As far as this question is concerned, none of the participants stated any advantage. However, students expressed negative feeling of the current ESP courses at the department of biology which are listed as follows

- Courses are long and incorporate topics that do not match with students' interests.
- Courses are routinely introduced using the same procedure.
- English courses should be more specific.
- Teacher uses traditional teaching methods.
- The teacher emphasises more on the analysis of texts.
- Teacher does not use colourful and visual materials.

Question 22 .do you think the current ESP courses are useful for your English language skills improvement ? Yes No

Most of the participants with 66% reported that the current ESP course does not help them progress in English language proficiency while few participants with 34% affirmed that

the ESP courses helped them improve their language skills. Thus, the current ESP courses need to be reviewed to be more contributory to the development of students' level in English.

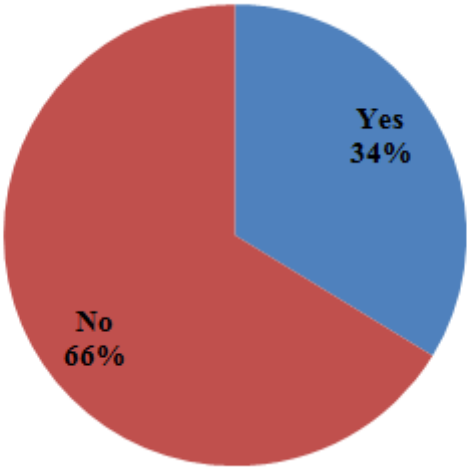


Figure 3.7 : Language Improvement

Question 23 and Question 24

Question 23.Do you think the current ESP courses need any of the following processes

- Revision of some of its units. ☐
- Total changing ☐

Question 24 .Others, specify

As indicated in figure 3.8 below, the majority of the participants admitted that the existing units are defective; 66% of them wanted a total rewriting of the units or replacing them with a better one. However, 31.5 % of the participants considered that the teaching units are good but only few items should be revised. Other participants reported that the teaching units are defective in aspects such as time constraints, selection of topics, language skills, teaching materials, and methodology.

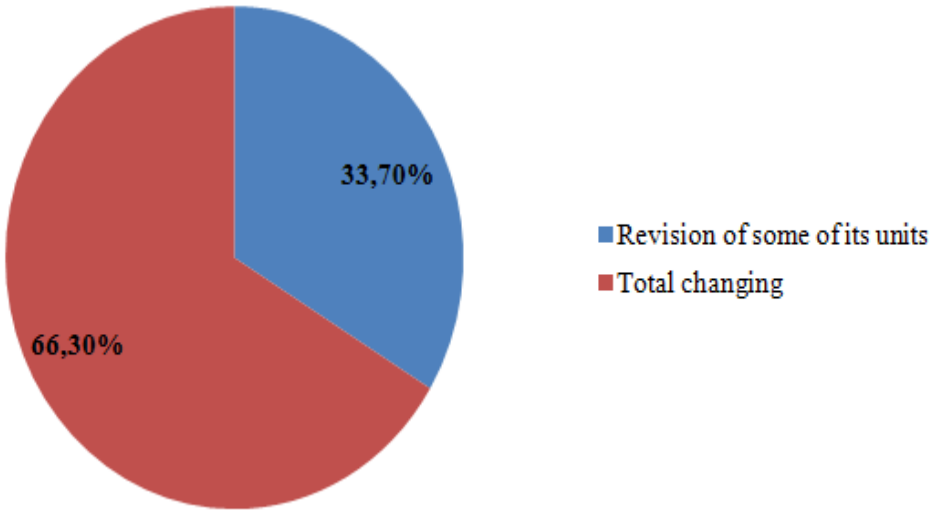


Figure 3. 8 Learners' Attitudes towards the Teaching Units

Question 25 . Do you think that the current teaching methodology adopted in the ESP biology courses is

Very useful ☐

Useful ☐

Not useful ☐

The purpose of this question is to identify learners' attitudes towards the methodologies used for the teaching of ESP. Figure 3.9 below indicates that the majority of the students 80,22% reported that the teaching methodology of the ESP course is ineffective and not useful. However, 10,52 % of the participants claimed that it is useful while only 5,26 % indicated that it is very useful. It follows then to say that, the current teaching methodology employed in the ESP courses needs improvements.

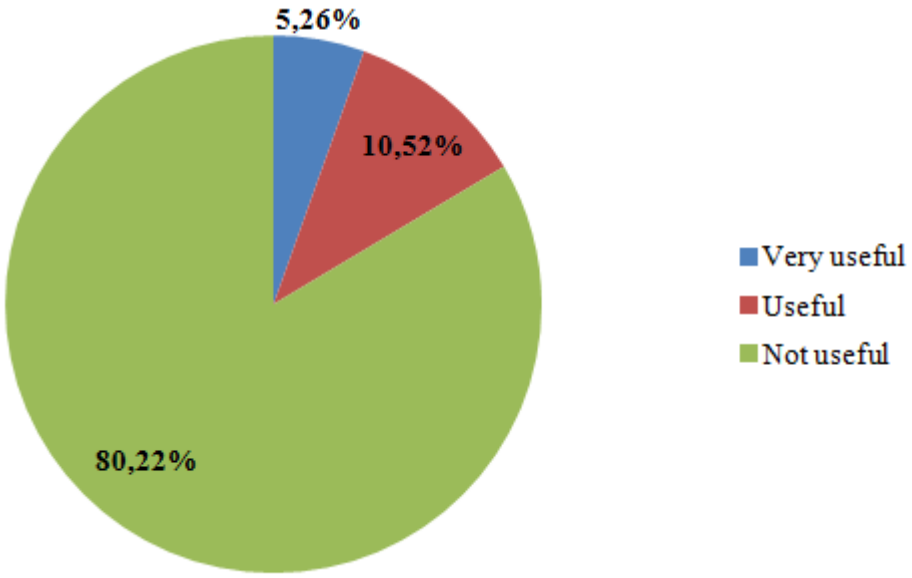


Figure 3. 9 Students' Attitudes towards the Teaching Methodology

3.1.3 Learning Suggestions and Recommendations

Part C

Section 6 : Learning needs (Preferences)

Question 26

Q 26.How can you rate your current knowledge in your specialty in English?

Not much ☐ basic knowledge ☐ very much ☐

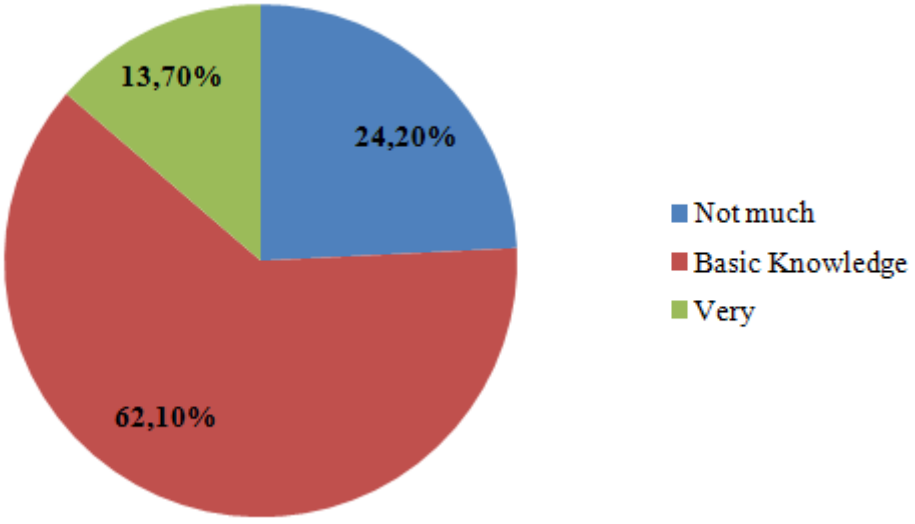


Figure 3.10 Students' knowledge of the Subject Matter

Results in figure 3.10 above demonstrates that significant number of students 62% and 13,7 % respectively stated that they have few to basic knowledge of the subject matter in English, whilst only 24,2% declared that they have less knowledge. Since our participants are enrolled in second and third year, they might certainly have a basic background of their speciality.

Question 27 to 29

Question 27 Do you think learning English through science content is important in your field ? Yes, No

Question 28 specify why ?

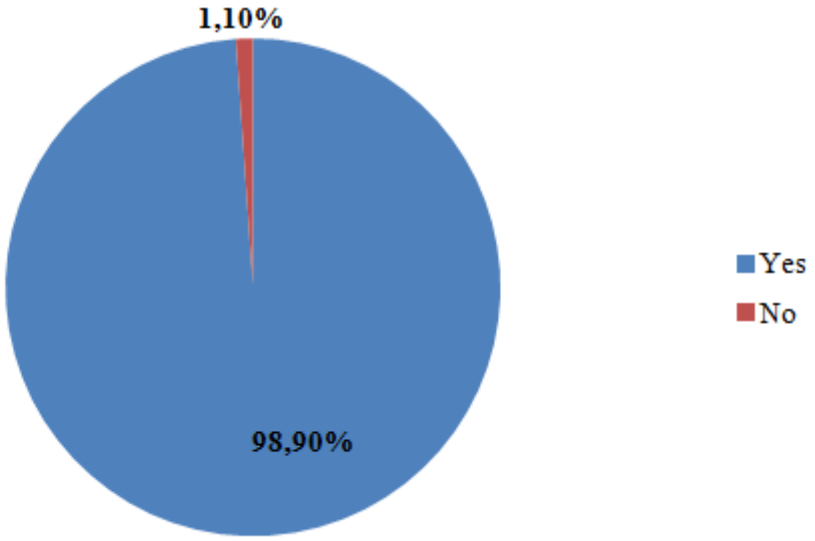


Figure 3. 11 Learning English through Science Content

The major aim of questions 27 and 28 is to investigate students' attitudes towards learning English through the science content. Results demonstrate that 99% of them welcomed the inclusion of science into English language courses. They argued that blending science with English language is motivational, they pointed out that lessons will be more interesting. However, few participants disagree with this idea, stating that they need to learn the general English and this includes teaching grammar, technical vocabulary.

Question 29 : Suggest some important topics that you would like to see in your ESP courses

The students-participants suggested a variety of topics, but all of the topics belong to their field of specialism. Among the topics that students proposed are respiratory system, central nervous system, transport system, plant nutrition, biology and hereditary, genetics in medicine, hormonal conditions, human body, nutrition, health, and latest discoveries in science.

Question 30 : suggested a set of principles of inquiry-based approach to teaching and learning to gauge the opinion of the students with regard to using this methodology of teaching to conduct ESP teaching in their department.

Table 3. 6 Students' Attitudes towards the Use of an Inquiry-Based Methodology in ESP

(**Note:1= strongly agree ; 2= agree ; 3= neutral ; 4= disagree ; 5= strongly disagree**

Questions	**1**	**2**	**3**	**4**	**5**
a-I like learning English by carrying out experimental tasks such as plants absorption, plants and light, and plants breathing) in English .	17,5%	47 ,5 %	15%	16,5 %	3,5%
b-I like to be exposed to science inquiry tasks such as conducting an experiment, formulating an explanation, searching for solutions ..) in English	23,8%	40%	20%	11,3 %	4,9%
c-I like learning English by describing evidence, solving problems or interpreting results.	27,5%	41,3 %	16,2%	11,3 %	3,7%
d-I like making hypotheses to experiments in English.	17,5%	48,8 %	15%	16,2 %	2 ,5%
e-I find it necessary to understand graphs, diagrams, and charts and writing reports about them in English.	33,8%	31,3 %	13,8%	18,8 %	1,2%

f-I like learning English by solving puzzles of scientific inquiry tasks.	27,5%	30%	27,5%	13,8 %	1,2%
g-I like learning English by discussing with my mates of my findings of tasks .	43,8%	36,3 %	12,5%	3 ;7 %	3,7%
h-I prefer using real-life tasks.	37,5%	41,3 %	15%	2,5 %	3,7
i-I like learning English through my background of the special knowledge.	26,3%	40%	23,7%	5%	3,7%
j-The process of questions answers in tasks can enhance my acquisition of vocabulary and grammatical structures in the ESP course.	25%	46,3 %	16,2%	7,5 %	5%
k- I like the use of Information and Communication Technologies such as computers, internet and PowerPoint) in the ESP course.	38,8%	33,8 %	18,8%	6,3 %	2,5%

- ✓ **Students' Opinion about Learning Experimentally**

As illustrated in table 3. 6 above, apart from mixed feelings or disagreements that certain participants have expressed. Responses to question (a) highlight that 75 % of the participants show interest in exploring tasks and investigating experiments through English. Similarly, question (c) indicates that 60% of the students are of the opinion of solving problems and interpreting results in English. Furthermore, questions (d) to (e) indicate that the students like learning through exploring charts or diagrams, and solving science puzzles in English. It can be said that the participants welcomed the idea of using inquiry-based instructions as a teaching methodology for appropriating English.

- ✓ **Students' Attitudes Towards the Use of the Subject Matter Knowledge and Real Tasks in Collaboration**

The results shown in table 3. 6 above show that the participants like to explore real-life tasks through teamwork. In addition, the majority of the participants showed their preference for learning in pairs and through interactional tasks. Furthermore, the students reacted

positively to capitalising on their scientific background knowledge in their endeavour to get into grips with the English language. These aforementioned instructions (working in pairs, interaction) could be considered as key precepts of inquiry-based learning.

- ✓ **Students' Reaction to the Use of Information and Communication Technology Means**

ICTs are vital tools for accelerating the student content acquisition, and for promoting research skills. The use of visual aids in lectures is very essential because this latter facilitate the delivery procedures, stimulate learners thinking, and motivate them. In line with this argument, most of the students (71%) who responded to question (**k**) expressed their eagerness towards the use of these technological means in their ESP classes.

Question 31 and Question 32

Question 31 : Do you like learning by using (you can choose more than one answer)

Videos tapes ☐ CD/ tape records ☐ Pictures ☐

Books ☐ Texts related to your discipline ☐

Question 32 : Other specify .....

Table 3. 7 Learning Styles

Preference of Teaching Materials	**Percentage**
Videos tapes	70%
Cd / tape record	60%
Pictures	90%
Books	17%
Texts related to your discipline	86%

Question 31 investigates the participants learning preference of the teaching materials. As indicated in table 3.7 above, 70 % of the students prefer learning English by using videos

tapes, 90 % through pictures . 86 % of the participants prefer to analyse texts related to their field. However, 17 % prefer learning by reading books and examining texts. Students have different learning styles and preferences. Thus, the researcher is required to capitalize on these teaching materials when planning instructional tasks.

Question 33 and Question 34 :

33. When you are asked to perform classroom activities , do you prefer to work ?

Individually ☐ in pairs ☐ in groups ☐

34 .Other, please specify.....

As far as question 33 and 34 are concerned, two options scored an equal rate of 27, 40 %, namely, working in groups, and working in pairs. On the other hand, 45, 3 % expressed their preference for working individually. In a nutshell, it seems that participants are interested in the teaching techniques investigated above.

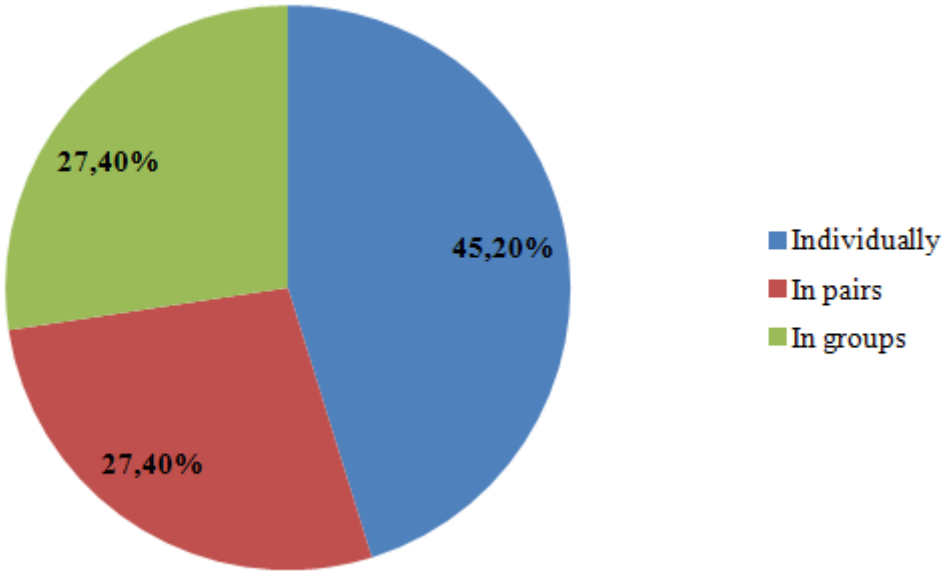


Figure 3. 12 Classroom Working Techniques

Question 35 : Would please suggest some recommendation or comments to ameliorate your ESP learning / teaching situation in your department ?

In question 35, students are offered the opportunity to express themselves by reporting and proposing suggestions that could improve the ESP teaching/learning situation in their department. Hence, among these suggestions and recommendations are the following :

- ✓ To select motivational topics that match with students' interest.
- ✓ To focus on oral and writing skills
- ✓ To encourage more practice inside and outside classes .
- ✓ To create an environment that enables learners learn best (reducing the number of the students per- class).
- ✓ To use ICT means.
- ✓ To be taught by highly competent teachers who have a science background knowledge.
- ✓ To include topics about science in general and biology in particular.
- ✓ To change the time table of the English courses (In the morning rather than the end of the day).

3.1.4. Interpretation of the Results of the Students 'Questionnaire

Results showed that the biology students of the University of Oran1 are quite keen and eager to learn English. Moreover, the participants under investigation believe that English displays a prominent role in their field of specialism; they maintained that they need to learn English to fulfil academic and professional tasks. The academic tasks involve the need to maximise their chance for pursuing advanced study that would enable them to read and write scientific papers, attend and give oral presentations in conferences, explore the science research work and books related to their field. This findings is in line with the observation of Mauranen et al. (2010: 184) that recent studies indicate that English language proficiency plays a role in academic success. As far as the professional tasks, the participants want to learn English to communicate with foreign interlocutor or for job related work.

In order to develop a suitable syllabus, the researcher finds that it is necessary to detect students' language ability and problems. Results of the questionnaire showed that the participants expressed weaknesses in the four language skills, but mostly in the speaking and writing skills. However, they pointed out further language difficulties which concern grammar, vocabulary and pronunciation. This finding appears to adhere to the argument of Javid (2011b: 43) that ESP "learners have diverse language needs as well as they bear

differences in their learning styles(LS) due to their diverse educational, social, ethnic and cultural background."

As far as students' attitudes towards the current ESP courses, results showed dissatisfaction among them regarding their ESP teaching/learning situation. The students claimed that the current ESP courses do not meet their needs and this prevented them from developing their language proficiency, they suggested for a total revision of the current ESP teaching units. Attitudes to an ESP course may be influenced by a students' previous learning experience in which learning was not successful. Also, the participants rated negatively of the teachers' traditional teaching methods as well as the unavailability of the teaching materials, they suggested to increase the weekly ESP teaching hours. kennedy and Bolitho (1984) believed that ''new developments imply new materials and methodologies, and these affect the learner as well as the teachers'' (p.17). Additionally, Jureckov (1998: 44) maintained that ''ESP learners require not only a desired and substantial "meal" but also an appropriate time for its consumption, otherwise they cannot digest it''. McDonough (1984: 91) also pointed out that ''the relatively small amount of time that can be spent in the language class may well bring about a decrease in its efficiency''.

In the assessment of the students' learning preferences and styles, results demonstrated that the students involved in this study welcome favourably the idea of blending the inquiry-based principles with English language learning, believing that the instructions of the approach could highly create interest among learners to share ideas, express thoughts or debate results, and thus provide them with opportunities to improve their language proficiency. This claim seems to support the findings of Yi-Li (2014), Mohsen-Alwadi (2018) who indicates that inquiry-based teaching is valid and an efficacious approach in L2 classes. Besides, it encouraged students to be actively engaged in high level of learning experiences whilst evolving them linguistically and cognitively

3.2. The Analysis of The Teachers' Questionnaire

As discussed in chapter 2, this questionnaire was delivered to 15 ESP teachers working in different biological departments in the university of Oran, university of Saida, university of Mostaganem, and university of Tiaret. However, out of the 15 teachers only 12 teachers gave back their answers. In this research work, teachers are given the labels T1, T2, T3 to T12 and these symbols stand for Teacher 1, Teacher2, Teacher 3 and so on. The analysis of the data revealed the following findings.

3.2.1. Teachers' Background and ESP teaching Situation

Part One

Section 1 : Teachers' Profile

Question One

- What is your degree ? Master ☐ Magister ☐ Doctorate ☐

As far as this question is concerned, equal proportion with 25% of the participants were holders of Doctorate and Magister, while the other half were holders of Master degree in English.

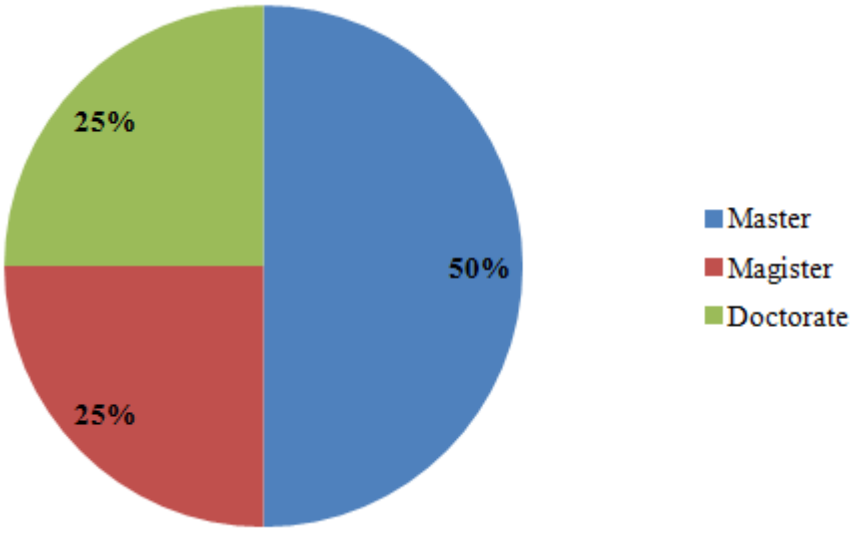


Figure 3. 13 Teachers' Qualifications

Question Two

- What is your status at the department of Biology ? Full -time teacher ☐ Part- time teacher ☐

As indicated in figure 3. 15 below, the majority of respondents (66,66 %) were full-time teachers and only (33,33%) of them were part-time teachers.

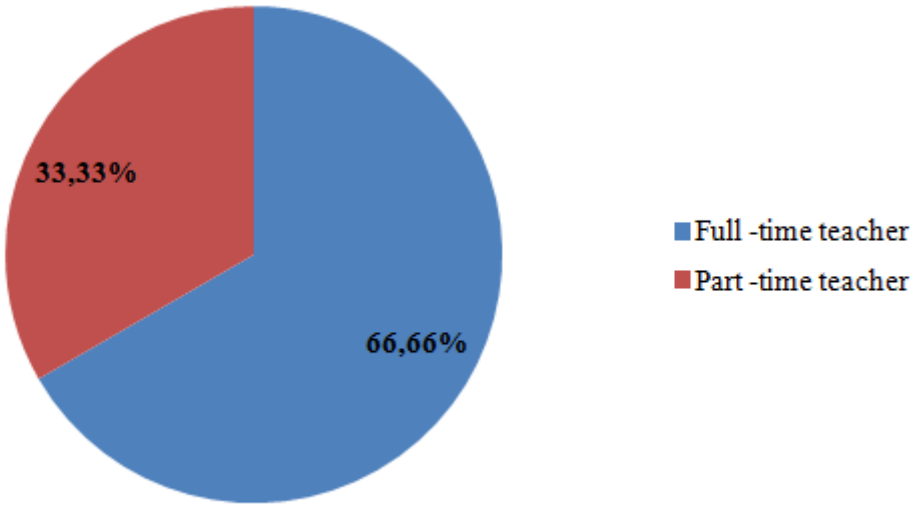


Figure 3. 14 Teachers' Status

Section 2 : ESP Teaching Objectives and Learners' Needs

Question Three and Question Four

Table 3. 8 Teachers' Teaching Experience

Teachers	**Years of ELT teaching experience**	**Years of ESP teaching experience**
Teacher 1	5	8
Teacher 2	1	1
Teacher 3	8	4
Teacher 4	3	4
Teacher 5	3	2
Teacher 6	2	4 months

Teacher 7	7	10
Teacher 8	4	1
Teacher 9	1	2 months
Teacher 10	3 months	1
Teacher 11	10 months	7 months
Teacher 12	4	3

Questions 3 and 4 allow the researcher to gain insights into the respondents' teaching experiences. Results in table 3. 8 indicate that the length of teaching experience among teachers in ELT ranged from 3 months to 8 years. On the other hand, the years of expertise in ESP ranged from 2 months to 10 years. It can be said that all the respondents have different teaching experiences in both ELT and ESP.

Question Five and Six

5: Have you had a students' needs analysis at the beginning of the year? Yes or No
6 : If yes , indicate how ?

All the respondents affirm that they have undertaken students' needs analysis at the beginning of the year; moreover, the teachers indicated using different tools such as questionnaires and tests. Other teachers pointed out that they asked the students about their difficulties and wants whilst others interviewed the responsible of the speciality about the students' needs and their expectations in ESP.

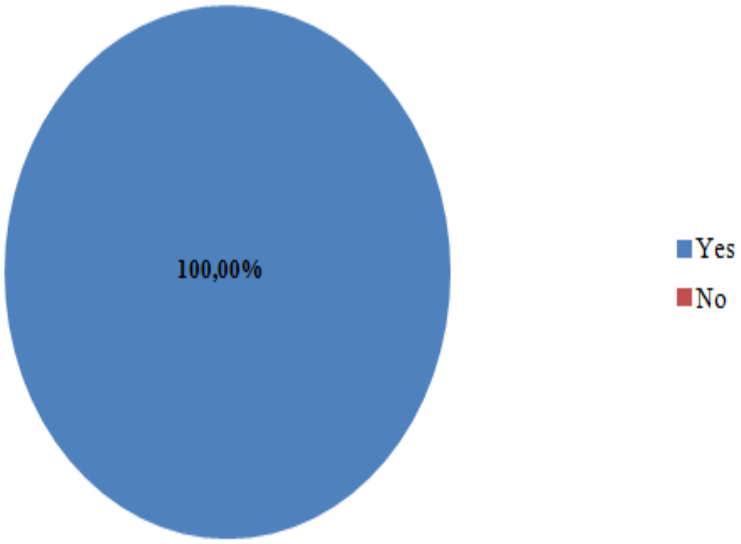


Figure 3. 15 Needs Analysis

Question Seven

- What are your learners' language needs ?

Question 7 aims to gain insights into the learners language needs. The majority of the teachers confirmed that the four language skills are essential in ESP; however, six teachers viewed that the communicative and the writing skills are the most likely required. In addition, tow teachers believed that the biology learners need English to achieve in academic tasks such as the ability to write and read scientific articles, take part in conferences or meet up with foreigners. Thus, the need to be proficient in the four language skills and have a good command of the technical vocabulary is of utmost importance .

Question Eight

How can you assess your students' language level?

- Upper -intermediate ☐
- Intermediate ☐
- Beginner ☐

Regarding question 8, 25% and 75% in respectively of teachers foresee that learners have intermediate to upper intermediate level. Students have acquired English in middle and secondary schools, still some of them have a low level of proficiency.

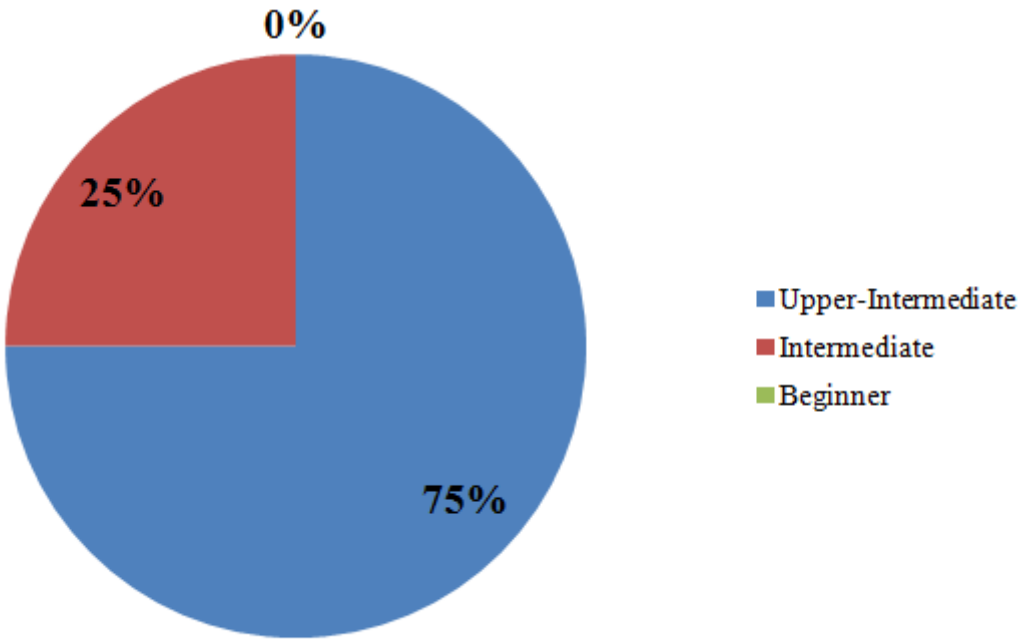


Figure 3. 16 Students' Language Proficiency

Question Nine and Ten

9 : Are your students motivated to learn English ? Yes , No
10 : Explain , please.....

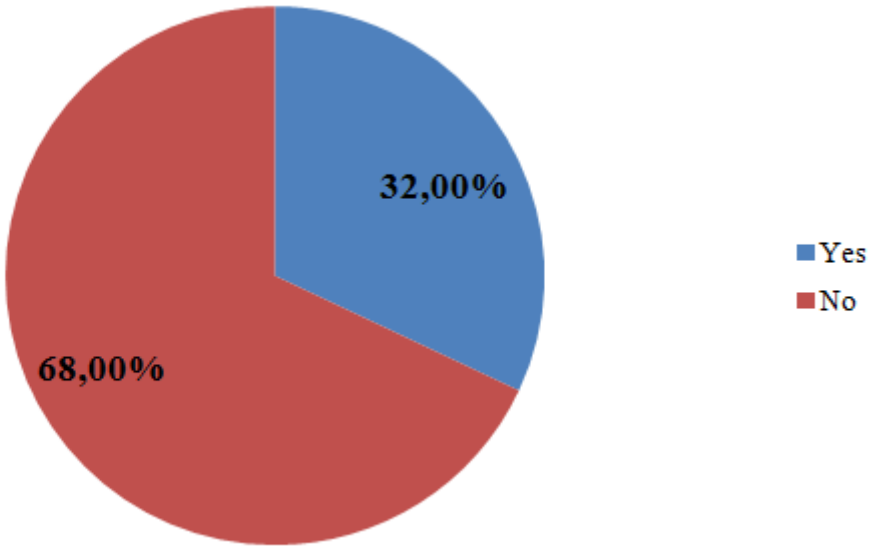


Figure 3. 17 Students' motivation to Learn English

The purpose of these questions is to inspect whether the biology learners are motivated and interested in learning English. Results show that the majority of the ESP teachers with 68% reported that their learners show little interest in English learning, claiming that the majority of the learners do not attend the English class and consider English as an optional module. Besides, teachers stated that the number of students per-class and the time allotted to teaching ESP (which is often in the afternoon) make student feel less motivated to learn. Actually, only 32% agree that their learners are eager and enthusiastic to learn English, and this is shown in their positive attitudes and behaviours inside the classroom.

Question Eleven

- .What skills do you most focus on while teaching English for biologists ?

This question reveals a discrepancy in responses; the vast majority of the teachers (i.e., seven teachers) reported that since they teach via course lecture and the number of students per lecture is hard to deal with, they put more focus on reading, understanding skills and terminology. However, the remaining teachers (i.e four teachers,) claimed using the four language skill approach.

Question Twelve

- Does the Institute or the University department provide you with a specialized teaching syllabus ?

  Yes ☐

  No ☐

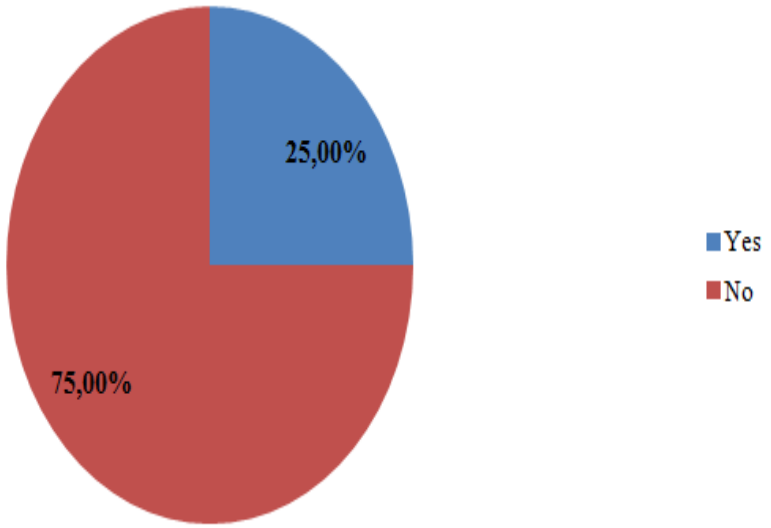


Figure 3. 18 Syllabi Distribution

25% of the respondents stated that they are handed out with a teaching document which includes guidelines and titles that teachers must tackle when lecturing. On the other hand, 75% of the respondents admitted the total absence of the ESP syllabus at the level of their departments. It can be said that not all the teachers have access to the ESP syllabus.

Question Thirteen and Fourteen

Question 13 : Do you think that the content of this syllabus can satisfy your learners' needs ?
Question 14 : Explain please.....

Results indicate that 11 teachers out of the 12 showed a very negative attitudes towards the content of the syllabus. The respondent teachers reported that the handed syllabus is deficient in many aspects. Firstly, this document does not really refer to a syllabus, because this latter does not provide a clear division of the teaching units and it does not specify the topics, or the teaching materials. Secondly, this document does not match with the learners' needs and expectations. However, only one teacher of the respondents claimed that the current teaching syllabus is adequate and it demonstrates the notions to be discussed in the courses, grammar and the terminology. It can be said that there is disparency among teachers

concerning the content of the syllabus and its suitability to the learners needs and levels of proficiency.

Question Fifteen , Sixteen and Seventeen

Question 15 :Do you think that the use of syllabi are crucial in the ESP teaching process ?
Question 16 Do you think the absence of this tool can affect the teaching/ learning of ESP ? yes, no

Question 17. If yes , how is that

Figure 3.20 below denotes that 90% of the respondents believed that ESP syllabi are necessary documents that should accompany practitioners in the teaching/ learning process. They added that syllabi address students' weaknesses as well as the teaching/ learning objectives; besides, the availability of a specific syllabus designed for a specific category of ESP learners is part and parcel of the specificity of ESP. However, 10% of the respondents viewed that the non-availability of this teaching tool is not very harmful. They mentioned that teachers could lecture without the need to have syllabi; adding that an ESP teacher should prepare his/her programme according to the target situation and according to the needs of the learners.

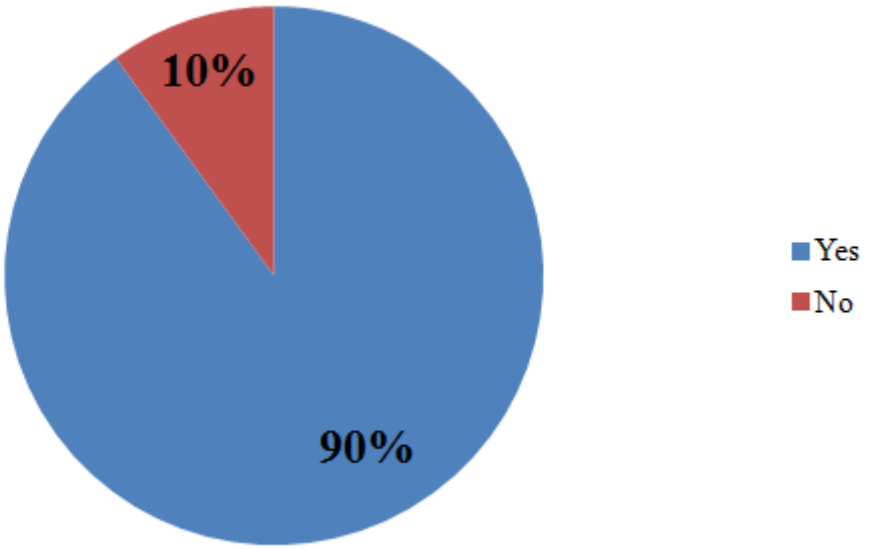


Figure 3. 19 The Importance of Syllabuses.

Question Eighteen and Nineteen

Question 18 :Do you think the absence of this tool can affect the teaching/ learning of ESP? Yes, No

Question 19: If yes, how is that?

50% of the respondents view that the absence of the syllabus as a real hindrance, they stated that the absence of syllabi might put teachers into dilemma as well as face to a long list of enquires, which without doubt would have a negative effect on the overall ESP teaching learning process. Unexpectedly, the other half of the participants 50% shared a different opinion, they claimed that in all situations the ESP teacher should be flexible and should prepare his/her syllabus by following the needs of learners and the available materials. It can be said that teachers shared two distinct views, some are with the necessity to equip ESP teachers with an official ESP syllabus, others are with the view that ESP syllabi are not mandatory and that ESP teachers can possibly elaborate their syllabi.

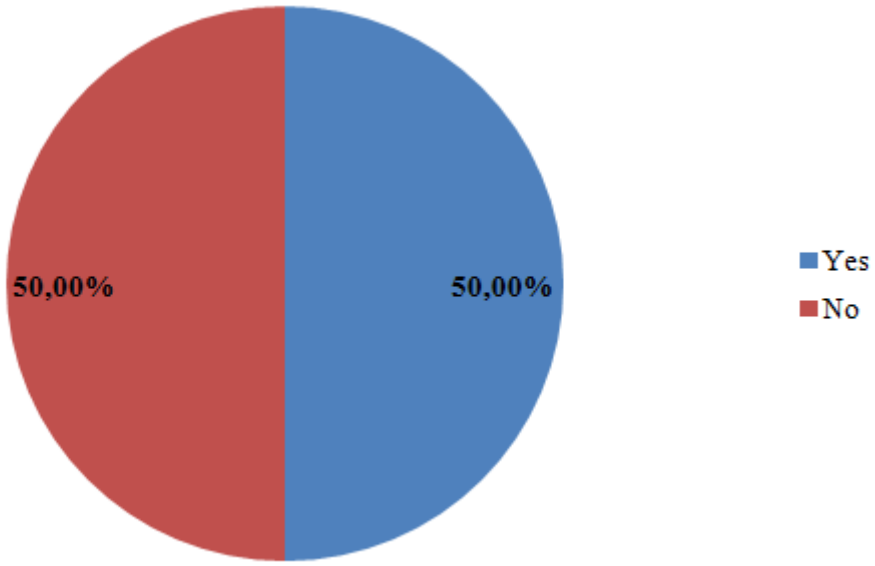


Figure 3. 20 The Absence of Syllabuses

3.2.2. Teachers' Difficulties and Recommended Solutions Analysis

Part Two

Section 1 : ESP teaching difficulties and recommended solutions

Question Eighteen and Nineteen

Question 19 : How many students do you have per class ?
Question 20 : Do you think that the number of students per class can have a side effect on the ESP teaching learning process ?

Most of the respondents working in the biological departments demonstrated that the number of the students is often problematic, and sometimes surpassed 200 students per class. In addition, the total majority of the respondents claimed that the number of students per class would have an effect on the quality of teaching, and its disadvantages are considerable. According to these teachers, large number of students may prevent teachers communicating the working knowledge, and thus prohibits them from achieving the objectives and the goals of the courses.

Question Twenty

- What criteria do you take into account when designing your ESP courses?

The purpose of question 20 is to elicit information about the criteria that teachers follow when approaching their ESP courses. Results indicate that five out of the twelve teachers stressed on the fact that their courses are designed according to their students level of proficiency, learners' needs and their speciality, while two teachers stated that they focused more on methodology and the content. Other teachers (four teachers) reported that teaching techniques and the speciality of the learners are very essential criteria in designing ESP courses.

Question Twenty-One and Twenty-Two

Question 21 :Do you find difficulties when planning your ESP course ? Yes , No
Question 22 : If yes specify

Figure 3.21 demonstrates that 70% of the respondents under investigation confirmed that they confront considerable obstacles when planning the ESP courses ; however, 30% claimed that they do not face up problems whilst designing their ESP courses.

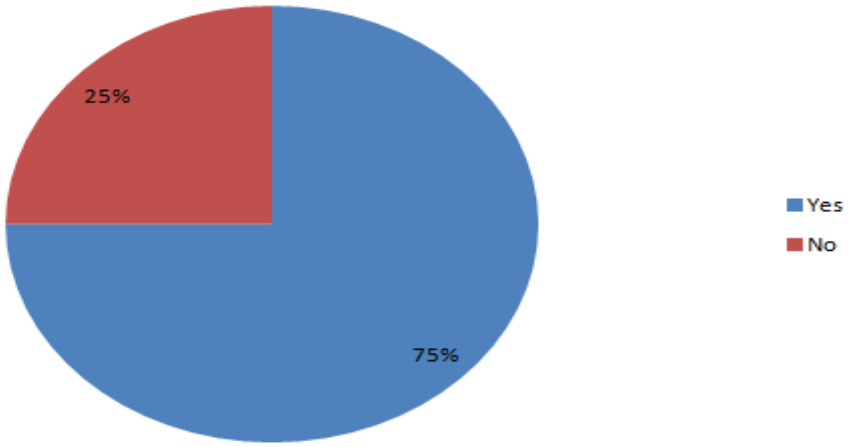


Figure 3. 21 Teacher's difficulties when Planning the ESP course

Under this investigation, the difficulties that teachers tend mostly to deal with are illustrated in the following

- ✓ Teachers claimed the lack of the subject matter knowledge stating that there is a gap between their literary background knowledge, and the scientific stream where they are supposed to teach.
- ✓ The lack of practical training
- ✓ The absence of specific teaching methodology
- ✓ The lack of pedagogical teaching materials
- ✓ Learners' low motivation
- ✓ The insufficient time allocated for English
- ✓ The lack of ESP libraries
- ✓ Learners language proficiency differences

Question Twenty-Three

- According to you, what are the topics that motivate your learners?

The majority of the teachers claimed that topics that engage and motivate the students to learn English are those related to their field of specialism. In other words, teachers maintained that students would interact best when they found themselves familiar with content of the course. Likewise, teachers reported that teaching English using the science

knowledge fosters the students' curiosity and thinking skills, upgrades their levels ,participation and oral practice in the classroom.

Question Twenty-Four

- Is there any specific methodology or teaching strategy you follow while delivering the ESP course ?

All of the teachers stated that they do not follow a particular teaching methodology while teaching ESP. However, they indicated that there are certain actions teachers undertake such as the identification of needs, the setting of course goals and objectives, the selection of teaching materials, the decision about assessment and evaluation procedures. In this regard, One teacher claimed that ''In ESP, many aspects are involved in deciding how to teach. However, instructors have to adopt one particular method that should correspond with the teaching situation and meet with the learning styles of learners''. Another teacher asserted that teachers should balance their teaching methodologies with the learning styles and preferences of learners and thus not capitalizing on one type. Teachers also added that when delivering the ESP courses, they use tasks and project works because they facilitate the teaching of ESP and encourage learners to communicate using the target language.

Question Twenty-Five

- How do you assess your learners ?

Assessing learners performances in ESP is a valuable aid to get feedback on learning. In this line 8 out of 12 teachers stated that they use various methods for assessment, but the circumstances in which assessment is implied differ from one teacher to another. However, the majority of the teachers claimed using either summative or formative assessment. One among these participants claimed that to check learners' progress and measure proficiency. He uses two types of assessments: classroom assessment and formal testing. In the one hand, classroom assessment is carried out by the teacher himself and it involves that learners answer questions, or discuss with classmates in a given time. On the other hand, formal assessment involves using formal tests such as the placement tests which by no means help the teacher to diagnose the skills that need more focus. Other two teachers added that they assess their

learners using the achievement test that stands for measuring what the learners have learned using either written assignments or group work projects. One teacher considered the marks of the learners in exams as the only sort of assessment.

Question Twenty-Six and Twenty-Seven

Question 26 : Does it happen to you to evaluate your ESP courses ?

Question 27 : If yes, how and how often do you evaluate them ?

The purpose of these questions is to demonstrate whether the process of evaluation is ascertain among teachers in the ESP teaching context. The answers revealed that the minority of the respondents with 25% tend to evaluate their ESP courses regularly either through questionnaires or group discussions claiming that this help to spot the gaps in the ESP course. However, the majority of the respondents with 75% disapproved the evaluation of their courses. Six teachers reported that ESP course evaluation should be included within the ESP teaching process, but teachers, in most cases, are restricted by allotted time.

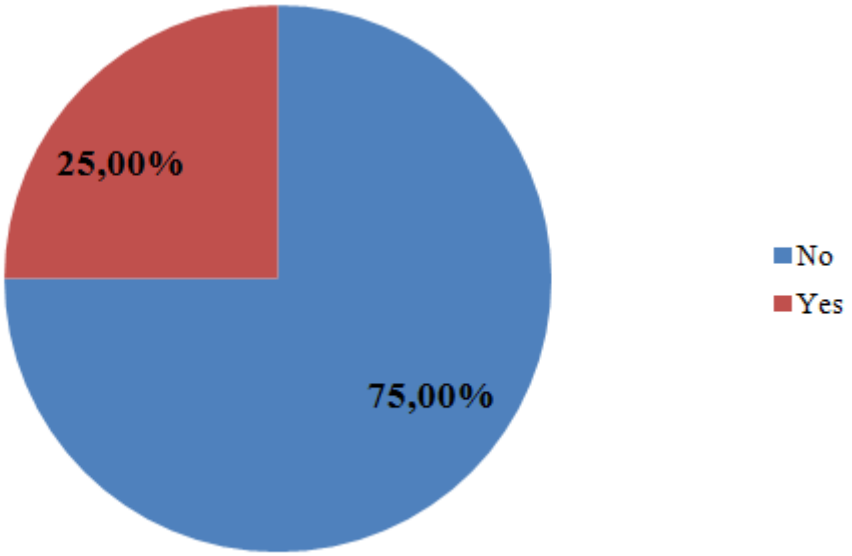


Figure 3. 22 ESP Courses Evaluation

Question Twenty-Eight and Twenty-Nine

Question 28 : Do you think that the use of technological means is important for the success of the ESP teaching/ learning ? Yes, No

Question 29 : Explain please

All the respondents 100% affirmed that successful ESP teaching learning requires ICT means. They assumed that the use of ICT such as videos, CD tapes, pictures, computers, internet in the ESP courses can enhance and promote the thinking processes of learners, it also makes them exposed to different forms of tasks. Teachers reported that Using multiple ICT means may facilitate and increase students' motivation to learn the target language.

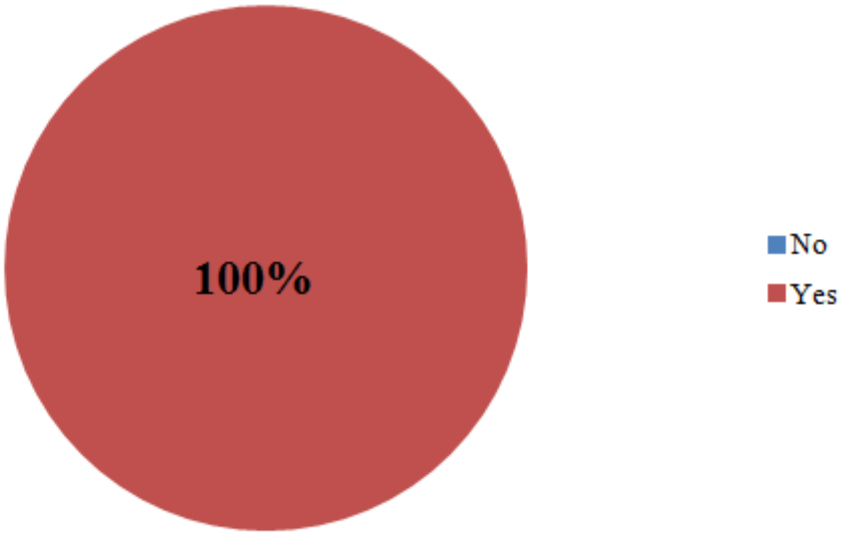


Figure 3. 23 The Importance of ICT Means

Question Thirty

- Are technological materials available at your department ? Yes, No

As aforementioned, the use of technological means is necessary to keep learners motivated and very effective in course presentation. As far as this question is concerned, 58,66% of the respondents confirmed the availability of the technological means at their departments, while 41,66% admitted its absence; they also claimed that the only means that they apply are handouts and pictures. It can be said that technological means distribution in the biological departments varies from one university department to another.

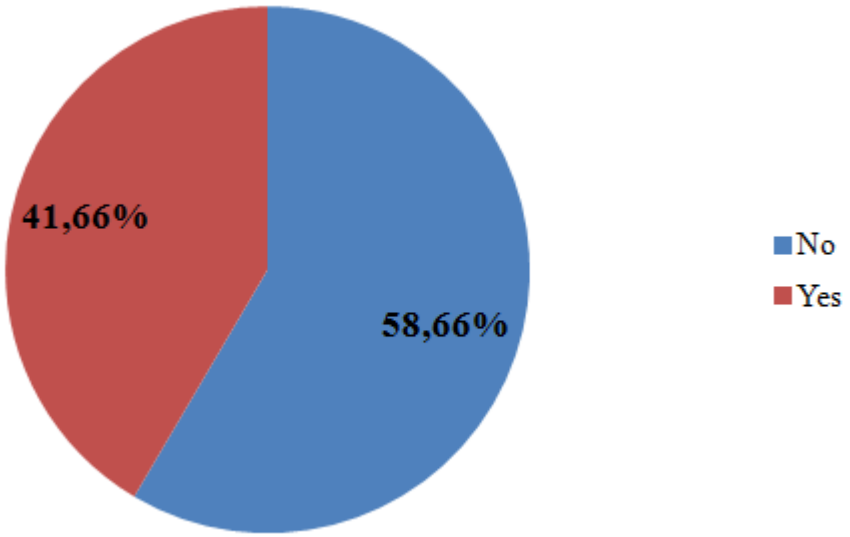


Figure 3. 24 Technological Means Availability

Question Thirty-One and Thirty-Two

31 : Do you think that the time allocated for the teaching ESP course is sufficient? Sufficient, Not sufficient

32 : If not sufficient, what can you suggest.

As demonstrated in figure 3. 25 above, all the respondents reported that the weekly time allotted to teaching ESP in the biological departments is insufficient (one hour and a half). Teachers did not suggest solutions but they proposed that The Ministry of higher education should review and increase the weekly time teaching of ESP at the department of biology.

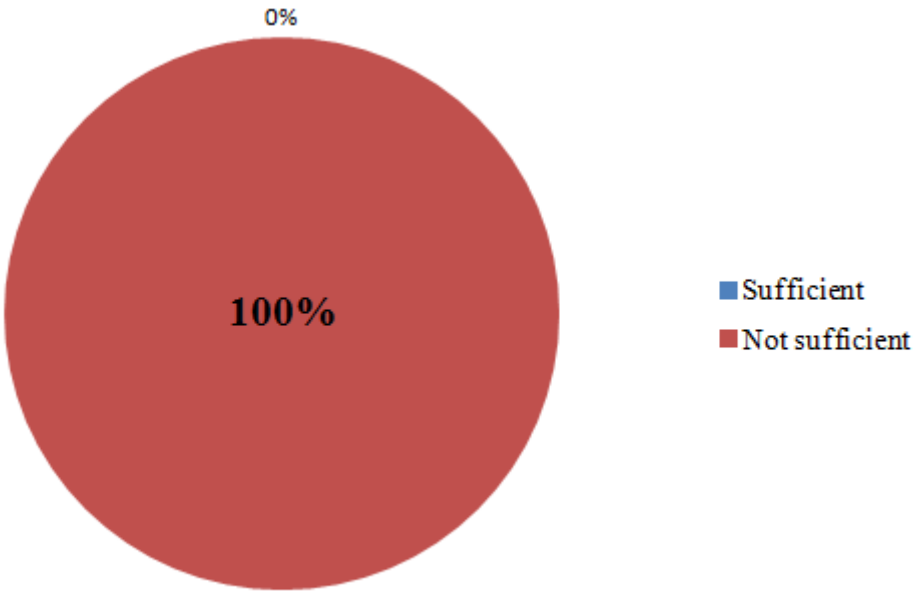


Figure 3. 25 The Weekly Teaching Hours

Question Thirty- Three

- According to you, what should be the ESP teaching per- week ?

Teachers showed different opinions regarding the optimal time devoted to ESP courses in the department of biology. On the one hand, 6 teachers out of 12 estimated that the weekly time to teaching ESP could be 6 hours. On the other hand, 4 teachers stated that one hour and a half per a week is not helping learners progressing in the target language, thus they suggested that the teaching of English should be at least 3 hours per-week. However, the remaining 2 teachers claimed successively the following ‘’cannot answer’’, ‘’as much as it can be offered’’. It can be said that the teachers working at the department of biology are with the view of increasing the weekly teaching hours and it could be sechdueled from three to six hours per week.

Question Thirty-Four

- What can you suggest to improve the current teaching situation of English at the department of Biology?

All the respondents maintained that ESP in Algeria is still in its infancy, but still they are positive that the ESP teaching learning in the biological departments could improve. Teachers made the following suggestions to make the ESP course more functional,

- ✓ Teachers pointed out that it is necessity to have further practical training in different sub- areas of ESP.
- ✓ Teachers need to acquire basic knowledge in science.
- ✓ Teachers stress on the need to attend seminars, workshops and conferences in ESP.
- ✓ Teachers should be equipped with the necessary teaching materials.
- ✓ Teachers have to work in collaboration with the subject specialist teachers.
- ✓ Teachers should be trained in: needs analysis, ESP course design, syllabus design, curriculum, teaching methodologies in ESP, assessment and evaluation in ESP, teaching materials in ESP.
- ✓ Teachers should be provided with textbooks and libraries.
- ✓ Teachers should be updated with recent research and scientific innovation.
- ✓ Teachers suggest increasing the weekly dose to teaching ESP, and the number of learners per group should be reduced.

3.2.3. Interpretation of the Results of the Teachers 'Questionnaire

ESP teachers' perceptions of the needs of learners and of the overall ESP teaching /learning situation in department of biology of the University of Oran1 are important for identifying their constraints and obstacles. Besides, the responses of the teachers are crucial for the development of the suggested syllabus which we will review in chapter 4. The findings of the questionnaire revealed that the ESP teachers are unsatisfied with the current ESP teaching/ learning situation. Firstly, the ESP teachers claimed that syllabi are necessary tools at any educational context ; however, lots of them lamented the lack of this vital teaching document. The finding appear to support valuable research studies of Zaghar (2007), Mebitil (2011), Bouzid (2012), Dakhmouche (2008), Bouroumi (2021), Boudersa (2018) Bouyacoub & Bouabdallah (2017) who have equally addressed the issue of the absence of this necessary document in other Algerian ESP educational contexts.

Secondly, the ESP teachers revealed difficulties such as, lack of the subject matter knowledge, lack of textbooks and students low level of proficiency. The findings support the view of Sheldon (1988) that ‘‘Whether we like it or not, these [textbooks] represent for both students and teachers the visible heart of any ELT programme’’. (p. 237), and of Waters (1993) that ‘‘ in recent years, the audience for ESP has begun to include a much higher percentage of learners with only a limited command of English’’.

Thirdly, the same teachers expressed negative feelings regarding the teaching environment of English in the department of biology. Many teachers claimed that the number of the students per class and the weekly workload to teaching English is not adequate to function effectively. This is supported by Ferris (1998: 300), who concluded that larger classes are less likely to allow small group work than are smaller classes so as Richards (2001: 208) who noted, ‘‘class size affects the quality of instruction’’.

3.3. Teachers’ Semi-Structured Interview

This part brings a detailed description of the semi-structured interview conduct with the 5 ESP teachers working in the biological departments in Oran (University of Science and Technology of Oran, Mohamed Boudiaf , The Institute of Biological Sciences Oran1). The aim of the interview is to gather in-depth information about the difficulties and the problems that teachers face. It is also used to collect information about the teaching status of ESP, but most importantly investigate the students’ needs so that to design a suitable syllabus for this research population. Another aim for using the interview is to crosscheck and compare what was obtained from the previous research tools.

To ensure the confidentiality of the teachers, they were given the following signs R1, R2, R3, R4, R5, stands for respondent1, respondent2, respondent3, respondent4, and respondent5 while 1,2,3,4,5 stands for the numbering of them.

Question One : Teaching objectives of ESP

This question aims to provide the researcher with information about the ESP teaching objectives at the biological departments so that to understand what learners need to accomplish. In this vein, the interviewee teachers believed that ESP courses are included in the biological curricula to equip students with the communicative and pedagogical skills of

the target language so that enabling them to get access to the vast research work related to their field. R3 and R1 were with the opinion that biologists are motivated to pursue certain goals either in academic or professional areas; therefore, the mastery of the target language is more than necessary. Sharing the same opinion, R4 argued that '' Science development has made of English a requisite language, thus the inclusion of the ESP courses are for the purpose to prepare students with a working knowledge tailored to their specific needs''. Additionally, R2 pointed out that students at the department of biology need to develop the technical vocabulary and the four language skills including: listening, speaking, reading and writing, but also other skills such as the critical and creative skills.

Question Two: Teachers' Teaching Styles

As teachers play a prominent role in the ESP teaching process, this question aims to explore the main strategies and techniques that teachers employ in the ESP classroom. Results indicate that the teachers working in the biological departments admitted the implication of divergent styles. However, the total majority of the teachers (5 teachers) supported the student-teaching approach as the utmost teaching style. Teachers also maintained that in ESP classroom they ensure to serve as the facilitator of knowledge while learners should be the active parts. Moreover, teachers claimed that when designing lectures, learners' needs and their different learning styles are of supreme value. In this topic, R3 stated the following

> My teaching style is mostly interactive. I like involving my students in the process of the lesson to make sure they understand what I present. I do not like direct teaching and spoon-feeding. The students have to assume an active role in the lesson under my guidance, I equally vary my lectures to appeal to students' varied learning styles.

In the same line of thought, other teachers namely (R4 and R1) believed in the fact that learners of biology are visual learners, thus they learn best when they are exposed to visual tools. They approved the use of tasks that request using visual aids such as videos, audio-visual videos, pictures, power points, paper handouts and so on. While R5 reported that

> In my teaching, I prepare the lecture effectively to give the students clues of essentials, and I try to make minimum understanding of the lesson. I say that I mostly use much of humour to involve the students and hook them up and make their learning experience pleasant.

In addition, R2 stated,

> I adopt an integrated teaching style in my ESP classroom. I mean that I strive to incorporate all the teaching styles among which is the authority, facilitator, and the demonstrator. I say we teach best if we apply an eclectic teaching style.

Question Three: Learners' Needs

Concerning this question, teachers provided a variety of needs. They claimed that the biologists need the English language for divergent purposes. For instance, R4 stated that '' the main reason for teaching English to biologists is to make them communicate their English in academic and professional purposes''. Teachers added that learners of biology need English to communicate in scientifc events such as making oral presentations, participating in conferences, writing academic papers, speaking with lab foreigner partners. Besides, they stated that it is necessary for learners to have a solid repertoire of terminologies and science knowledge in English. Additionally, R5 reported that students have low language proficiency particularly in speaking and writing tasks, but also in grammar functions. In a nutshell, teachers believe that learners of biology need to improve all the four language skills ; however, ESP teacher have to take into consideration the skills that students mostly lack.

Question Four: The Topics that Motivate the Biology Learners to Learn English

As far as this question is concerned, the majority of the interviewee teachers are with the opinion that learners of biology are more engaged into learning when they are exposed to topics close to their area of specialism. In other words, students show remarkable interest when they have prior knowledge of the topic being presented to them. In this regard, R2 stated that ''Teaching students using the content of biology is beneficial. Vis –as vis my teaching experience, I have observed that the student interaction inside the classroom increases when they are familiar with the topic''. Likewise, R4 stressed on the fact that

> Subjects from the field of specialism of students make them more involved. Thus and in my opinion, integrating the science content of biology with English language learning is mutually beneficial, because this inclusion permits learners to work cooperatively. Alternatively, it helps them to expand their literacy skills, enable them develop concepts and terminology of the scientific discourse in English.

Teachers considered that the notion of teaching English through the working content of biology motivates learners and gives them opportunities to work collaboratively.

Question Five : The Importance of Syllabuses in ESP

As far as this question is concerned, the interviewee teachers agree that syllabuses are valuable and essential tools at any educational system and so in ESP. In this regard, R1 stated that ‘‘Syllabuses are teaching tools, they sum up the instructions of the teaching/learning process’’. Similarly, R3 reported that syllabuses serve as a contract between the teacher and the learner, he claimed that ‘‘I think that successful ESP teaching begins when both teachers and learners are provided with detailed syllabuses that describe accurately what is expected to accomplish by the end of each unit.’’. Teachers agree on the fact that syllabuses lay out to convey the expectations of the overall teaching/learning objectives, the policy to spend on each lecture, what should be included in terms of content, materials, assignments, assessment, and evaluation.

Question Six: The Current Syllabus Evaluation

When teachers were asked about their evaluation regarding the existing teaching syllabus at the department of biology, they showed a very negative attitude and expressed feelings of disappointment and dissatisfaction. For instance, R4 reported that

> Well, to answer your question, let me first define what syllabi represent in education. Syllabi, are academic documents that give moral support to the teacher, and so as for the learner. Syllabi prescribe explicitly the course policies, requirements and sequencing, they include the teaching objectives and the learning outcomes, and provide content of the course. Unfortunately, the existing syllabus does not cover the aforementioned elements. It lacks many aspects, and does not list what we should approximately teach. Thus, the current syllabus does not meet my expectations.

In the same line of thought, R3 and R1 viewed that they do not actually have a syllabus, both respondents claimed that the document they were handed is very poor and set very little. They view that the content of this syllabus is not illustrated into manageable teaching units. Further, there is no coherent description of the teaching materials that teachers may use. According to them, the current teaching document does not consist of a clear specification of what to teach ; instead, it lists the learning/ teaching objectives, and some

grammatical functions. However, R5 did not see any shortcomings of the existing syllabus, this respondent viewed that notions, functions and grammar are discussed.

Question Seven : Syllabus Writing Procedures

4 respondents out of 5 pointed out that they design their syllabi. As far as the strategies or the methodology that they follow to design the teaching document, the respondents emphasis on many aspects such as identifying the level of the students, the available teaching materials and the time assigned to teaching English. The majority of the respondents, mainly R1, R2, R3 and R4 reported that they elaborate the syllabus once undertaking needs analysis at the beginning of the academic year '' by asking the learners about their difficulties, necessities, lacks and wants'' reported by R4 . In addition, the respondents stated that since they teach through a lecture course, the integration of the panel skills is adjusted according to the time allocated to the English course. Moreover, they declared that unlike the general English syllabus, ESP syllabus design is complex. It requires having particular competencies, and an acceptable knowledge in the area of expertise of learners.

Question Eight : Assessment and Evaluation

Assessment and evaluation are invaluable testing concepts in ESP. When asking teachers about the strategies that they carry out to assess the achievement of the students and the methods to evaluate the ESP course, they indicate distinct tools. For instance, R1 claimed that

> Assessment and evaluation are a continuous measuring process, it could be at the middle or at the end of the ESP course. My assessment of the learners generally deals with their ability to perform certain tasks, and based on their feedback and interactions , I draw conclusion regarding the progress, but most importantly make my general assumptions of the course.

To fulfil this task, R4 reported that he conducts the following list

- ✓ Placement test at the beginning of the year.
- ✓ Classroom and proficiency tests to assess if the objectives of the courses are achieved or not.
- ✓ Evaluation test at the end to provide valuable information of the courses, learners'achievement,and teachers'functionning.

R2 claimed that he uses both formative and summative evaluation. The formative evaluation is carried out during the lecturing of the courses in which the teacher measures and analyses the language and the communicative skills of the learner. As far as the summative evaluation, the teacher stated that this type is gathered from classroom feedback and everyday testing and assessment.

Question Nine : Teaching Materials

Teaching materials are effective and true stimuli to learning in ESP if used properly. When the ESP teachers were asked about the teaching materials that they employ in the ESP classroom, several replies are obtained. R4 stated that ‘‘although the department is equipped with ICT means such as projectors and CD rooms, I use my personal teaching tools : auditory and visuals ones.’’. In the same vein, R2 and R1 claimed that they use printed materials such as texts, books, articles from special journals, dictionaries, games and dialogues. In addition, R3 reported that ‘‘Well different tools among which is the linguistic, the auditory and the visual one. However, the teaching materials that I adopt in my ESP classes are adjusted with the needs and level of my learners’’. The teachers working in the biological departments employ various types of teaching materials; but they maintained that teachers should be creative and use what is appropriate and available.

Question Ten: Teachers Teaching Difficulties at the department of biology

When teachers were asked about their difficulties when teaching ESP in the biological departments, a set of issues are highlighted. The majority of the teachers affirmed that they have poor subject matter knowledge, because of their literary background. However, teacher R3 stated that she has a baccalaureate in Life and Natural Sciences, and this helped her know basic aspects in science. Teacher R5 listed the following difficulties :

- ✓ lack of the specialized knowledge.
- ✓ Scarcity of the textbooks.
- ✓ The absence of a syllabus.
- ✓ Students’ heterogeneous language level.
- ✓ low income as compared to full-time teachers.

In the same line of thought, R1 added that

Since my first recruitment in 2015 as an ESP instructor, I am dealing with the same problems such as the time allocated to the teaching of English which is always not enough, and students' low level of proficiency . Moreover, learners show less interest to the learning of English as compared with the other modules. Other difficulties are related to the number of students per class, the absence of a well defined syllabus, and the absence of guidance and collaboration among teachers.

Question Eleven: Teachers Suggestion and Recommendation to Improve ESP Teaching/Learning in Departments of Biology.

This research has demonstrated that teachers working at the biology departments are not happy with the current ESP teaching learning situation. In what follows some of their suggestions :

- Offering teachers professional training programmes,
- Equipping teachers with more references and teaching resources such as textbooks, professional syllabi, and books,
- Reconsidering the number of ESP teaching hours per department.
- Encouraging collaboration between subject specialists and ESP teachers.

3.3.1. Interpretation of the Results of the Teachers' Semi-Structured Interview

Results of the semi-structured interview with the ESP teachers working in the biological departments correlate with the one obtained from the teachers and the students' questionnaires. The interviewee ESP teachers expressed negative feelings regarding the current ESP teaching/learning situation. Additionally, the ESP teachers claimed that the objectives of teaching ESP at the biology department are to equip students with the target language and enable them accomplish either academic or professional tasks. As far as the teaching problems, the hindrances identified in the teachers' questionnaires were equally reported in ESP teachers' interview. These difficulties are the lack of the subject matter, lack of suitable syllabus, absence of professional training, and the insufficient time allocated to English. Additionally, the interviewee teachers agree on the fact that syllabi are valuable and essential in ESP. Besides, teachers believed that for the development of an ESP syllabus,

concepts such as needs analysis, defining goals and objectives, content specification, selecting the teaching methodology as well as taking decisions on assessment procedures are of paramount importance to devise an ESP syllabus.

3.4. Classroom Observation

The primary goal of classroom observation is to investigate what is really happening in the ESP courses at the department of biology. It aims to gain insightful understanding of the ESP teaching situation, and gather information about the learners' needs. These needs include their wants and lacks, learning attitudes, learning styles and preferences. Another important aspect of the classes observation is to examine issues such as the teachers' obstacles, the organisation and the organisation of the units, the available teaching resources that teachers bring into the classroom, the teaching approaches, the tasks, and the teaching techniques.

The observation of the randomly selected classes of the two different levels (i.e., third and second year) highlighted and confirmed the results obtained from the previous research tools (the questionnaires , the semi-structured interview). As far as the observation of the current ESP courses at the department of biology, the researcher decided to observe four main parts: course content, teaching methodology, classroom activities and teaching materials.

The researcher undertakes the observation of the classes during the first semester of the academic year 2017-2018, the observation takes a total of (4) four months. Results of the observation are summarised in the following description.

3.4.1 Course Content

In this part, the researcher typically examines the selection of the content and the ordering of the courses, the grading of the tasks, the learning objectives and the target language. When examining informally the teaching units of the teachers, they appear with labels such as « Biology evolution », « Biology classification », « Plants », ,« Nutrition in plants » and others. At the beginning of each unit, teachers explain the general theme of the units and introduce the list of course topics as well as the main objectives to be attained by the end of each unit syllabus. Although the themes of the units belong to the biology field, the investigator noted that not all of stated themes fit with the specific field of each group. Regarding the grading of tasks, the researcher noticed that tasks do not follow a chronological

order; that is to say, they do not pursue the titles of the units. In addition, the tasks were generally determined by the use of a traditional typology that exploits a text or a given printed material such as articles in which students were required to raise their hands and respond verbally.

Considering the difficulty and the suitability of these tasks, the observer noticed that some elements in tasks may not suit with the level of the students. As far as the specification of learning goals and objectives, the investigator finds that the stating of goals and objectives was rather vague and not practical. She felt that the statement of the objectives is not aligned with what learners do by the end of the instruction. Concerning the target language of the course, less priority was given to the teaching of the communicative and to the writing skills while more focus was given to listening and reading skills. The researcher figured out that some teachers introduce grammatical functions directly rather than in context. In other words, grammar was taught as a separate activity. In contrast, other teachers follow a different direction and the teaching of grammar was in context. Meanwhile, technical words are generally presented in isolation using translation from English to French, and students were asked to memorize them.

3.4.2. Teaching Methodology

As far as the teaching environment in the ESP classes, the researcher noticed that the group size of the students in the target classes vary from one group to another; that is to say, the number of students ranges between 25 to 200 per class. In addition, the timing of the ESP courses often started in the afternoon as the last session. Another stricking observation is that the majority of the students when they attend the English course, they feel fatigue and seemed exhausted from the previous lectures; consequently, they became less motivated to learn. However, few seemed interested and involved while the rest either paid little attention or formed annoying groups for unnecessary talk.

In this gradual observation, it was noticed that though the teaching materials to some extent are available, very rare to often absent use was marked out. In the teaching, ESP teachers tended routinely to use the text-based approach in which they gave students handouts then asked them to read and analyse scientific texts, or solve exercises which are most of the time of grammar nature. Furthermore, little interaction between student-student is being

practiced. Learners were given less opportunity to talk because teachers, in most of the sessions, tend to dominate the classroom discourse. Moreover, there were few groups working activities or problem solving tasks that might elevate, encourage interactions and oral exchanges. Another important aspect to be mentioned is that even though the content of the tasks belongs to the field of specialism of learners, they were less enthusiastic to learn.

A further important thing to indicate is that low importance was given to the assessment and evaluation processes in the ESP courses. It is worth mentioning that assessment/ evaluation are essential components in the ESP course. Teachers use them to determine the learners 'progress and measure the effectiveness of their courses. In the courses being observed, assessment was performed superficially either by testing the students verbally or asking them to do tasks. As far as the evaluation of the courses, the researcher could not come up with a pertinent conclusion if the teacher is evaluating the courses or not. Thus, it is not possible for the investigator to draw final conclusions regarding the ESP courses evaluation conduct.

3.4.3. Students' Language Lacks

It is also central to look at the learners' language proficiency and at their discourse when talking to their teachers or with classmates. Results of the analysis of the students language proficiency is organised in the following details.

3.4.3.1.Vocabulary

English is the language of science and technology, thus it is compulsory for biologists to acquire English to perform academic or professional tasks. In the observation of the oral production of the students, it was noticed that they had rich repertoire of the technical terms which were significantly produced in their oral discussions. In fact, the mastery of the technical terms might result from the language transfer between French and English which are derived from the same language family tree (i.e. , Latin). Another valuable remark is the students lack of general English words; moreover, some students had serious weaknesses that interfere with the productive skills or the receptive skills such as pronunciation, miss spelling of words, and words ordering. The following description is a representation of some of errors students have made in the ESP lectures.

3.4.3.2 False friends

False friends refer to the words that exist in both languages which are pronounced alike, but have different meanings. In the observation, the researcher noticed that learners know lots of technical vocabulary in French because English and French languages share in common many words. However, when writing, students most often fell into some confusing false friends. The following examples are some of the mistakes that students have made.

Examples

Table 3 . 9 False Friends

English	French
Cell	Sel
Rest	Reste
Root	Route

3.4.3.3. Grammar

Unlike the teaching of grammar in GE, grammar should not be outside the remit of ESP. In the department of biology, teachers have two layers in teaching grammar. A group of teachers preferred to teach grammar as a separate activity; that is to say, learners learn the grammar roles in isolated activities. However, another group of teachers favoured the teaching of grammar in context in which learners by no means will learn the structures of sentences from the analysis and explanation of authentic texts that use a variety of language structures including prepositions, modals, adverbs, logical connectors, adjectives, tenses, passive and active forms. The following description is some of the grammatical errors students have made in the ESP lectures. These errors were collected from students oral practices inside the classroom.

3.4.3.4.Prepositions

In language learning, it is very natural that students make mistakes. In the classes being observed, the researcher noticed several mistakes, among which, is the misuse of prepositions, some of their mistakes are listed in the table 3.10 below

Table 3. 10 Misuse of Prepositions

Prepositions errors	Correction
Incorrect prepositions	
1. Nerve cells transport nervous impulses **for** various parts **in** the body.	1. Nerve cells transports nervous impulses to various parts of the body
2. Food is ingested **through** the human being **in** the mouth.	2. Food is digested in the human being through the mouth.
3. Since years **before**, the evolution of the utilisation of the electron microscopy....	3. Since years ago, the evolution of the utilisation of the electron microscopy.....
4. If insulin is not secreted **in** a proper time, the sugar blood in the body rises.	4. If insulin is not secreted on a proper time, the sugar blood in the body rises
Omitted prepositions	
1. Microorganisms are used various purposes, such as preparation of curd,	1. Microorganisms are used **for** various purposes such preparation of curd,

bread and cake. 2. The Kingdom plantsis divided into cryptogam and phanerogame. 3. These building blocks are known protein.	bread and cakes 2. The kingdom **of** plants is divided into cryptogam and phanerogame. 3. These building blocks are known as protein.

3.4.3.5 Words Order

The difficulties with word order that the biology students most often made, are illustrated with the reversing of words, or with wrong placement of words. Some of the students' mistakes are demonstrated in table 3.11 below.

Table 3 . 11 Mistakes in Words Order

Sentences	Correction
1. Canal alimentary. 2. Plants have energy **low** needs. 3. The size of the cell has **too much** enlarged as compared to the rest of the cells. 4. We **also** have observed the resistance of this infectious agent.	1. Alimentary canal. 2. Plants have low energy needs. 3. The size of the cell has enlarged too much as compared to the rest of the cells. 4. We have also observed the resistance of this infectious agent.

3.4.3.6.Tenses

Students often make mistakes with wrong verb tenses form, some of their mistakes are illustrated in the following examples

Examples

Table 3 . 12 Wrong Use of Tenses

The wrong form of the verb	The correct form of the verb
Present tense ➢ Every part of the plant **need** food and other substances. **Participles** ➢ They are **token** up in the ionic form. **Axiliaries** ➢ The liver **have** over than 500 functions.	➢ Every part of the plant need**s** food and other substances. ➢ They are **taken** up in the ionic form. ➢ The liver **has** over than 500 functions.

In written or produced sentences, student often tend to omit the‘s’ that marks the third person singular. In other situations, students misconfuse the use of participles of some irregular verbs.

3.4.3.7. Plural/ singular forms

Most of the English nouns in the plural form are marked with **s** or **es**. However, words in the biological sciences, more particularly botany and zoology, are derived from Latin. Further, most of Latin masculine words ending with **us,** took the **i** in the plural form, while feminine nouns ending with an **a** are pluralized **ae.** Some of the mistakes being detected are demonstrated in the table 3. 13 below.

Table 3 . 13 Singular/ Plural Mistakes

Sigular nouns	Errors	Plural form
Leaf	Leafs	Leaves
Alga	Algas	Algae
Os	Osses	Ossa
Alveolus	Alveoluses	Alveoli
Edema	Edemas	Edemata

Antrum Tunica	Antrums Tunicas	Antra Tunicae

3.4.3.8. Pronunciation

In the analysis of the students' oral practices, many mistakes were made. The tendency of miss-articulating the sounds of English is considered as one part of the many negative language transfer that exists between the French and the English languages. Some of these mistakes are presented in table 3.14.

Table 3. 14 Mistakes in Pronunciation

Words	Right pronunciation	Wrong pronunciation
Biology	/ baɪˈɒlədʒi /	/ bɒləʒi
Main	/ meɪn /	/ mæn/
Analyse	/ ænəlaɪz/	/ænəlɪs/
Production	/ prəˈdʌkʃən/	/ prəˈdk u s ɪən /

3.4.4. Classroom Activities

In the observation of the biological classes, the researcher noticed that due to the absence of ESP textbooks, teachers prepare and design their classroom activities. One thing worth mentioning here is that the type of ESP tasks in these classes most commonly focus of on reading comprehension or translation ; in other times, on grammar tasks such as punctuation, verb-subject agreement, fill in the blank, synonyms, homonyms and others. The variety of learning techniques such as dialogues, presentations, and role play are rare if not absent. Another important aspect being observed within the learning tasks is that speaking and writing skills were given less centeredness as compared with the other skills. Furthermore, very little interaction between learners is practised.

3.4.5. Teaching materials

Materials are very important in teaching endeavours. They are necessary tools used to facilitate the teaching /learning process. In addition, materials can motivate and raise students' curiosity and support language acquisition. Concerning the current ESP teaching situation, materials are not largely implied; teachers commonly select paper-based teaching materials or choose some scientific articles related to the specific field of the learners. Likewise, learners often practise and explore the target language using the same aforementioned material. Moreover, the observer noticed the absence of textbooks that, in turn, could guide teachers or help them planning courses.

Regarding the use of visual aids such as pictures, projector, videos vary from one class to another. All in all, the overall observation shows that there is no sufficient use of up to date teaching materials that could engage and motivate learners to successfully learn the target language.

3.4.6. Interpretation of the Results of the Classroom Observation

The observation of the classes in the department of biology helped the investigator to draw conclusions about the current ESP teaching situation, the teachers' problems, and the students' needs. In fact, the observation enables the researcher to generate valuable information which can be used in the innovative syllabus.

Based on the classroom observation, the analysis shows that the ESP courses are not adequately taught. Courses are most of the time introduced using the text-based approach that quite often entails the use of translation. Activities and tasks are likewise exploited in traditional ways and excluding use of updated teaching materials. This shortage is probably one among the many reasons that led students to show little interest towards the learning of English. At the linguistic level, the majority of the students found difficulties in grammar, vocabulary and pronunciation, other problems occur with their productive skills such as speaking and writing. Also, the language transfer between French and English is viewed as another barrier.

3.4.7. Interpretation of the Main Findings

This section represents the main results obtained from the various research tools (i.e., teachers' interview, teachers' questionnaire, and classroom observation), and it is intended to address the three hypotheses of this research project. In fact, the results obtained from the

analysis of these research instruments have shown that there is a positive correlation between the findings.

With regard to the first hypothesis, which stipulates that the main obstacles the ESP teachers face at the department of biology of the University of Oran1 could be the followings: absence of syllabi, unavailability of teaching materials, and students' low level of motivation. The main points gathered from the first hypothesis revealed the following discussion.

First, the results of question 12 and question 34 in the teachers 'questionnaire, and the results of question 9 in the teachers' interview, showed complaints and discontent among ESP teachers about the distribution of syllabi at the level of their departments. Nevertheless, ESP teachers acknowledged many hindrances; part of it is the absence of a proper syllabus. Thus, the lack of syllabi is confirmed within our first hypothesis.

Second, with regard to the unavailability of the teaching materials, the data analysis showed different results. The majority of the teachers, as shown in the results of question 30 in the teachers' questionnaire, acknowledged the availability of the teaching materials, mainly the ICT resources. However, other ESP teachers reported in the teachers' questionnaire that there is significant shortage in teaching materials such as the lack of ESP textbooks, the lack of ESP libraries, and the lack of suitable ESP syllabi. It follows to say that, there is a lack of ESP teaching documentation at the department of biology. Thus, the unavailability of the teaching materials is also proven within our first hypothesis.

Third, the results of the learners' questionnaires show their eagerness and interest in learning English. However, the results of the teachers' questionnaire, the teachers' interview, as well as the classroom observation indicate that the students have difficulties and are not motivated to learn English. Moreover, the results in the teachers 'questionnaire show that learners, unlike in the other modules, have less interest in learning English and that most of the time students miss the English course. Still more, the attendees among them mostly show the feeling of fatigue and boredom. The classroom observation also shows little participation, lack of enthusiasm and less effort to learn in the lectures. All of these demonstrate that students show little interest in English. Thus, our hypothesis that postulates that among the obstacles that the ESP teachers face at the department of biology the students' low level of motivation is then confirmed.

In first hypothesis, we hypothesised that the lack of appropriate syllabi, unavailability teaching materials and students' low motivation are the main obstacles that ESP teachers encounter at the department of biology. Results indicate that the barriers and the constraints are not solely limited by these hindrances. In fact, ESP teachers have listed other problems such as difficulties with the planning of the ESP course, students' different levels, time constraint, lack of the subject matter knowledge, lack of collaboration and team working.

The second hypothesis suggests that the ESP teachers working at the department of biology consider that the existing ESP syllabus is unsuitable and does not meet the learners' needs. The results from the analysis of the teachers' questionnaire confirmed that the existing teaching syllabus is inappropriate. Teachers are disappointed and unsatisfied with the form of the current teaching document, and they show many shortages with regard to its content. Teachers claimed that the current teaching syllabus does not supply a clear sequencing of the teaching units, and also does not prescribe the teaching materials. Therefore, it can be said that the current teaching syllabus at the department of biology is deficient and lacking many aspects. Likewise, the findings of the analysis of the teachers' interview show a feeling of dissatisfaction with regard to the current teaching syllabus, teachers claimed that this latter is not suitable and does not meet with learners' expectations, needs, and levels. Thus, the second hypothesis of this research work is approved.

The third hypothesis suggests that to enhance the current teaching situation of English at the department of biology, ESP teachers propose to offering them professional training sessions, and designing a more suitable syllabus. The analysis of the results of the teachers' questionnaire, and the interview show that teachers want to be acquainted with a pre- or in service professional training in ESP. Additionally, the same ESP teachers seek better teaching opportunities and suggest extending the weekly teaching workload for the teaching of English, reducing the number of students per class, providing ESP textbooks and ESP libraries, encouraging team-work between teachers, and supplying a suitable syllabus for each speciality. In fact, the results demonstrate that the absence of syllabuses could negatively influence the teaching/ learning of ESP. Likewise, there is a total agreement among teachers on the prerequisite for having a teaching syllabus. Thus, they also recommended that the Ministry of higher education should provide them with a guided pre-designed syllabus to adequately achieve the aims and the goals of ESP teaching at the department of biology. In a nutshell, the second hypothesis of this research work is confirmed.

Even if the third hypothesis of the research study is confirmed, it is necessary to note that the ESP teachers also suggested encouraging teamwork among students, collaborating with foreign experts, and reconsidering the status of ESP in the Algerian universities.

Conclusion

From the overall analysis and discussion, insightful information was gathered in line with the research questions and the hypotheses posed in this study. The results have shown that the ESP teachers at the department of biology of the University of Oran1 encounter many obstacles on the part of ESP teachers and ESP learners. On the basis of the findings obtained, the researcher attempts to suggest a methodology to designing a syllabus, then proposes an ESP teaching syllabus sample that goes with the inquiry learning pedagogy, to make the ESP students more engaged and committed. Additionally, this last chapter introduces suggestions and recommendations that could be used by Algerian ESP teachers working in the departments of biology.

Chapter Four:

Suggesting a Methodology to Designing an ESP Syllabus

Introduction

After analysing the results obtained in the previous chapter, the following chapter introduces a systematic methodology to designing an ESP syllabus. It provides readers with models of syllabus design in ESP field, then describes the main stages followed to elaborate the suggested syllabus. These stages encompass the interpretation of the process of needs analysis, as well as the methodology and the procedures undertaken to design the new syllabus. Additionally, and in the hope to avoid the mismatch existing over the concept syllabus design and its relation to teaching methodology, this project work suggests a teaching approach (i.e., the Inquiry-based pedagogy) to our ESP learners.

4.1. Models of Syllabus Design in ESP

Generally speaking, syllabus design in ELT can be classified into two different parts (i.e., syllabus design for English for Specific Purposes and syllabus design for English for General Purposes). However, both types stipulate undertaking needs analysis to decide on the content, the methodology, and the teaching materials. In addition, syllabus design in language teaching varies from one model to another; thus, it is more than essential to provide the reader with an overview of the different syllabus design models commonly used in language teaching programmes.The following discussion describes syllabus design models of Munby's(1978), Bell's(1981), Brown's (2001) and Richards'(2001).

4.1.1. Munby's Syllabus Design Model

In 1978, Munby established a syllabus design model, as it is indicated in figure 4.1 below. Munby's model displays three main components (i.e., the participants, the communicative needs processor, and the profile needs).

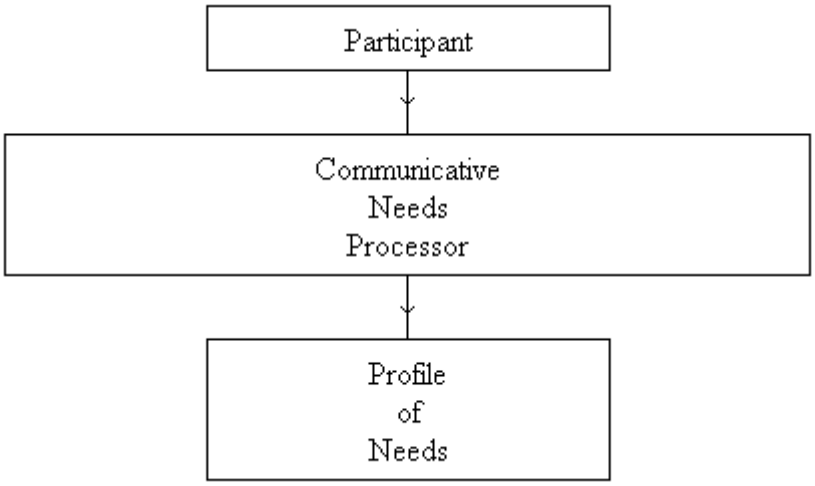


Figure 4. 1 Munby'S Syllabus Design Model (adapted from Mizel,2016, p.24)

The concept of communicative needs processor (i.e., CNP) of Munby influenced the syllabus design in ESP. Munby posited that the design of courses for language syllabuses takes place only when this latter is preceded by preliminary analysis of learners' needs. Additionally, he regarded that the CNP is the cornerstone of this model, because it investigates the communication needs in a socio-cultural context, which in turn determines the profile of needs. Using the CNP, the designer can collect thorough information from the learner; that is to say, inspecting what the learner is expected to do by the end of the course. Many researchers have employed the CNP of Munby's approach to needs analysis. In fact, the parameters addressed in Munby's model establish the profile of needs; these are described in what follows.

4.1.1.1. The Participants

It specifies the information related to the identity of learners and their language skills such as age, gender, nationality, mother tongue, command of the target language, and other languages.

4.1.1.2. Purposive Domain

It recognises the purposes for which the target language is required (e.g : educational or professional).

4.1.1.3. Setting

This part requires determining the setting both physically and psycho-socially. The physical setting refers to time and place; that is to say, where and when English will be taught.

4.1.1.4. Interaction

This constituent revolves around the roles of the participants when communicating with each other; more simply, it refers to the position of the social relationship that exists between them (i.e., student - teacher ; student - student ; superior to subordinate and so forth).

4.1.1.5. Instrumentality

This component investigates the instruments by which learners will practise the language skills in the classroom. Instrumentality is concerned with the mode and the channel of communication. Mode of communication means determining if the language is used in spoken, written or both modes (i.e., language used in the form of monologue, dialogue, reading, or other). However, channel of communication means the ways in which this communication will be undertaken (i.e., face to face, telephone, radio or other).

4.1.1.6. Dialect

It refers to the dialects that learners will have to understand or produce.

4.1.1.7. Communicative event

This section deals with the receptive and the productive skills that learners will need to master.

4.1.1.8. Communicative key

It identifies what the learners will do with the language and how they will cope with the activities in the classroom (e.g., formal or informal).

4.1.1.9. Target Level

Determining the target level is to identify the level of linguistics receptively and productively at the end of the ESP course .

Like any other models, Munby's model is not received without critics. Munby' introduced a detailed list of micro functions in his CNP, but he did not mention how to prioritise them

and how to address the affective factors as well (Dudley-Evans and St-John, 1998). Similarly, Nunan (1988) pointed out that the Munbian model is too mechanistic, and it does not perceive the perceptions of the learners.

4.1.2. Bell's Syllabus Design Model

As indicated in figure 4.2 below, Bell (1981) suggested several activities to language teaching syllabus design. Bell (1981) is with the opinion that language is a social skill by which individuals or a group of people communicate in their society using a particular language.

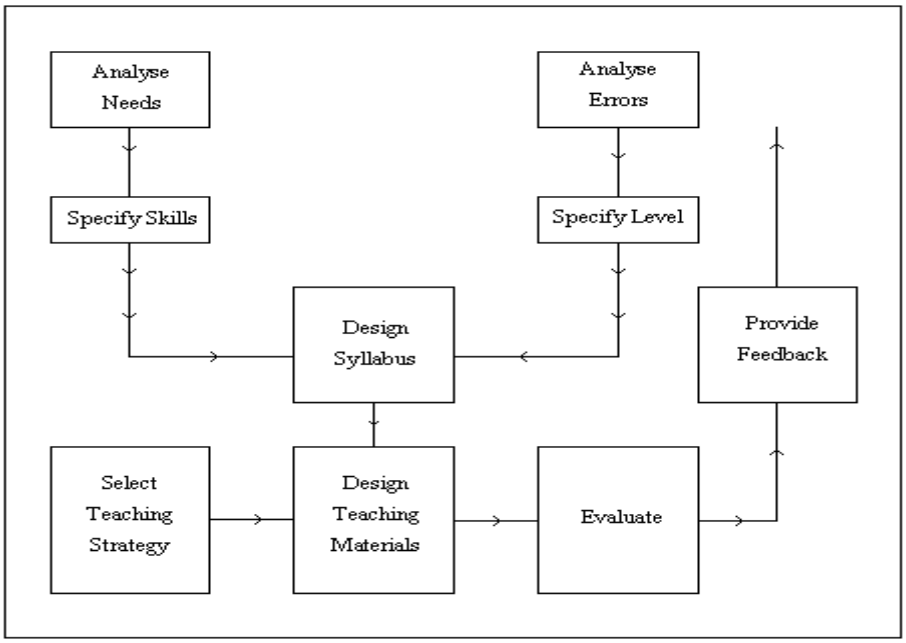


Figure 4. 2 Bell's Syllabus Design Model (Adapted from Kahurdin,2018, p. 29)

To design a particular language teaching syllabus, Bell, as shown figure 4. 2 above, provided two important steps. On the left side is analysing needs, while on the right side is specifying skills. The two concepts refer to the external requirements of the students. They are basically independent variables that take into account how old the learners are, what pre-knowledge they have, what are their purposes for learning the target language, and how much time is devoted for the that learning purpose.

The right side, however, includes two main concepts (i.e., analysing errors and specifying level). With regard to these aspects, the designer has to identify the language competence of the students so that to decide on the language system (i.e., grammar , lexis) to be taught in the classroom. In addition, these aspects will help covering the learning level of the students (i.e., beginner, intermediate, advanced).

As far as the bottom branch of Bell's (1981) model, three more steps are provided (i.e., selecting teaching strategy, designing teaching materials and evaluating). The designing of the teaching materials is certainly carried out when the designer achieves the collection of information needed from both left and right sides. What comes after is selecting a convenient teaching strategy in the course of which the designer stipulates the teaching materials. The final step in Bell's model is to decide on how to examine the overall learning outcomes. In fact, this step is extremely important, because it gives the designers an opportunity for a future revision of the syllabus.

4.2. Syllabus Design Models in Language Curriculum Development

The following description provides curriculum theories proposed by Brown (1995) and Richards (2001). In fact, the discussion of language curriculum development procedures is viewed as one aspect of language syllabus design.

4.2.1. Brown's Curriculum Development Model

Brown (1995) suggests a series of activities in language programme development. However, the curriculum model proposed by Brown can be adapted into syllabus design in language teaching areas. The model provided by Brown (1995), as shown in figure 4.3 below, is composed of six interrelated components (i.e., needs analysis, goals and objectives, testing, materials, teaching , and evaluation). These six components are described in what follows.

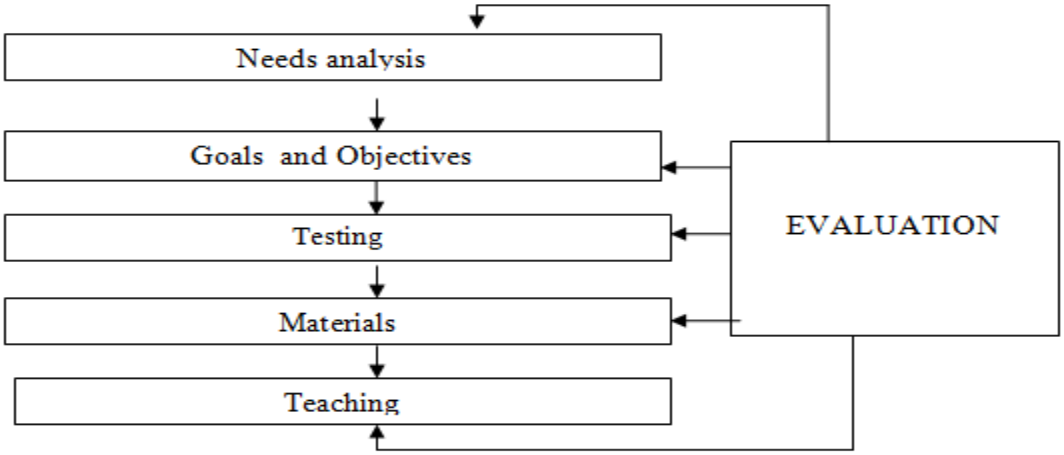


Figure 4.3 Brown 'S Curriculum Development Model (adapted from Brown,1995, p. 20)

4.2.1.1. Needs analysis

Brown (1995) is with the opinion that needs analysis is the backbone to developing curricula. Needs analysis in language curriculum development refers to the language forms that learners will likely use in the target language. Via needs analysis, teachers can determine the educational content and the forms of language that students need to acquire to accomplish certain tasks.

4.2.1.2. Formulation of goals and objectives

Setting goals and objectives are extremely vital concepts in language curriculum development. Goals are obtained from the identification of the needs of a group of learners. On the one hand, goals specify the general purposes of the language program and the items to be accomplished in a given programme or a course. Objectives, on the other hand, are specific and precise statements of the content or the skills that students need to learn to achieve a particular goal.

4.2.1.3. Language Testing

Tests are used to evaluate the teaching and the learning process in a particular context. Brown (1995) indicated that tests are one main procedure to cover up if the students have achieved the stipulated competencies and the course objectives. Moreover, tests can also provide teachers with valuable information about whether the courses are running effectively

or not, they are additional means used to revisit the content of the teaching unit of the syllabus.

4.2.1.4. Developing materials

Materials development is viewed as another important aspect within the curriculum development. They refer to the different means used to facilitate the learning of the language, thus to provide learners with the language skills they need. The teaching materials (i.e ., materials) can take different forms such as linguistic, visual, auditory or kinesthetic as they can be presented in print, on CD Room or the Internet (Tomlinson,2003). Materials, as Brown (1995) asserted, can be developed when the designer go through preliminary phases such as : identifying needs, setting objectives and obtaining testing results (p.22).

4.2.1.5. Language Teaching

Brown (1995) is with the opinion that for language curriculum development, teachers must necessarily be given free choices to practise teaching in the way as they see it appropriate to the context. Meanwhile, the objectives of the courses as well as the teaching testing techniques should be distracted.

4.2.1.6. Evaluation

According to Lowton (1983) evaluation ‘‘ is essentially concerned with supplying information about the success or the failure of a teaching- learning situation’’ (p. 90). Evaluation is an integral part of curriculum language development, it describes the merits or the shortcomings of something such as courses, syllabuses, or curricula. Programme evaluation is viewed as an ongoing process of gathering information to constantly improve the curriculum. Evaluation, however, is not used to evaluate if the programme is effective, but it can also be employed as a tool to develop the objectives, tests, materials and teaching.

4.2.2. Richards’ Curriculum Development

In 2001, Richards proposed a curriculum language development which could be adapted into syllabus design procedures in language programme development. Richards model, as indicated in figure 4.4 below, emphasised on : needs analysis, situation analysis,

planning learning outcomes, course organisation, selecting and preparing teaching materials, providing for effective teaching and evaluation. The following description is the summary of curriculum language development suggested by Richards.

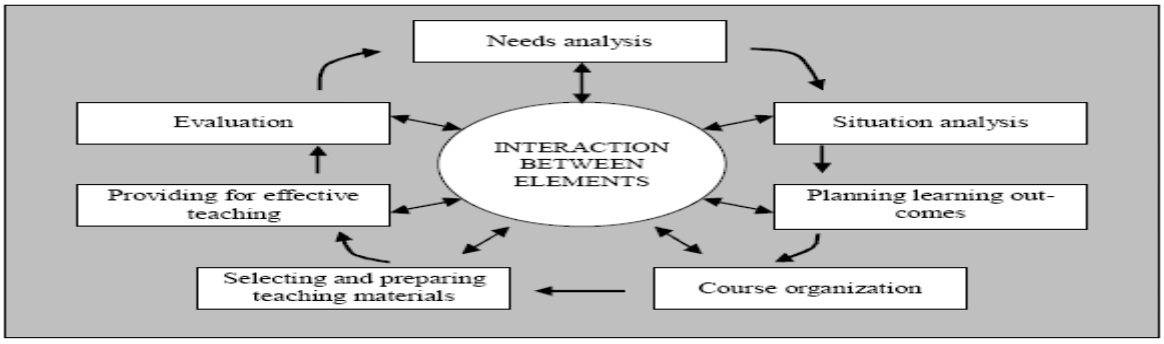


Figure 4. 4 Richards' Language Curriculum Development (from Kahurdin, 2018, p. 87)

4.2.2.1. Needs analysis

Many scholars have interpreted the term needs analysis differently. Generally speaking, the term needs analysis often refers to wants, lacks, necessities, expectations, constraints, motivation, demands, and desires (Brindely 1984, as cited in Richards 2001, p,54). Richards (2001) pointed out that needs analysis in language development programme is restricted in terms of the ''linguistic deficiency'' which describes the linguistic ability of the learner, and what she/he will be able to do with language.

4.2.2.2. Situation Analysis

Situation analysis is of the investigation of the factors influencing a given curriculum project. In other words, it is the process of determining the obstacles of the implementation of the curriculum. These factors can be social, political, economic or institutional. Each situation estimates factors that facilitate or hinder the implementation of the curriculum Richards (2001, p. 90).

4.2.2.3. Planning Goals and Learning Outcomes

Another important aspect of Richards' curriculum development model is determining goals and learning outcomes. Goals are the description of the general purposes of a

curriculum, but in language programme development, goals are often described in terms of aims and objectives. In this line of thought, Print (2002) reported that aims are what is hoped to be achieved in a curriculum. Likewise, Richards (2001) viewed aims of a programme as the statements that a programme seek to bring in a given teaching context, they are very general and often accompanied with more specific statements (i.e.,objectives) which ,in turn, are very specific (i.e., obtained from the analysis of aims and its different components). Richards (2002) believed that there are many reasons for stipulating goals (i.e., aims) in curricula stated in the following extract.

- People are often motivated to pursue specific goals

- Goals can improve the teaching/ learning process

- Goals lead to an effective programme

4.2.2.4. Course Planning and Syllabus Design

Syllabuses are not considered as activities which occur in the curriculum process. In fact, syllabuses are integrated parts of the curricula, they should be based on the identification of aims and objectives which are generally formulated in the needs analysis stage. To design a syllabus, Richards (2001) suggested the following steps: developing a course rationale, describing entry and exist level, choosing a course content, sequencing courses content, planning the course structure as well as preparing the scope and sequence plan.

4.2.2.5. Effective Teaching

In order to provide a good quality teaching in language programmes, teachers have to prepare an environment that facilitates the teaching, and this is done by considering some factors such as : “institutional factors”, “teacher factors”, “teaching factors and learner factors” (Richards, 2001, p. 198).

4.2.2.6. Evaluation

In language programmes, evaluation is the information collected about aspects in a language programme so that to decide on the extent to which the programme is achieved. Evaluation can be conducted through the examination of several contexts in the language

programmes such as how this latter meet the learners' needs, the procedures of syllabus design and course content, and goals attainment.

4.3. Syllabus Design Criteria

Since there are various types of language syllabuses, the ESP teacher, like any other teacher, may face challenges and constraints into the selection of the content of the syllabus. In this scope of thought, Harmer (2001) formulated four main criteria regarding the issue of syllabus design, these criteria are described in table 4.1.

Table 4. 1 Syllabus Design Criteria

Criterion	Description
The ability of the learner	The content of the syllabus should be in line with the language level of the learner. Teachers should start with easy aspects in language then moving towards complex ones.
Validity	The language of the syllabus should be authentic.
Significance	The goals and the objectives of the syllabus have to match with the content of it.
Interest	The content should meet with the students' expectations, and it should also motivate them and raise their interest to learning.

4.4. The Suggested Syllabus

Owing to the fact that third and second year students at the department of biology are of mixed specialities, the investigator had recourse to choose one particular level of learners studying one speciality as the sample for the new syllabus. The group of learners, chosen in this investigation, are Biology and Vegetal Physiology second year students enrolled in the department of biology of the university of Oran1.Since there is a need to propose a reliable syllabus, this latter should be systematically developed using standard and formal procedures of syllabus design approaches to language teaching.

As it is previously discussed in this chapter, there are various models of syllabus design in language teaching programmes. The discussion of the different models shows that syllabus design approaches have some shortcomings. For example, Munby's (1978) syllabus design model was criticised for being too mechanistic and for paying little to learners' perception (Nunan,1988,p: 20). Meanwhile, Brown's(1995) curriculum language development model has some shortcomings too, it focuses on language that is needed for the academic success rather than the situation needs such as examining the personal factors (i.e., what learners want to learn, how they want to learn). Similarly to Munby's (1978) and Brown's (1995) models, Richards (2001) curriculum development model has two main shortcomings: first, some aspects of the curriculum such as needs analysis are not formally explained (i.e., the conduct of needs analysis), second, the evaluation to the language curriculum development is not demonstrated, and third, his theory of curriculum language development is too broad to novice teachers (kaharuddin, 2018).

Apart from the discussion of the models, it can be said that there is not an optimum model to curriculum or a syllabus design that could suit every teaching/learning context. Hence, it can also be stated that consistency and careful consideration of needs analysis, especially in ESP context play a major role in the development of the language syllabus. Thus, the designer is required to be flexible, very consistent and shall pay attention to the process of needs analysis, the items to be included in the syllabus, and the systematic procedure chosen for the designing of the syllabus.

According to the results of the research study, the investigator suggests a mixed syllabus (task-based and functional notional syllabus) which is systematically developed by adapting some of the procedures used in Brown'(1995) curriculum language development model.

4.5. Needs Analysis Procedures in The Design of the Suggested Syllabus

This part of discussion provides the reader with the systematic procedures the investigator carried out to collect the necessary information needed for the designing of the suggested syllabus. In order to provide valuable information for this latter, the researcher adopted Brown's (1995) needs analysis model as the basic systematic procedure for the elaboration of the ESP syllabus to this research work. Brown (1995) needs analysis systematic procedures are composed of three main stages described in what follows:

- ✓ Making decisions about needs analysis
- ✓ Gathering information
- ✓ Using information

4.5.1. Making Decisions about Needs Analysis

In order to design a curriculum or a syllabus, there are fundamental decisions that the designer needs to tackle before undertaking the needs analysis; for instance, he/she is required to decide on: who will be involved in needs analysis and what type of information will be collected, and which points of views should be presented. In this research, three groups of participants are involved (ESP students, ESP teachers, the investigator).

4.5.2. Gathering information

The designer, in this part, must delineate the type of information to be collected. In other words, the designer needs to make decision not only about the philosophy of the needs analysis that he/she is going to perform, but also about the different types of instruments to gather the necessary information. In this research work, the investigator has used questionnaires, semi- structured interview and class observation; these tools are practical and relatively easy to use. The students' questionnaire was adaped from the rich published NA

documents in (Hutchinson&Wtares,1987 ; Nunan ,1999, Munby,1978; Brown, 1995; Basturkman;2005; Robinson, 1991; Dudley Evans& St john, 1998).

4.5.3. Using information

The needs analysis procedures explained earlier in chapter 1 and chapter 4 is a valuable source which can be used to state goals and objectives, to select the content, to choose the teaching techniques, to select the teaching materials and to decide on testing and evaluation strategies for the innovative syllabus. In this research work, the results obtained from the students and teachers' questionnaire, the teachers' interview and the classroom observation are used to set goals, select content, choose teaching techniques, and make decision about assessment of the innovative syllabus.

4.6. The Procedures for the Design of the Suggested Syllabus

The ESP syllabus formulated in this study is directed to second year students enrolled in the department of biology at the University of Oran1. The suggested ESP syllabus aims to improve the language skills of the target learners by focusing on speaking and writing skills. Equally, the teaching of the technical vocabulary is an intrinsic part of the syllabus with the view of upgrading learners' academic and professional performances in the target field.

In order to understand the steps that the investigator followed to elaborate this suggested ESP syllabus, it is more than important to show and describe all the procedures that she went through in this research work. As it is previously stated within this chapter, the components of the innovative syllabus are identified and adapted from Brown's (1995) language curriculum development model. It is worth mentioning that the components of Brown's (1995) model are modified according to what this research work is intended to explore (i.e., explaining the stages by showing the reader how to design an ESP syllabus in an ESP teaching contest). Identifying the components of the suggested syllabus go through three main phases illustrated in figure.4. 5 below. The following discussion is the summary and the description of these phases.

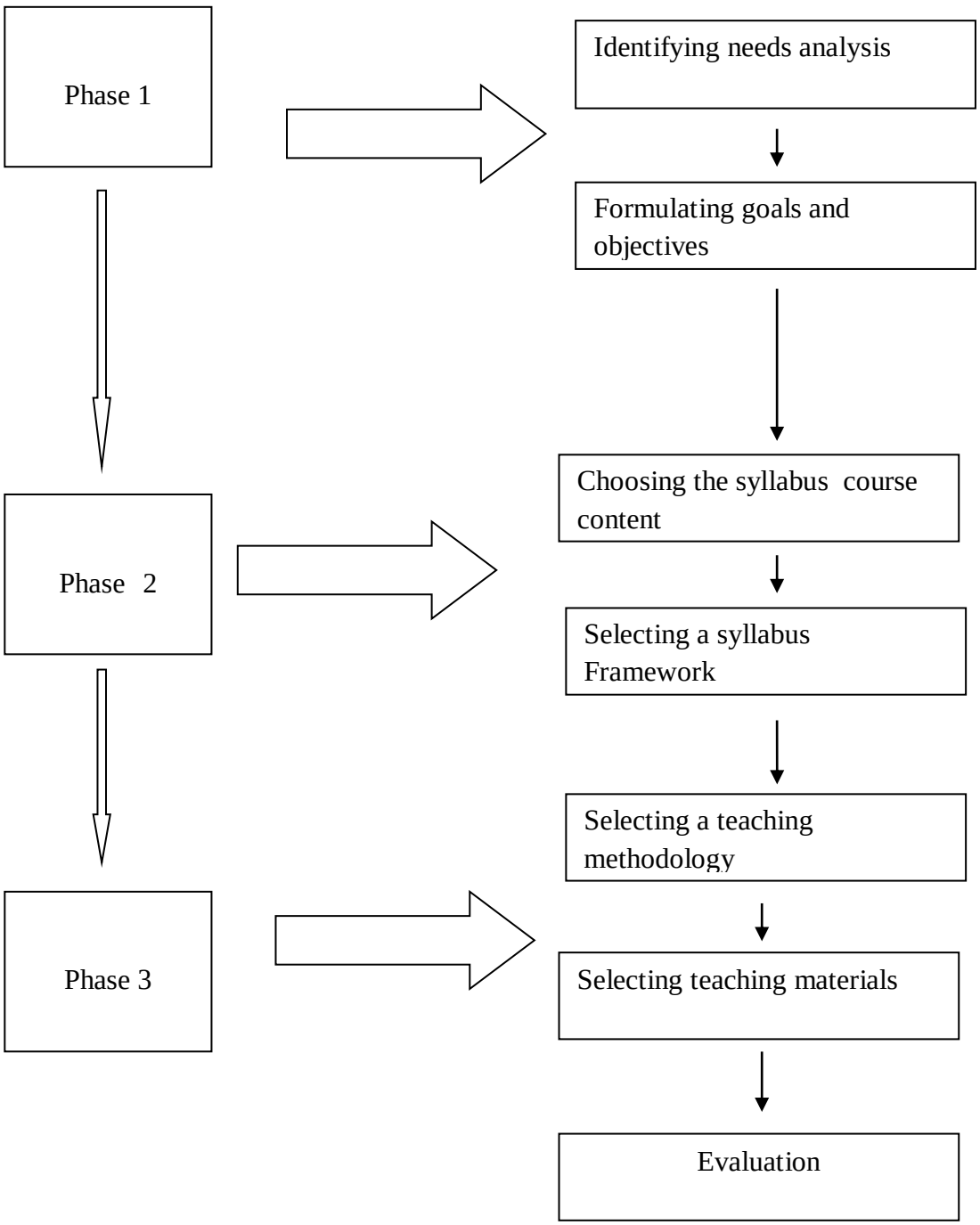


Figure 4. 5 The Procedures for the Design the Suggested Syllabus

(The Authors' source)

4.6.1. Phase 1

In this phase, the investigator should have a sound review of the process of needs analysis (NA) in ESP. NA is conducted to sort out information that is quite important for developing the content of the syllabus. Moreover, NA permits to examine the linguistic needs of the learners (i.e., abilities, problems, preferences, likes, dislikes, purposes, and expectations). As a result, the designer (i.e., the ESP teacher) can determine the language components (skills, functions, grammar, vocabulary and so on) of the syllabus. Another important step within this phase is to outline learners' learning styles and learning preferences to map out the learning activities and the teaching techniques of the course of the syllabus. All the information obtained from the overall NA of (teachers' and students' questionnaires, teachers 'interview and classroom observation) are analysed, then used to formulate aims and objectives of the syllabus

4.6.2. Phase 2

The designer proceeds to this phase when he/she successfully undertakes the first phase (i.e., identifying needs, formulating aims and objectives). Phase 2, however, involves the selection of the course content of the syllabus, it is formulated from what is obtained from the NA. When the designer makes decisions about the content of the course syllabus, he/ she moves then to the selection of a framework syllabus (i.e., type of a syllabus) which indicates how the learning activities will systematically be processed.

4.6.3. Phase 3

In this phase, the designer needs to select an appropriate teaching methodology and provide instructional materials for the syllabus. One point to mention here is that the teaching methodology we refer to here is mainly concerned with the teaching approach. In other words, the type of the teaching strategy that the teacher is going to use to reflect on the teaching tasks presented in the syllabus. The next step the designer is required to shed lights on is the preparation of the materials of the syllabus, as well as making decisions about the process of assessment and evaluation of the courses.

4.7. The Methodology of Designing the Suggested ESP Syllabus

The suggested ESP syllabus for the biology students of the University of Oran1 is composed of three main phases: The initial phase, the development phase, and the final phase. The components of the syllabus are systematically developed within a structured approach to language curriculum development of Brown (1995). Figure 4. 6.below illustrates the main component of each phase. This is the researcher methodology for the design of the innovative ESP syllabus.

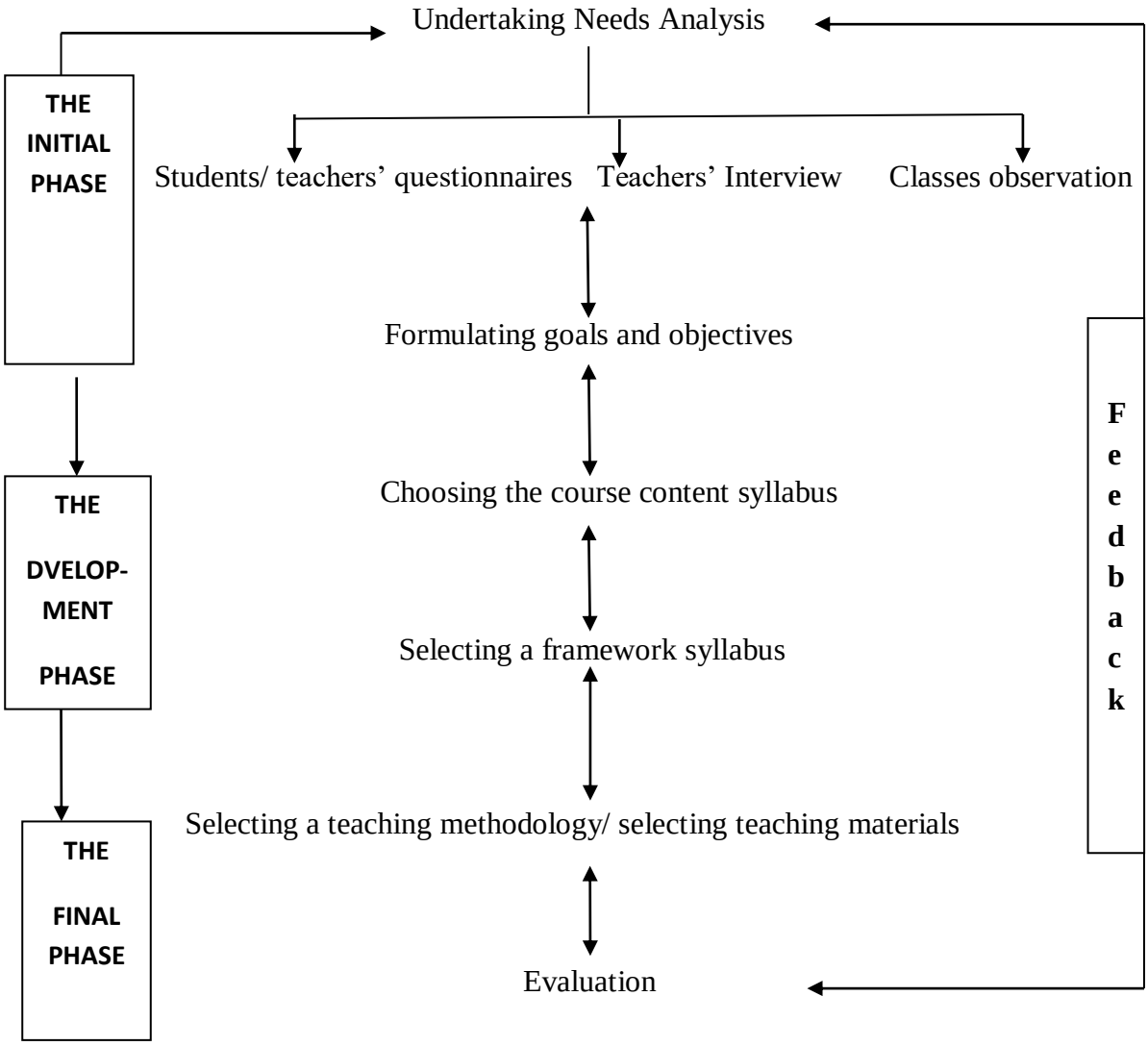


Figure 4. 6 The Methodology Of Designing The Suggested Syllabus

(The Author's source)

4.7.1. The Initial Phase

The initial phase represents the main input (i.e., needs analysis) which is considered as the cornerstone of the overall design. Needs analysis of this phase, is used to collect the necessary data so that to make decisions about the content of the syllabus. The participants of the study (teachers, students, observer) are the source of information for the innovative syllabus. After conducting needs analysis, the major results obtained are summarised in the following table, these items can be used as an input for the formulation of aims and objectives of the syllabus.

Table 4.2 : Major Findings of Needs Analysis (**the author's source)**

learning needs
Language needs and learning purposes
Students need English for both academic and professional purposes . Students want to participate and take part in national and international conferences. Students need to read and write scientific papers. Students need to explore books, manuals related to their field of study. Students need English for post-graduation Students need English to carry out their study abroad . Students want to communicate with foreign interlocutors in other research laboratories. Students need English for job-opportunities abroad. Students want to develop their oral practices. Students want to develop their English language skills and the science skills such as (Describing, hypothesising, investigating,analysing, reporting, discussing,solving....).
Language problems
Students have problems with speaking skills. Psychological problems such as feeling shy to speak in public or being afraid of making mistakes. Language interference (from French to English). Lack of general English vocabulary. Problems with pronunciation. Problems with writing skills. Problems with grammar.

Attitudes towards the ESP course
Students are not satisfied with current teaching methodology. The lack of the use of the ICT teaching materials. The time allocated to English module is not sufficient.
Learning preferences and learning styles
Students want to : Learning by using real life tasks. Learning through science content of their field. Learning through tasks, videos, pictures or games. Learning in pair or in small groups.

4.7.1.1. Determining Aims and Objectives

Results obtained from NA, as illustrated in the table 4.2 above, are used to draw the list of the overall aims and objectives. In syllabus design the term ‘’aim’’ or ‘’goals’’ refers to the general statements that students need accomplish. In this perspective, Richards (2001) listed four purposes to formulating aims in the language programmes which are the following

- To make a clear purpose for the programme,
- To write guidelines for teachers and learners,
- To make learning more focused,
- To provide important, and realisable changes in learning.

In fact, the formulation of aims of the innovative syllabus were also drawn in accordance with the aims in the teaching ‘canvas’ sent to the department of biology by the Ministry of higher education. The researcher has also included NA inventory obtained in the first phase. The major aims of the suggested ESP syllabus are as follows.

- To help students use the four language skills, but giving more focus to speaking and writing
- To help students develop their speaking skills, and increase their understanding of the subject content in English.

- To reinforce students correct use of grammar.
- To extend students academic and professional skills, and increase their science language skills.
- To use the technical vocabulary of their field of specialism.

Objectives, in contrast with aims, are more specific statements. In other words, objectives break down aims into smaller units that describe what learners will be able to do in each course , it can be used to gauge the success or the failure of the course. In this line of thought, Richards (2001, p.123) suggested six characteristics to objectives listed as follows.

- Objectives describe aims in smaller units;
- Objectives set the basis for the organisation of the teaching activities;
- Objectives describe learning in terms of observable behavior and performance ;
- Objectives make planning of the course more easier (text books, course planning, testing);
- Objectives are measurable, thus they can provide success or failure of the programme;
- Objectives do away with subjective interpretation and personal opinions ,they describe the process of planning within courses.

Alike aims, the researcher formulated the objectives using the guideline of the teaching 'canvas' and the NA inventory obtained from the first phase.

- Students will be able to communicate using simple to complex sentences and by using the target vocabulary;
- Students will be able to understand real-life tasks presented in audio or video format;
- Students will be able to understand non-standard varieties of non-native speakers of English;
- Students will be to read and understand the published literature written in English of their field;
- Students will be able to write scientific reports
- Students will be able to analyse drafts and diagrams
- Students will be able to conduct academic tasks such as communicating and participating in international events.
- Students will be able to use the science language skills (interpreting, describing, evaluating, reporting, analysing and so on).

4.7.2. The Development Phase

After setting the aims and objectives, the designer proceeds to the development phase in which he/she decides about the content of the syllabus, and framework syllabus via which the course content will be classified and presented in the classroom.

4.7.2.1. Choosing the Course Content Syllabus

Richards (2001, p.148) argued that data obtained from needs analysis can be used in the planning of the course content. Thus, results of needs analysis obtained from the participants during the initial phase are used to formulate the content of the syllabus. The content of the syllabus refers to the topics, the grammatical instructions, and the language functions.

4.7.2.2. The Selection of the Topics

From the insightful guidelines received from both teachers and students, a list of topics was drawn. It is also worth mentioning that in order to make the topics more engaging, the researcher consulted other resources such as articles; books, textbooks and websites. The topics that are included in the syllabus are the following.

- Cells structure and functions
- Cell functions in plants and animals
- Transpiration Mechanism In plants
- Transportation in plants
- Photosynthesis in plants
- Light and dark reactions in plants
- Transport of water and salt in plants
- Respiration in plants

4.7.2.3. The Selection of the Grammatical Items

Even though grammar is not the backbone in the teaching of ESP, it should not be disregarded. Conclusively, results have confirmed that students show low level in grammar. Therefore, the researcher viewed that the integration of grammar in the innovative syllabus is mandatory, it could help learners to speak and write effectively. As a result, a list of grammatical items are included in the innovative syllabus, and are stated as follows

- Articles and prepositions
- Word foundation (prefix and suffixes)
- Word classes: nouns, verbs, adjectives and adverbs
- Singular plural forms
- Active/ passive voice.
- Tenses
- Coordinators
- Gerund and infinitive
- Punctuation and capitalisation

4.7.2.4. The Selection of Language Functions

The language functions are the purposes for which spoken or written tasks are made, and they are found in different disciplines. Science study revolves around the implication of certain skills such as observing, analysing, hypothesising, descriping comparing, classifying, explaining, enumerating. In the field of science, these functions are called science skills. Biology is a science that studies the functions, growth, origins, evolution and distribution of living organism; thus it uses the language of science. Developing students' science skills using the target language might foster students academic or professional language skills. Accordingly, the researcher viewed that the implication of the science skills is vivid, and they are referred to "language functions" in the units. The main language functions marked out the suggested syllabus are derived from the "discovery work'' that organises the science skills into three separate groups which are in their turns gathered into three distinct types of cognitive skills, namely process skills, reasoning skills, and critical thinking skills. The figure 4.7 below describes briefly each skill.

SCIENCE PROCESS SKILLS	
SKILL	**DESCRIPTION**
Observing	Determining the properties of an object or event by using the senses
Classifying	Grouping objects or events according to their properties
Measuring/Using Numbers	Skills include: ✓ Describing quantitatively using appropriate units of measurement ✓ Estimating
Communicating	Using written and spoken words, graphs, tables, diagrams, and other information presentations, including those that are technology based
Inferring	Drawing a conclusion about a specific event based on observations and data; may include cause and effect relationships
Predicting	Anticipating consequences of a new or changed situation using past experiences and observation
Collecting, Recording, and Interpreting Data	Manipulating data, either collected by self or by others, in order to make meaningful information and then finding patterns in that information that lead to making inferences, predictions and hypotheses
Identifying and Controlling Variables	Identifying the variables in a situation; selecting variables to be manipulated and held constant
Defining Operationally	Defining terms within the context of one's own experiences; stating a definition in terms of "what you do" and "what you observe"
Making Hypotheses	Proposing an explanation based on observations
Analyzing	Studying something to identify constituent elements or relationships among elements
Synthesizing	Using deductive reasoning to pull together key elements
Evaluating	Reviewing and responding critically to materials, procedures, or ideas, and judging them by purposes, standards, or other criteria
Applying	Using ideas, processes, or skills in new situations
Generating Ideas	Expressing thoughts that reveal originality, speculation, imagination, a personal perspective, flexibility in thinking, invention or creativity
Expressing Ideas	Presenting ideas clearly and in logical order while using language that is apporpriate for the audience and occasion
Solving Problems	Using critical thinking skills to find solutions
Questioning of Scientific Assumptions	The tendency to hold open for further verification presented assumptions, encounters, and ideas

Figure 4. 7 Science Skills

4.7.2.5. The Selection of a Syllabus Framework

In this section, the researcher is required to select a framework syllabus to mark out the sub-division, the sequencing and the grading of the content in the classroom. As far as this research work is concerned and in accordance with the results of NA, the designer opts for the use of an integrated syllabus (mixed syllabus) of task-based syllabus and functional syllabus. The adoption to these two types of syllabuses is assumed to bring certain methodological practices which is believed to be adequate to the current ESP teaching / learning context. Functional syllabus is employed to promote the language functions or what has been referred earlier in this work to the ‘’the science skills’’, whilst the task-based syllabus is employed to reflect the use of organised and purposeful tasks that might provide learners with opportunities to practise the target language in real-life tasks.

4.7.2.5.1. Functional- notional syllabus

White (1988) identified functional notional syllabus from two main perspectives : ‘’notions’’ and ‘’functions’’. ‘’Notions’’ , as stated by White (1988), are general concepts such as time, space, cause or effect while ‘’functions’’ are the language speech acts such as questioning, complaining, suggesting, and refusing. White (1988) posited that the functional syllabuses exploit functions which are of primary concern of the syllabus, while notions or topics as the frame subdivision of the content (p,10).

Another proponent of the functional approach is Wilkins (1976), who holds that functional syllabus is organised in terms of units that explore communicative functions that learners need; likewise, the teaching of the grammatical or the structural forms of the language is not emphasised in this type. It can be said that functional syllabuses represent on its core the teaching of communicative purposes expressed in functions that learners are expected to use.

4.7.2.5.1.1. The Benefits of the Functional Syllabus

There are tremendous strengths for the use of functional syllabus, Finocchiaro and Brumfit (1983,p.17) as quoted in Nunan (1988) provided a list of benefits to adopting the funtional syllabus as the following:

“- It sets realistic learning tasks.

- It provides for the teaching of everyday, real-world language.- It leads us to emphasise receptive (listening/speaking) activities before rushing learners into premature performance.
- It recognises that the speaker must have real purposes for speaking, and something to talk about.
- Communication will be intrinsically motivating because it expresses basic communicative functions.
- It enables teachers to exploit sound psycholinguistics, sociolinguistics, linguistics and educational principles.
- it can develop naturally from existing teaching methodology.
- It enables a spiral curriculum to be used which reintroduces grammatical, topical and cultural material.
- It allows for the development of flexible, modular courses.
- It provides for the widespread promotion of foreign language courses."(p.36).

4.7.2.5.2. Task-Based Syllabus

Task-based syllabus is organised around tasks that students are required to perform in the classroom. Task-based syllabuses drove its principles from the percept that considers learning as an active interactive process. The transmission of knowledge between the teacher and the learner is performed throughout a purposeful series of tasks. In task-based learning, learners are engaged in meaningful communication in which they work either collaboratively or in small groups.

Task-based language teaching (TBLT) has received considerable attention amongst scholars in applied linguistics, it refers to "an approach based on the use of tasks as the core unit of planning and instruction in language teaching'' (Richards & Rodgers,2014,p. 174). Task-based language teaching is a learner-centered approach and gives students opportunities to practise the language via tasks.

In fact the term 'task' is the essential component in TBLT, task is defined differently among various educators. Long (1985) as quoted in Nunan (2004, p.2) defined task as

> a piece of work undertaken for oneself or for others, freely or for some reward. Thus examples of tasks include painting a fence, dressing a child, filling out a form, buying a pair of shoes, making an airline reservation, borrowing a library..., by 'task' is meant

the hundred and one things people do in everyday life, at work, at play and in between (p.89).

Long (1985) described tasks as if they were an activity of everyday life doing. Another point to highlight is that Long (1985) did not refer these tasks to a particular pedagogical context. Nunan (2004) claimed that task in Long's definition is viewed as being ''non-technical'' and "non-linguistic", and it might be far from the context that involve the use of language.

Although the definition of task in TBLT is cited in many different ways, Van den Branden (2006,p.4) as quoted in Richard & Rodgers (2014) posited that a task " is an activity in which a person engages in order to attain an objective, and which necessitates the use of language''(p.177).

Advocates of the task-based language learning assume that this approach can provide a better context for learning. Feez (1998:17) as cited in Richards &Rodgers (2014) described the basic task based instruction as the follows

- It is a process approach, in its instruction, rather a product one.
- The focus is on providing purposeful activities that communicate meaning rather than forms.
- Learners are engaged in interacting and communicative language tasks and activities
- Tasks can be either pedagogical or real life tasks designed according to the needs of learners
- Tasks in the syllabus are sequenced from the easy to the more complex
- The tasks are arranged according to a set of parameters such as previous knowledge of the learners, the complexity of the task, the language required to undertake in the task and the available materials.

When adapting the task-based instruction as an approach to ESP teaching, ESP teachers must select adequate tasks which in their turn should provide outstanding learning outcomes. Doyle (1987:161) as cited in Nunan (1988:46) believed that tasks should worth specify the following

- The products students are required to formulate

- The approach that is going to generate the product

- The materials to be used in the process.

Besides, Shavelson and Stern (1981) suggested that before making a decision about the grading and the sequencing of tasks in the syllabus, teachers have to consider the following

- The subject matter to be taught;
- The materials to be used in the classroom;
- The activities that teachers and learners will be perform;
- The goals of the task;
- The students' abilities, preferences and interests;
- The social, cultural, contextual and institutional factors. (Cited in Nunan, 2004, p.47).

4.7.3. The Final Phase

This final phase, the designer is required to provide the instructional teaching materials and select a teaching methodology to reflect on the teaching tasks. The next step is make decisions about learners' assessment and courses evaluation.

4.7.3.1. Teaching Materials and the Teaching Methodology

4.7.3.1.1. Teaching Materials

Materials of the syllabus here would refer to anything (auditory, visual, kinesthetic or linguistic) used to ease and facilitate the learning of the language. Materials are also meant to help the students improve and develop their language proficiency, and increase their motivation and interest of the courses. The use of teaching materials enables learners to explore the language in its different forms. In this line of thought, we can mention some sources suggested by Tafenau (2017):

- **Textbooks**: textbooks include different subjects, and topics that are usually presented in separate units, it may provide teachers with new formative information to form specific activities.

- **Internet resources**: plenty of free online websites contain free lessons, other activities prepared by experienced teachers are also available .

- **Brochures, pamphlets** from subject teachers is effective for the selection of content lectures .

As far as the innovative syllabus is concerned, the researcher has selected and used the following teaching materials to develop and prepare the content of the units of the syllabus as well as the ESP lectures.

- ❖ English for science (textbook)
- ❖ How plants communicate (textbook)
- ❖ Twinkel website
- ❖ Future learn website
- ❖ Teachit science website

4.7.3.1.1.1. Supplementary Materials

Supplementary materials refer to any additional tools that the researcher used to give more value and support to the teaching tasks. As a consequence, she suggested the integration of instruments and media such as the use of audiovisuals (videos, broadcast, computers, CD-Room), these instruments can develop students listening and speaking skills. In addition to the aforementioned instruments, dialogues, short presentations, group of discussion were also included in the syllabus, and they were presented in the form of short talks either between teacher- students or student-student. The purpose of this strategy is to monitor the students' talks and develop their speaking proficiency.

As far as reading and writing tasks, students will have intensive reading tasks such as the analysis of special journals, texts in magazines, articles, texts from books and websites in which learners will be asked to skim language structures, scan vocabulary, extract specific meanings, and then write reports. Others authentic materials such as diagrams, pictures, maps, charts, graphs, hands out, English dictionaries, tables are included in the syllabus. In the selection and adaptation of the materials, the investigator took the following criteria

- ✓ Materials need to present the real language (the language of EST).

- ✓ Materials have to meet with the stated course objectives.
- ✓ Materials should suit the needs and the level of the learners.
- ✓ Materials have to stimulate cognitive learning processes of the learner.
- ✓ Materials should contain concepts and items familiar to the learner.
- ✓ Materials should take into account the different learning styles and different learning preferences of the learners.

4.7.3.2. Teaching methodology

In the last few decades, the relation between syllabus design and teaching methodology in second language teaching was controversial. In his book entitled ‘‘Syllabus Design’’, Nunan (1988) distinguished two basics views (i.e.,the broad view and the narrow view) to syllabus design, and its relation to teaching methodology. According to him, the broad view believed that it is difficult to exclude syllabus design from the teaching methodology, whilst the narrow view hold that the separation between syllabus design and teaching methodology can be possible. He also added that the proponents of the narrow view claimed that syllabus design deals with the grading of the content, but the teaching methodology is concerned with the selection and the grading of the learning tasks.

In the same vein, scholars such as Stern (1984), Widdowson (1984), Allen (1984) and Van EK (1975) were more likely supporters of the narrow view direction. These scholars are with the belief that syllabus design and methodology are separate. They believed that syllabus design is the question of the items to be included in the syllabus while the teaching methodology is the selection and the grading of learning tasks. In contrast with that, other scholars claimed that the question of syllabus design and teaching methodology could be one and same.

As far as this study is concerned, we suggest to adhere a middle ground of both views. We held that ESP teachers should be given more freedom to practise what they see appropriate to the teaching/learning context as long as their practices serve the teaching objectives, and meet the learners’ needs and preferences. In this research work, we have suggested a methodology for designing a syllabus, then proposed the inquiry-based pedagogy as a teaching methodology for the target group of learners. We will discuss this approach in what comes.

4.7.3.2.3. Evaluation

Once the syllabus is formulated, the ESP teacher has to decide on evaluation and assessment procedures. Evaluation may refer to the evaluation of the courses or the evaluation of the students. In fact, evaluation is used interchangeably with the term 'assessment'. Assessment refers to the process of measurement to collect feedback on the assessed, it may include observing students' activities and performances and may be used to modify how teachers teach. However, the term 'evaluation' is cited differently by many different scholars, Worthen and Sanders (1973) as quoted in Brown (1995:218) posited that ''evaluation is the determination of the worth of a thing. It includes obtaining information for the use in judging the worth of a programme, product, procedure, object, or the potential utility of alternative approaches designed to attain specified objectives''(p.19). It can be said that evaluation can be utilised to assess how a programme is running out by analysing all the aspects such as objectives, testing, teaching and materials

Evaluation and assessment refer to the strategies and techniques that the ESP teacher exploits to assess their students and evaluate the ESP courses. Thus, the assessment of the learners could be conducted and applied in the suggested syllabus using these three types of tests

- The placement test

- The diagnostic test

- The achievement test

The placement test is a test used to determine what the learners know, it is always used before the ESP course design. Hutchinson and Waters (1987) argued that placement test ''is diagnostic, indicating how far and what ways the learner falls short of the proficiency level....tests results will be used in forming the nature f the content of the ESP course that the learner will take''(p.146). Placement test is administered to students or a group of learners before taking part in the language programme.

Thus, the ESP teacher is required to undertake the placement test before designing the syllabus, and before planning the courses. The purpose of this test is to collect feasible information of the current level of the students; that is to say, analysing their language level, their knowledge of the subject matter in English (technical vocabulary), reading

comprehension of scientific texts, grammar items, translation of passages, listening and speaking abilities.

The diagnostic test is a test used to figure out the abilities and the disabilities of the students during the running the language programme. This type of test is employed to explore the gaps, the difficulties, the problems during the course. It is effective means that teachers can use to improve their courses before the end of the programme.

The diagnostic test is also recommended so that to analyse the level of the students in English. It is an effective means to show whether the students make progress, and are able to use the technical vocabulary studied in the different tasks. This type of test can be used by the teacher during the course conduct by making students answer different questions (true/false ; multiple choice questions, fill in the blank, ordering and so forth). The teacher may also make a diagnostic list by observing learners while doing activities. Presentations, classroom interaction, student-to student talk, written documents can serve as diagnostic sheets about the progress of the learners.

The achievement test is employed to identify the competencies of the learners or the likelihood amount of knowledge the students have learned. The results of these tests will be used to grade each student to pass to the next level if they are ready. In order to construct this type of test, the ESP teacher must take into account the following guidelines ;

- The test should test what learners have learned.

- The test should be purposeful (aims to test one thing and not a couple of different things).

- Test should avoid bias.

Depending on the course length, achievement tests, in most cases, are undertaken as final exams in which students demonstrate their proficiency, knowledge and skills. They are used to evaluate how well students perform. The ESP teacher can prepare a set of different achievements tests (oral, written and practical ones) such as assignments, homework, projects.

- **Self Assessment and Peer Assessment**

There are other alternative options for assessment that ESP teachers can employ to collect feedback on the overall ESP teaching/learning outcomes. In many ESP teaching

situations, tests sometimes are not enough to make final judgments due to the large number of students per-class, and also to time constraints. In this case, self assessment and peer assessment might be added as an aid by which learners, in the one hand, recognise their progress , on the other hand, teachers plan better tasks when their learners are assessed.

Self-assessment and peer assessment may result in increased motivation, direct involvement and autonomy. Besides, the ESP teacher can benefit from this type of assessment while the learners are still in the process of acquisition. Brown (2001) suggested the following self and peer-assessment procedures. These procedures can be used by ESP teachers in the ESP classroom.

Table 4 . 4 Self and Peer Assessment

Source : The Author

Oral productions	Learners self-checklist, detecting pronunciation and grammar errors from oral presentations.
Listening comprehension	Listening to broadcasts , videos , checking comprehension in pair or in groups of work, listening to academic lectures then doing quizzes.
Reading	Reading passages then self-check your comprehension to questions, reading with a partner then checking comprehension
Writing	Revise your written work by your own, or with a peer editing, , proofreading,

Course Evaluation

Like any language course, the ESP courses should be evaluated to gauge its merits or shortcomings. Course evaluation here is viewed as a key component

> to deciding whether a course needs to be modified or altered in any way so that objectives may be achieved more effectively. If certain learners are not achieving the goals and objectives set for a course, it is necessary to determine why this is so. Nunan (1988, p.118)

In other words, course evaluation will not only demonstrate the worth of the courses but also depicts its appropriateness in terms of the suitability of the (content, methodology). Thus, ESP course evaluation is an integral part that can, if any, help to identify the strengths and the weaknesses of the courses.

In the innovative syllabus the ESP courses should be evaluated to make clear judgment whether the objectives are attained. To evaluate the ESP courses of the suggested syllabus, the designer proposes both formative and summative evaluation.

In fact, many scholars are with the opinion that language course evaluation can be formative or summative (Robinson, 1991; Mackay, 1994; Dudley-Evans and St John, 1998; Genesee, 2001. Richards, 2001). Formative evaluation is conducted ‘‘to find out what is working well, and what is not, and what problems need to be addressed ’’ Richard (2001, p.288). It takes place during the course presentation, and it is aimed to detect how well the objectives are achieved, how well the learners are progressing. However, Summative evaluation is ‘‘concerned with determining the effectiveness of the program, its efficiency, and to some extent with its acceptability. It takes place after a program has been implemented*’’* (Richards, 2001, p. 292). Additionally, qualitative and quantitative evaluation can be used in both aforementioned evaluation type ; that is to say, teachers may collect subjective qualitative data by using (interviews and observations) or quantitative data from (questionnaire, tests results). To provide the ultimate worth of the inventory syllabus, we suggest using both types of evaluation.

4.8. Sample Units of the Suggested Syllabus

4.8.1. The proposed Syllabus for Biology and Vegetal Physiology Students

In the following description, the researcher provides sample units of the suggested syllabus. This latter is targeted for second-year students of the speciality ‘‘Biology and vegetal physiology’’. The units can be taught in the first semester, each unit is composed of topics, language skills and language functions to be covered, and the teaching materials to be employed. Moreover, these units are graded from simple tasks to complex ones ; however, more focus is given to the productive skills. Eventually, The teaching units aim to help students become proficient users of the target language and meet their needs.

Table 4 . 5 The Units of the Suggested Syllabus

Unit	Topic	Tasks	Teaching aids	Language focus / Grammar focus	Language function
1	**Cells structure and functions**	**Listening (Engage)** - Understand highly contextualized input with - visual support. - Use learners pre-knowledge by asking questions. - Taking notes then answering questions - listening to a video record. - Complete the task. **Speaking (Explore)** - Name the parts of the microscope. - Investigate and discuss the steps to analyse an onion cell using a microscope. **Reading (Explain)** - Skim a text for obtaining a specific information. - Infer the meaning of words from the context. - Answer text questions. **Writing (Elaborate, Evaluate)** -Supporting ideas with evidence. - Linking sentences - Describing cells structures and defining their functions	Using Colourful Pictures Video record Pictures Authentic text	Vocabulary use. Language practise The use of Adjectives And adverbs. Using connectors	Observing and determining properties of objects . Describing an experiment Describing a cell structure. Reflecting on facts Analysing a scientific processes Synthesising Supporting

					events

Unit	Topic	Tasks	Teaching aids	Grammar focus	Language function
2	**Cell functions in plants and animals**	**Listening (Engage)** - Referring to visual data in pictures -Observing and extracting information - Compare and contrast cells presented in the pictures and taking notes. **Speaking (Explore)** - Respond to questions that can be answered orally - Compare and contrast Items. **Reading (Explain)** - Distinguish the structure of cells in living organisms. - Draw the supporting details. - Answering text questions. **Writing (Elaborate, Evaluate)** - Filling a table - Linking sentences - Writing a summary in which personal comparison and contrast is expressed .	Using projector Using colourful pictures Authentic text	Expressing contrast Compare and contrast Adverbs expressing contrast and similarities	Observing and determining similarities and differences. Comparing a cell structure in plants with a cell structure in animals. Showing understanding. Reflecting on facts

				However, Whereas Similarly Likewise In contrast As well as	

Unit	Topic	Tasks	Teaching aids	Grammar and language focus	Language function
3	**Transpiration Mechanism In plants**	**Listening (Engage)** - Presenting a diagram of a leaf A diagram presenting stomatal functions - Making predictions of the chemical processes **Reading (Explore and Explain)** - Determine the importance of transpiration. - Highlight the basic processes of transpiration.	Using diagrams (Picture form) Printed text	Present simple and present prefect use	Observing and recording facts Mapping out a set of internal scientific processes . Arguing and

		- Identifying the internal functions inside the leaf as well as the items involved . - Make if statements are true or false text questions. **Writing (Elaborate, Evaluate)** - Writing a small paragraph of the scientific event presented in the diagram .	Presenting a diagram of stomatal regulation of transpiration	Vocabulary use ; tenses use	finding Information Transferring a diagram into a paragragh

Unit	**Topic**	**Tasks**	**Teaching aids**	**Grammar and language forcus**	**Language function**
4	**Transportation in plants**	**Listening (Engage)** - Watching an audio visual event. - taking notes of the main points. - Identifying the functions (xylem and phloem) **Speaking** - Answering questions orally - Communicating	Using a video tape	Combine oral instruction with visual	Break down Information into a series of events.

		events **Reading (Explore and Explain)** - Determine the process of transportation in plants. -skimming specific details . -Extracting information and important scientific facts . - Underlying key words **Writing (Elaborate, Evaluate)** - Answering quizzes	Printed text Quizzes in printed papers	Articles Passive/active form Vocabulary rating	. Generate ideas of the text . Understand the concept. Reviewing and responding Self evaluating

Unit	Topic	Tasks	Teaching aids	Grammar and Language Focus	Language Function
5	**Photosynthesis in plants**	**Listening (Engage)** - Presenting information of the topic. - Illustrating the event with a picture. - taking notes of the main points. - Identifying the scientific investigation. - The teacher read a text then repeat and rephrase oral	Using colourful pictures	Pronouncing Correctly	Noting and recording Information.

		instructions ; **Speaking (Explore /Debate)** - Performing an oral presentation that involves the analysis of one item related to the process of photothesis. - Facilitating discussion between groups. **Writing (Elaborate, Evaluate)** - Converting a graphs into small paragraphs. -	Power point slides presentation Graph	Repeat / pronounce	. Language practise Communicating events Reporting events Turning a graph into a written form

Unit	Topic	Tasks	Teaching aids	Grammar and Language Focus	Language Function
6	**Light and dark reactions in plants**	**Reading 1** -Gather information and confirm predictions. -Identify topic sentences and the main idea of each paragragh. -Identify connectors and how sentences are linked. -Matching words to definitions.	Text	Expressing condition Expressing cause/ effect	Noting and recording Information.

		Speaking (Explore /Debate) - Answering questions related to the study of the text. -Finding synonyms. **Listening** -Investigating an experiment, (the effect of light on photothesis). **Reading 2** -Understanding content and functional words. - Skim a text for a specific information. - Drawing the stages of an experiment. **Writing (Elaborate, Evaluate)** - writing a report on an experiment.	Picture An Experiment in picture	Expressing results Language practise If condition Makers of coherence	Investigating an experiment Reporting on events Writing a report about an experiment

Unit	Topic	Tasks	Teaching aids	Grammar and Language Focus	Language Function
7	**Transport of water and salt in plants**	**Listening (Engage)** - Watching an audio- video visual. - Recording events. - taking notes of the main	Audio visual		Noting and recording Information.

		points. - Identifying the scientific investigation. **Speaking (Explore /Debate)** - Fill in the blanks - Providing an Explanation based on an observation. - Facilitating discussion among learners. **Reading** Reading a text Answering questions **Writing (Elaborate, Evaluate)** - interpreting an experiments - Writing paragraghs using deductive reasoning and Writing a report **Speaking (Elaborate, evaluate)** - Oral presentation of how plants make their own food. - Discussion and debate	Video Figures	Language use Preposition s use Language developme nt	Making predictions. Communicating events. Turning figures into a written form

Unit	Topic	Tasks	Teaching aids	Grammar and Language Focus	Language Function
8	**Respirati -on in plants**	**Speaking (Engage, Explain)** - Providing an Explanation of the scientific event presented in the text.	Record Tape		.

		- Explain the items involved in the process of respiration. **Reading (Explore)** - Scan a text for gathering specific information. -distinguish between photothesis and respiration. -Explain how the aerial roots funtions. - Filling in the blanks - Filling a table **Writing (Elaborate, Evaluate)** - Draw in hand an experiment that proves respiration in green plants. - List the objects as well as the procedures undertaken. - Draw further experiment that proves respiration in non-green plants. - Write a report about the experiment shown in the figure.	Text Picture Figure	Language use Gerund and infinitive Singular plural	Generating ides Drawing conclusions . Developing thinking and reasoning skills

4.8.2. The Evaluation of the Suggested ESP syllabus by experts in ELT

To prove the worth of the suggested teaching document, it is essential to be reviewed by ELT teacherss who possess deep knowledge but have long teaching experiences in the field of ESP. Richards and Farrell (2005) asserted that unlike inexperienced teachers, ELT teachers tend to share the following characteristics

- ✓ A rich background knowledge base.
- ✓ Referring to their past teaching experiences, they can make intuitive judgments.
- ✓ A better understanding of students 'needs and students learning preferences.
- ✓ A great effectiveness and efficiency with course planning.
- ✓ A great awareness of the instructional objectives, and use of language learning strategies.

To review the prototype of the teaching syllabus, 3 lecturers were selected to carry out the review, and make statements regarding the content, language skills, language functions, tasks and the teaching aids of the syllabus. A checklist questionnaire composed of five quality options namely: very good, good, sufficient, bad, very bad were used to assess the teachers' responses in regard to their satisfaction or dissatisfaction of the innovative teaching material. The analysis of the responses used a scale ranges from 0 to 4, this type of analysis was adapted from Sudiyono (2003) used in Yassi & Kaharuddin (2018). As illustrated in table 4. 6, this type of analysis provides information about score range, qualitative description, and a follow up decision. The quality of the teaching syllabus is determined by taking the total score average of the responses of the teachers. Later, the total average score is interpreted by using the following qualitative description demonstrated in table 4.6 below .

Table 4. 6 Qualitative Description

Score	**Score range**	**Qualitative Description**	**Follow up**
4	1 .1-4.0	Very good	No revision needed
3	1.1-3.0	Good	No revision needed
2	1.1-2.0	Sufficient	Possible revision needed
1	0.1-1.0	Bad	Revision needed
0	0	Very bad	Replacement needed

Once the responses of the checklist questionnaire are gathered, they are analysed and drawn in table 4.7 .

Table 4 . 7 The Results of the Teaching Material Review

Content	Average score	Description	Follow up
A .Content			
-The teaching syllabus covers various topics and themes appropriate to the learners' level and needs.	3.0	Good	No revision needed
-They are arranged in a logical sequence from general to specific.	3.0	Good	No revision needed
- The topics and the themes go in line with the prior knowledge of the students.	2.0	Sufficient	Possible revision needed
-The teaching material gives students more chances to practise speaking and writing.	3.0	Good	No revision needed
B- **language skills and language functions**			
-The language focus, grammar, and technical vocabulary are appropriate to the student level and needs.	2.0	Sufficient	Possible revision needed
- There is an attempt to develop students' speaking skills ability.	2.0	Sufficient	Possible revision needed
-There is an attempt to develop students' writing in each unit.	3.0	Good	No revision needed
-There is an attempt to enable learners to write short scientific reports.	2.0	Sufficient	Possible revision needed
- There is an attempt to develop the language functions of the students such as how to describe, how to compare, how to analyse, how to predict, how to draw conclusions.	4.0	Very good	No revision needed
- There is an attempt to develop students' technical vocabulary.	2.0	Sufficient	Possible revision needed
C-Tasks	3.0	Good	No revision needed

- The tasks are interesting. - The learning tasks use various learning style arrangements such as pair practice, games, working individually and in groups. -Tasks permit learners to use language creatively. - The instructions for tasks are simple and clear. - The tasks allow for the integration of the language skills and vocabulary learning.	3.0 2.0 4.0 2.0	Good Sufficient Very Good Sufficient	No revision needed Possible revision needed No revision needed Possible revision needed
D- Teaching aids - There are tapes for listening. - There are handouts, pictures, videos in the units. - The use of materials such as ICT means (ex : projectors, PowerPoint)	 2.0 2.0 1	 Sufficient Sufficient Bad	 Possible revision needed Possible revision needed Revision needed
Total average score	2.39	**Good**	**No revision needed**

4.8.3. The interpretation of the results

The analysis of the teachers' responses resulted in a total average score of 2, 39, which means ''Good ''; that is to say, no revision is needed''. It can be said that the teaching syllabus for the target groups of learners seems relevant in terms of content, language skills, language function, vocabulary, grammar and teaching aids. Furthermore, the experts involved in the reviewing added the following comments. For instance, teacher one stated that:

- ✓ The lectures in each unit are graded in a logical order, the units and lectures go from the general to the more specific.
- ✓ The materials used in each unit will help the students to develop their speaking skills

In the same vein, the second teacher listed the followings.

- ✓ The tasks seem appropriate to the students level in English.
- ✓ Students can develop a set of language functions and this latter is critical, especially in academic writing tasks.

The third teacher commented on the teaching syllabus by stating the following:

- ✓ Integration of skills is of utmost importance.
- ✓ There should be a concern of learning outcomes.

According to the results obtained from the ELT expert examination of the teaching document, it can be said that the suggested teaching ESP syllabus is then ready for teaching the target group of learners. Additionally, this teaching document is not the substitute , ESP teachers can adapt, modify, exclude or add further tasks depending on the learners' needs, and in accordance with the teaching/ learning context.

4.9. Suggesting Inquiry-Based Pedagogy to ESP Teaching

The following review reflects on the inquiry-based pedagogy as a model to the current ESP teaching learning context, we also exploited its definitions, characteristics and benefits in foreign language learning in general and in ESP in particular.

4.9.1. Definition of Inquiry-Based Learning

In fact, the inquiry-based learning (IBL) is originated from science and math education, but it can be implied to other fields such as humanities, social sciences, and foreign languages. This approach aims to engage students in critical thinking processes by involving students in stimulating topics and activities that make them form questions and at the same time invite them to find answers to their own questioning. Lee (2014 ,p.1236) pointed out that IBL, in particular, focuses on the core of '*cognition'* and ' *discovery learning'* and actives students' cognitive learning skills.

Further , Feletti (1993 : 146) as quoted in Cleverly (2003) defined IBL as

> ..An orientation towards learning that is flexible and open and draws upon the varied skills and resources of faculty and students... This includes an inter-disciplinary

approach to learning and problem –solving, critical thinking and assumption of responsibility by students for their own learning (chap2, p.7)

In other words , the IBL is a methodology characterised by the act of questioning, and also by the integration of activities that promote learners thinking and reasoning skills. So, it is a flexible approach that increases students' participation in the classroom. In this approach, students give feedback and interact with the content being exposed to them. Next to that, students can learn using their senses such as observe, explore, think, analyse , discover, create and solve inquiries. By using the IBL, students can gain self -learning confidence and become autonomous learners (i .e. ,the initiator of the learning process), and develop a vigor sophisticated linguistic knowledge.

4.9.2. Characteristics of Inquiry -Based Learning

Inquiry -based learning is more than a simple approach to education. Lots of educators , authors and researchers described this approach in same way. However, this latter is driven out of learners' curiosity to understand the conceptual knowledge that intrigues, surprises or makes them confused.

Escalante Arauz (2013) provided 5 five characteristics to IBL set as follows.

- It helps students develop critical thinking skills.
- It fosters feedback in the classroom.
- It exposes students in problem-solving tasks .
- It evinces questioning and encourages self -directed learning.
- It uses real-life tasks and promote the use of ICT means (p.482).

Similarly to Arauz (2013), the co-author Kahn and O'Rouke (2005) characterised IBL as follows.

- It engages learners' in complex problem scenarios that require a myriad solutions and responses.
- It is student centred- approach.
- It is designed according to learners 'needs, and prior knowledge.
- Inquiry-based tasks stimulate learners thinking skills and increase their curiosity to explore knowledge and seek new evidence.

- In IBL, students pursue their own lines of inquiries and are responsible for analysing, presenting, exploring , investigating and reflecting on tasks.

4.9.3. Inquiry-Based Learning to Foreign Language Classrooms

Many research studies of inquiry-based language curricula validated and supported the incorporation of IBL into education (Ermawati, Yunus and Pammu, 2015 ; Al-wadi, 2018). This approach encompasses learner-centred approach and the inquiry based instructions to learning. However, the way it is implemented varies from one context to another and from one environment to another.

Ermawati et al (2015) investigated the effectiveness of integrating IBL instructions into undergraduate EFL students reading comprehension at higher education. The results revealed promising benefits to foreign language learning classes. It was found that the implication of this approach helped students improve theoretically and pedagogically their reading skills .

In her article *inquiry-based learning : a new approach to classroom learning*, Ismail (2006) insightfully argued that to have a productive inquiry -based classroom, the class should be equipped with multi-stimulating materials such as magazines, books , articles brochures , pamphlets, CD rooms and they should necessarily relate to the students' field of study.

Mohsen-Alwadi (2018) investigated the effect of implementing inquiry-based teaching (IBT) strategies into English language courses in motivating students teachers critical knowledge. A quasi-experimental method was applied to one group class composed of 19 students in English education in the bachelor programmes at Bahrain teachers college University of Bahrain. The findings indicated that students were progressively involved of English content -based courses next to developing their language skills. Mohsen Alwadi (2018) claimed that using the IBT techniques is adequate when teaching pure theoretical content courses to foreign language classes, it helps EFL/ ESL students learn both content and the target language .

Arauz Escalante (2013) analysed the benefits of IBL as an action model to English foreign language classes, and tested the effect of implementing digital technologies in the acquisition of the foreign language. She concluded that IBL lessons are centred on students 'needs ,and that IBL allows students to work collaboratively, do research , analyse, solve

problems, and share information. Similarly, this approach, according to her, invites students to visualise real-life tasks that require their personal involvement, a direct contact with the target language.

Schwarzer & Luke (2001) explored an innovative inquiry cycle curricula framework in a whole language foreign language classes for elementary monolingual classrooms. The inquiry model being employed includes the following phases‘ building from the known, taking time to find questions for inquiry, gaining new perspectives, attending to difference, sharing what was learned, planning inquiry, and taking thoughtful actions’’(p .2). The co-author found that inquiry cycles curricula yield positive learning outcomes and could be an excellent for beginners or advanced level language learners’ classes.

Yi-Lee (2014) explored Chinese second language class feedback and preferences of inquiry-based teaching approach as a model to a language teaching classroom. After one semester of the implementation of IBT method to non-Chinese and non- native speaker of Chinese language, a questionnaire was administered to the aforementioned students in regard to some aspects such as motivation, anxiety, class interaction and the use of visuals. The results indicated that IB teaching is an efficacious approach in L2 classes ; besides, it enhanced the linguistic and the cognitive learning processes of the learners.

In similar work, Zhang (2013) incorporated ESP instruction with autonomous inquiry , he designed a new learning model that makes learners acquire language and knowledge from a novel professional learning context. According to Zhang (2013) when tapping into inquiry tasks such as observing , analysing , debating , solving problems , reading ; students become active communicators, active thinkers and constructors of the knowledge. Zhang (2013) concluded that the proposed mixed model helps ESP learners to gain knowledge, develop their English language skills and other professional skills needed in their field.

In a foreign language classroom, Altstaedter and Jones (2009) studied the ways in which, 14 undergraduate learners enrolled in a Spanish course at a major University in the mid-Atlantic United States receive the Spanish and the Hispanic culture by using the Inquiry-based approach as a model to their learning. After exposing students to a series of a Webquest inquiry tasks, the data revealed a valuable perception of the Spanish language and the Hispanic culture. The co-author pointed out that the use of IBA in foreign language course motivates students to learn both language and culture.

Based on the studies aforementioned, it can be said the IBL pedagogy is a viable teaching method for foreign language teaching classes. It motivates learners to think critically and become users of the language, it enhances their cognitive, critical and learning skills. The following description describes the incorporation of the IBL pedagogy into an ESP context.

4.9.4. Inquiry-based learning specific to ESP

Even though no comparison between ESP and IBL is found in literature, both pedagogies are mandated at the policy level. ESP is an approach to language teaching to learners studying in disciplines such as (medicine, science, maths, biology, engineering, business, and so forth), teaching ESP aimed to enable learners to use the target language in either academic or professional area of their expertise.

IBL is a scientific learning model that makes students explore knowledge in the form of inquiry tasks. Although IBL approach is largely employed when teaching science and maths, countless evidence in literature reported the positive outcomes of implementing IBL into foreign language teaching classes. Table 4.8 below, the researcher summarised some of the principles and instructions of both approaches.

Table 4. 8 ESP and IBL

Source : The author

ESP	IBL
➢ A learner -centred approach ➢ ESP is an approach to ELT . ➢ ESP uses what learners have learned earlier in GE. ➢ The four language skills are important, including the communicative needs. ➢ Learners become the user of English either in academic or professional settings. ➢ Focus on the learner. ➢ The ESP teacher performs several roles ➢ Use of ICT.	➢ A learner -centred approach ➢ It can be applied to FLT ➢ IBL provides content and experiences that are most likely familiar to students previous knowledge. ➢ It encourages students to talk in the classroom (i.e., feedback and collaborative works). ➢ Students of particular needs become creative and develop skills they need in their lives . ➢ Prepare active learners. ➢ The teacher is the facilitator of the knowledge ➢ Use of ICT.

In fact, traditional learning approaches assumed that language learning and science learning are separated. However, teachers claimed that the understanding the content by the act of questioning is powerful tool that can create desire among learners to express thoughts, share ideas, or debate result. This desire to form questioning can in turn provide learners with opportunities to improve their language proficiency. Additionally, recent research suggested that blending science principles in foreign language teaching classes is advantageous. Therefore, blending the inquiry-based approach into an ESP teaching context can stimulate learners curiosity and encourage them to use two things at once; that is to say, the content and the target language

Figure 4 .7 below demonstrates how ESP shares a common core with IBL. In fact, both approaches have got their distinct definitions, principles and instructions, but realistically, some of the characteristics of both disciplines may or may not overlap with each

other . For instance, ESP and Inquiry-based approach share in common language and subject matter. The point is that since ESP does not involve one specific teaching methodology, then it is useful to think of innovative teaching approaches that cater for the learners needs and best serve the teaching and the learning of ESP. Hence, it is needless to say that selecting an appropriate methodology when teaching ESP is crucial. In this vein, Kenny (2016) posited that teaching approaches in ESP vary from one context to another, teachers' selection of the teaching method depends greatly on needs analysis, learners' objectives of learning, and the context in which language is taught .

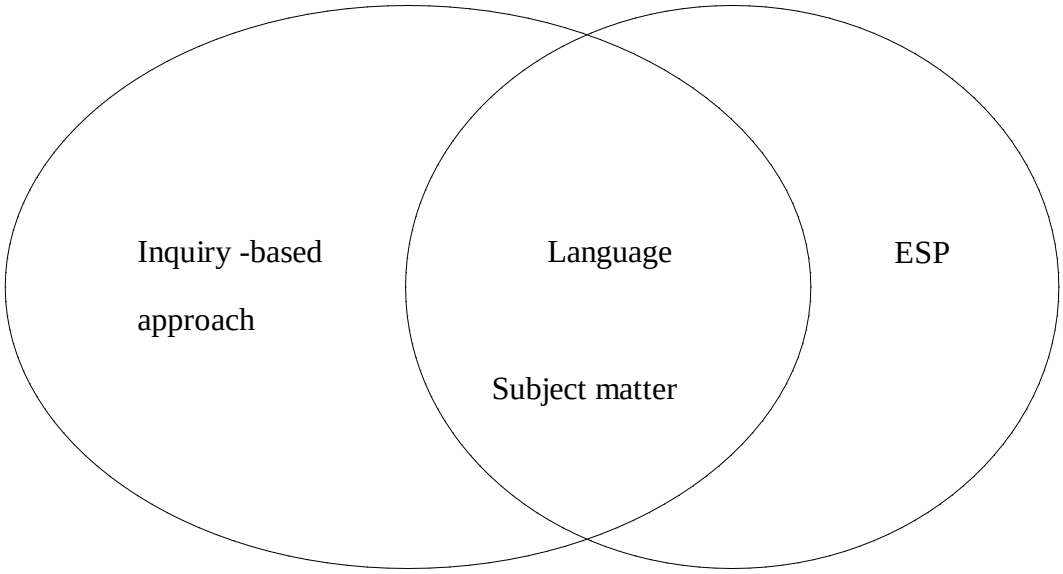


Figure 4.7 Common Core and Overlap between ESP and IBA

Source: The Author

4.9.5. Inquiry models in ESP

The inquiry models designed by researchers and investigators in literature demonstrate the inquiry processes cycles that identify the roles of teacher and the student involvement in the courses when they proceed from one phase to another.

The inquiry model suggested years ago by Bybee (1997) is called The 5 E model , this latter is based on the constructivist theory of learning. Even though the 5 E model is commonly exploited in science and biological education, it has significantly contributed positively in foreign language education (YİĞİT,2011, Alberta ,2004, Ermawati, 2015, Al-wadi, 2018) .

This model promotes collaborative learning through which students solve problems, ask questions, make discoveries and construct knowledge from interaction with peers. Figure 4.8 denotes the five phases of the 5 E model (i.e ., Engage, Explore, Explain, Elaborate, and Evaluate),these phases are not in linear ; however, there might be back and forth progression between stages for example between explore-explain or between explain and elaborate. This model could be experienced in one lesson or in one unit lasting weeks. The following description is the summary the role of the ESP teacher and the ESP learner in each phase.

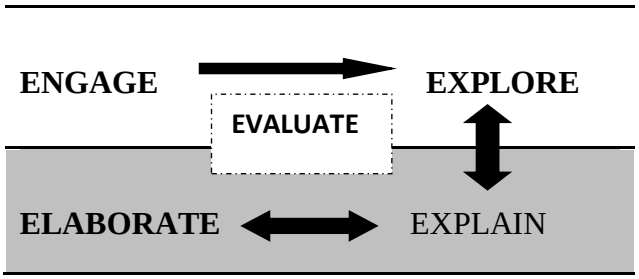


Figure 4.8 the 5 E Model (adapted from Carr et al,2007, p.4)

Engage

The ESP teacher starts the learning process by making students engaged in a new concept or a topic that generates students' curiosity and creates interest and raises their inquiries. Tasks should go with students' prior-knowledge and present learning experiences. This stage elicits directions and evokes curiosity.

Explore

In this stage, students explore questions, perform phenomenon of certain concepts, investigate new ideas and skills while the ESP teacher examines, observes and listen to students as they interact of the proposed activities; that is to say, the ESP teacher acts as facilitator. The stage of exploration provides students with concrete experiences on the basis of building continuous knowledge .

Explain

During that stage students demonstrate their understanding of the concept process skills; accordingly, they communicate new facts, share discoveries, and debate alternative explanations. In the meantime, the ESP teachers invite students to share their discoveries formed in the previous stages '*engage* ', '*explore'* and organise them into evidence using formal academic language .

Elaborate

This stage allows students to extend their conceptual understanding principles, skills, real world concepts, and by applying them into real experiences that contribute to their learning. The ESP teacher helps students deepen their understanding and facilitates discussions through alternative explanations.

Evaluate

The ESP teacher evaluates students progression; at the same time, students assess their performances regarding the earlier stages. Several types of assessment teachers can use such as tests, projects discussions, quizzes to check students understanding and reflect on the effectiveness of the lesson.

4.9.6. Benefits of Inquiry-based learning to ESP classes :

The IBL is generally driven out by students'interest and prior knowledge, this teaching/ learning approach supports realistic and relevant learning. The Center of Inspired Teaching (2008) listed many advantages to the IBL which are set as follows

- It develops 'habit of mind'.
- It fosters the acquisition of skills and knowledge.

- It equips students with the necessary needed skills to succeed in different professional contexts.
- Its instructions require students to possess prior knowledge so that to cope with diverse learning styles.

Sharing the same opinion, Arauz Escalante (2013) claimed that the IBL has the following benefits

- It gives students opportunities to choose their topics, form their own questioning then solving them.
- It develops students' metacognitive skills.
- It encourages students to use the target language in a meaningful context.
- It intensifies speaking and writing skills.

Conclusion :

To conclude, it can be mentioned that designing an adequate ESP syllabus is time-consuming and effort demanding; however, teachers or researchers, on their hand, must make efforts to overcome the hindrances and cater for the needs of their learners. To this end, the aim of this research study was to shed light on the ESP teaching learning situation at the department of biology of the University of Oran1 by exploring the obstacles that ESP teachers encounter and investigating the learners' needs. After analysing the contextualized teaching learning situation, we have provided a suitable methodology to designing an ESP syllabus which goes hand-in-hand with the needs of the learners as well as the teaching objectives. We have also prepared a sample of teaching units and ESP lectures ready for implementation. The same chapter set out an optimal teaching methodology, and proposed the inquiry learning in hope to make learners more engaged and involved. This chapter can be regarded as a roadmap for any ESP teacher willing to develop his/her own syllabus by adopting or adapting this model.

GENERAL CONCLUSION

General Conclusion

This research study investigated the English teaching situation at the department of biology and shed light on the constraints faced by teachers while teaching ESP. The exploration of the terrain has shown that there is a total absence of methodological guidance through which ESP teachers can effectively implement the technical courses. In other words, ESP teachers are deprived of a well-defined pedagogical tool that could guide and help them teach properly the module in question. Consequently and in hope of doing away with one of the many practical concerns raised by the ESP teachers, the central objective of this study is to analyse the needs of the learners at the biology department of the university of Oran 1, then propose an ESP syllabus composed of 8 teaching units and 10 lectures, and equally suggest an inquiry-based teaching pedagogy to enhance their motivation and oral performance. Actually, this research study was carried out to find out answers to three research questions that aim to unveil the obstacles faced by the ESP teachers, gauge their satisfaction or dissatisfaction with the existing syllabus, and ultimately pinpoint their suggestions and recommendations to optimise the status of English at the department of biology of the University of Oran1. To answer the aforementioned questions, quantitative and qualitative research instruments (namely students and teachers' questionnaire, teachers' interview, and classroom observation) were used, then a mixed method approach was employed to analyse the collected data. This latter was followed by a descriptive statistics, the analysis of the compiled data revealed the following results.

- ✓ Teachers assert on the necessity to have further practical training in the different sub-areas of ESP.
- ✓ Teachers need to acquire basic knowledge in science.
- ✓ Teachers stress on the need to attend seminars, workshops and conferences in ESP.
- ✓ Teachers should be equipped with the necessary teaching materials.
- ✓ Teachers have to work in collaboration with the subject specialist teachers.
- ✓ Teachers should be trained in: needs analysis, ESP course design, syllabus design, curriculum, teaching methodologies in ESP, assessment and evaluation in ESP, teaching materials in ESP.
- ✓ Teachers should be provided with textbooks and libraries.
- ✓ Teachers should be updated with recent research and scientific innovation.
- ✓ Teachers suggest increasing the weekly dose to teaching ESP, and the number of learners per group should be reduced.

In light of the stated findings, the three hypotheses of the study have been supported and the following pedagogical recommendations have been formulated. First, for the design of a language syllabus for a group of learners whether in English for general purposes or in English for specific purposes, needs analysis is imperative and should be the chief concern of the overall process of development. Needs analysis enables teachers to collect in-depth information about learners' needs, learning objectives, learning styles, and preferences. Additionally, needs in the syllabus design not only helps teachers set the objectives, but also enable them take decisions about the teaching methodology they intend to adopt.

Second, designing a syllabus must adhere to the critical pedagogical approaches to syllabus as well as curriculum design in language teaching programmes. Identifying theories and approaches to syllabus design can help teachers form a congruent philosophy and a convenient framework syllabus.

Third, the researcher is with the belief that teaching ESP is flexible; that is to say, it changes from one speciality to another, from one context to another, and from one university to another. Moreover, the review of literature posted that in ESP there is no particular teaching methodology that fits all. Thus, it follows to say that it deemed more appropriate for teachers to be updated with the latest teaching methodologies and approaches in ESP. Furthermore, teachers are required to take decisions about the best teaching strategies and techniques that guarantee learners' successful attainment of the target language.

Fourth, novice ESP teachers or language teachers who usually have a background in general English complain of lack of the subject matter knowledge and expertise in the field of technical English. Thus, lots of them encounter difficulties when designing specialized tasks for learners of different specialities. In fact, the lack of knowledge of the speciality should not be considered a barrier; instead, teachers should be responsible for the quality of knowledge they possess. And to progress professionally, many options are available; for instance, teachers can exploit and read books related to the field of expertise of students, collaborate with colleagues, or with other teachers working in other universities and institutions.

Fifth, since most of the teaching staff is not stable to work on a long term syllabus and most of the teachers have not received adequate training, ESP educational authorities should provide minimum syllabus guidelines for each speciality. The canevas provided for ESP

teachers are mostly meagre and inappropriate as it simply specifies the objectives to teaching English for biology purposes.

Sixth, the teacher-participants in this study reported the lack of ESP libraries and the resort to haphazard use of the internet materials; consequently, it deemed more appropriate to provide these teachers with a textbook designed by specialists of the field to overcome the difficulties of the documentation shortage. Additionally, it will significantly assist the teachers who are mostly trained in general English to progress along with their students in getting to grips with specialised language of each discipline.

Seventh, providing teachers with a textbook does only partly solve the problem of ESP teaching in Algerian universities. Teachers should be given a minimum of training in specialised language teaching and language programme designing. In ESP, there is no standard syllabus that fits for all; additionally, ESP course should be designed according to the contextual teaching situation and learners' speciality needs. Therefore, teachers should be trained on how to design their syllabuses or at least adapt the content provided by the Ministry of education in line with the needs of their students.

Limitations of the study

Three limitations were identified in this research work. First, when the researcher, at first sight, explored the terrain, she unexpectedly found that the number of teachers working in the department of Biology at the University of ORAN1 was insufficient to conduct the study. Thus, to provide a valid sample, teachers from neighbouring universities (i.e., University of Tiaret, University of Saida and University of Mostaganem) were also added to go beyond this burden and gather data from different universities nation-wide. Second, since it is hard to formulate one syllabus that fits all the biologists learners, our innovative syllabus was restricted to only one group of learners (i.e., Biology and vegetal physiology). As a result, another study will be required to bridge this limitation.

The last limitation was related to the time allotted for the study. At the beginning, the researcher thought that to suggest a methodology to designing an ESP syllabus and propose a syllabus model would not require much time, but in our investigation, we have noticed that the term ''syllabus' is vast because it encompasses other conceptual key aspects (i.e. needs analysis, goals and objectives, teaching materials, course design, teaching methodology, assessment and evaluation procedures). To some extent, the stated concepts can affect the

development process, thus consistency and high cautiousness, at this stage, is of utmost importance. Moreover, as time and scope of this study did not allow implementing the innovative syllabus model, we cannot state with full confidence that this framework will successfully contribute to the challenging and altering current teaching situation of English in the department of biology of the University of Oran1, but it is just one way that might help teachers modify, adapt, design or improve their syllabuses.

Further Pedagogical Implications

Despite the limitations stated earlier, it follows to say that devising a methodology and guidelines to ESP syllabus design cannot overcome all the hindrances ESP teachers encounter in this department, rather it is just one way to facilitate the task for them and not the optimal solution. Undoubtedly, the suggested syllabus model does not illustrate all the teaching contents of the module in question (i.e., language functions, linguistics items or communicative skills). As far as the inquiry teaching pedagogy proposed in this work is concerned, one may point that this teaching strategy is estimated to be at the benefit of learners, but does not ensure their progression unless applied. Thereby, it is important to conduct further studies to examine other questioning relating to the teaching of ESP in the department of biology; such questions would be for instance " to what extent could cooperation between ESP teachers, subject matter, and ESP learners contribute to the enhancement of ESP teaching learning process ?" "Can ESP teachers work without the need of textbooks?" "Are the Algerian ESP teaching courses compatible with ESP learners real-life needs?" "How could Algerian ESP teachers and experts work collaboratively using the web-based technologies?" One may add that it is high time that the Ministry of Higher Education and Scientific Research officials who are responsible of foreign languages policies in educational settings proposed effective changes to the enterprise of ESP instruction across our country.

Bibliography

Allwright, D., & Bailey, K. M. (1991). *Focus on the Language Classroom : An Introduction to Classroom Research for Language Teachers*. Cambridge University Press.

Altinyelken, H. K. (2010). Curriculum change in Uganda : Teacher perspectives on the new thematic curriculum. *International journal of educational development*, *30*(2), 151–161.

Altstaedter, L. L., & Jones, B. (2009). Motivating Students' Foreign Language and Culture Acquisition through Web-Based Inquiry. *Foreign Language Annals*, 42(4), 640-657.

Ameziane, H., & Guendouzi, A .(2005). The new approach to ELT in Algeria: What teacher profile for what purpose?', *in Proceedings of the 4th International Conference on English Language Teaching*. University of Algiers 10-12 December, 2005, pp. 15-23.Thala Editions,El Biar

Arauz, P. E. (2013). Inquiry-Based Learning in an English as a Foreign Language Class: A Proposal. *Revista de lenguas modernas*, 19(2013), 479-485. Retrieved October (2018) from : https://revistas.ucr.ac.cr/index.php/rlm/article/view/14031.

Atai, M. R. (2003). The impact of theexplicit instruction of the frequent grammatical patterns of ESM written discourse on ESP students reading comrehension. *Iranian Journal of Applied Linguistics*, 10 (1), 115- 132.

Auerbach, E. R. (1986). Competency-Based ESL : One Step Forward or Two Steps Back? *TESOL Quarterly*, *20*(3), 411-430. https://doi.org/10.2307/3586292

Bacon-Shone, J. (2013). *Introduction to Quantitative Research Methods*. UK: Graduate School, The University of Hong Kong.

Basturkmen, H. (1998). Refining Procedures: A Needs Analysis Project at Kuwait University. *In English Teaching Forum* , 36. (4) : 2-9.

Basturkmen, H. (2010). *Developing Courses in English for Specific Purposes*. Houndmills Basingstoke: Palgrave Macmillon.

Beckett, G. (2002). Teacher and student evaluations of project-based instruction. *TESL Canada journal*, 52–66.

Bell, R, T. (1989). *An Introduction to Applied Linguistics*. London: Batsford.

Bell, J. (2014). *Doing Your Research Project: A Guide for First-Time Researchers*. McGraw-Hill Education (UK).

Bencherif, M. O. (1993). Presentation of the Algerian Universities ESP Project. In *Maghreb ESP conference: Current Initiatives in ESP in the Maghreb and Future Perspectives* (pp. 12-13).

Benyelles, R. (2009). *Teaching ESP at Post Graduation Level: The Case of First Year Post Graduate Students of Economics at Abou Bekr BELKAID University-Tlemcen*. [Doctoral thesis, Abou Bekr BELKAID University-Tlemcen] Abou Bekr BELKAID University-Tlemcen.

Bocanegra-Valle, A. (2010). Evaluating and Designing Materials for the ESP Classroom. In English for professional and academic purposes. In Garrido,M.R & Gomez, I. F & Silveira, J. P. C.(2010). *English for Professional and Academic Purposes.* NY : Rodopi.

Boudersa, N. (2018). ESP Education in Algeria: A Description of the Teaching Situation Scenario with Focus on Problems, Challenges and Training. *International Arab Journal of English for Specific Purposes, 1*(2), 1-22.

Bouroumi, R. (2017). Offering the Algerian ESP Issue a Better Opportunity.*TRANS Nr.23.*

Bouyakoub, N., & Bouyacoub, M. C. (2017). The ESP Teaching and Learning Situation in the Algerian Universities with reference to Psychology Students at Tlemcen University. *International Journal of Curriculum and Instruction*, *9*(2), 217-227.

Bradburn, N, M & Sudman, S & Wansink, B. (2004*). Asking Questions. The Definitive Guide to Questionnare Design- For Market Research, Political Polls, and Health Questionnaire*. San Francisco: John Willey and Sons.

Breen, M. P., & Candlin, C. N. (1980). The essentials of a communicative curriculum in language teaching. *Applied linguistics*, *1*(2), 89–112.

Breen, M. P. (1987b). *Learner Contributions to Task Design*. In C.N. Candlin & D. E. Murphy (Eds). Language Learning Tasks. Englewood Cliffs: Prentice- Hall Int.

Brown, J., D. (1995). *The Element of Language Curriculum: A systematic Approach to Programme Development*. Boston: Heinle & Heinle Publishers.

Brown, D. (2001). *Teaching by Principles: An Interactive Approach to Language Pedagogy*. New York: Addison-Wesley.

Brown, J. D. (2016). *Introducing Needs Analysis and English for Specific Purposes.* London: Routledge.

Burton, D., & Bartlett, S. (2009). *Key Issues for Education Researchers*. London: Sage.

Bybee, R . W. (1997*). Acheiving Scientific Literacy* : *From Purposes to Practices.* Portsmouth, NH : Heinemann.

Cammarata, L. (2010). Foreign Language Teachers' Struggle to Learn Content-Based Instruction. *L2 Journal*, *2*(2010). 89-118. DOI : 10.5070/L2219063.

Carr, J., Carr, J. W., Sexton, U., & Lagunoff, R. (2007). *Making Science Accessible to English Learners: A Guidebook for Teachers*.USA: WestEd.

Carver, D. (1983). Some Propositions about ESP. *ESP Journal*, *2*(2), 131-137.

Catherine, D. (2002). Practical Research Methods. *A User Friendly Guide to Mastering Research*. UK: How To Books Ltd.

Cathcart, R. L. (1989). Authentic discourse and the survival English curriculum. *TESOL quarterly*, *23*(1), 105–126.

Center of Inspired Teaching.(2008). Inspired issue brief : Inquiry-based Teaching .Consulted on 06 October 2018, On URL http://inspiredteaching.org/wp-content/impact-rsearch-briefs-inquiry-based-teaching.pdf

Chen, Y. C. (2010). Content-Based Business English Course for EFL. *The Internet TESL Journal*, *16*(1). Retrieved from http://iteslj.org/Lessons/Chien-BusinessEnglish.html

Chen, Z. (2016). Grammar Learning Strategies Applied to ESP Teaching. *Theory and Practice in Language Studies*, *6*(3), 617-621. DOI: https://doi.org/10.17507/tpls.0603.23

Cleverly, D. (2003). *Implementing Inquiry-Based Learning in Nursing*. London: Routledge.

Cohen, L., Manion, L., & Morrison, K. (2007*). Research Methods in Education* . London and New York, NY: Routledge Falmer.

Coffey, B. (1985). ESP – English for Specific Purposes. *Language Teaching*. Cambridge: Univerity press.

Courtney, M. (1996). Talking to learn : Selecting and using peer group oral tasks. *ELT Journal*, *50*(4), 318–326.

Coxhead, A. (2013). Vocabulary and ESP. In B. Paltridge & S. Starfiekd (Eds). *The Handbook of English for Specific Purposes.* West Sussex: John Wiley & Sons app. (p. 115-132).

Creswell, J. W. (1994). *Research design : Qualitative & quantitative approaches*. Washington: SAGE Publications.

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research*. Washington: SAGE Publications.

Dakhmouche, F. R. (2008). *Meeting students' needs an analysis of ESP teaching at the departement of computer science*.[Magister thesis, Mentouri University-Constantine]. Mentouri University-Constantine

Dörnyei, Z. (2001). New themes and approaches in second language motivation research. *Annual Review of Applied Linguistics*, *21,* 43-59. https://doi.org/10.1017/S0267190501000034

Dudley-Evans, T., John, M. J. S., & John, M. J. S. (1998). *Developments in English for Specific Purposes : A Multi-Disciplinary Approach*. Cambridge: Cambridge University Press.

Ellis, M., & Johnson, C. (1994). *Teaching Business English* (Illustrated edition). Oxford: Oxford University Press.

Ellis, R. (2005). Principles of instructed language learning. *Asian EFL Journal* (1)-(16). Available on . https://doi.org/10.1016/j.system.2004.12.006

Ermawati, Yunus, N., & Pammu, A. (2015). The Implementation of Inquiry-Based Learning to Reading Comprehension of EFL Students. *International Journal of Science and Research(IJRS).Vol(6)(3)*-1067-1071.

Esteban, S. G., & Martínez, C. T. (2013). Critical reflections on teaching ESP through constructivist, communicative and collaborative technological integrated procedures. *Procedia-Social and Behavioral Sciences*, *141*, 342–346.

Feak, C. B. (2013). ESP and speaking. In B. Paltridge & S. Starfield (Eds). *The handbook of English for specific purposes*. West Sussex : John Wiley & Sons. pp. (35)(55).

Ferris, D. (1998). Students' Views of Academic Aural/Oral Skills : A Comparative Needs Analysis. *TESOL Quarterly*, *32*(2), 289. https://doi.org/10.2307/3587585

Ferris, D., & Hedgcock, J. (2013). *Teaching L2 composition : Purpose, process, and practice* (Third Edition). Routledge, Taylor & Francis Group.

Flognfeldt, M. (2016). Professional Feedback Loop : How Can Practising Teachers' Reflection Inform English Language Teacher Education? *Acda Didactica Norge*, *10*, 252-270. https://doi.org/10.5617/adno.2515

Gay, L. R., & Mills, G. E. (2003). *Educational Research: Competencies for Analysis and Applications.* New Jersey: Macmillan Publishing Company.

Gaye, A. (2020). Implications of current research in ESP for ESL/ESP teacher training. *English for specific purposes instruction and research*, 203–225.

Ghafournia, N., & Sabet, S. A. (2014). The Most Prominent Roles of an ESP Teacher. *International Education Studies*, *7*(11), 1-9.

Graddol, D. (2006). *English next* . London: British Council.

Graves, K. (1996). *Teachers as Course Developers*.Cambridge: Cambridge University Press.

Goh,C.C. (2013). ESP and Listening. In B. Paltridge & S. Starfield (Eds.), *The handbook of English for specific purposes*. West Sussex : John Wiley & Sons (pp 55.76).

Harding, K. (2007). *English for specific purposes*. Oxford: Oxford University Press.

Harmer, J. (1998). *Haw to teach English*. Harlow: Longman.

Harmer, J. (2001). *The practice of English language teaching*. London: Longman.

Harrison, H., Birks, M., Franklin, R., & Mills, J. (2017). Case Study Research : Foundations and Methodological Orientations. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, *18*(1), Article 1. https://doi.org/10.17169/fqs-18.1.2655

Hemche-Bereksi Reguig, H. (2015). *A Comparative Study of Teaching ESP in the LMD System in Algerian and French Universities: The Case of the Faculties of Sciences in Tlemcen and Paris-Sud Universities* [Doctoral thesis, Abou Bekr BELKAID University- Tlemcen]. Abou Bekr BELKAID University- Tlemcen

Hutchinson, T., & Waters, A. (1987). *English for Specific Purposes* (1re éd.). UK :Cambridge University Press. https://doi.org/10.1017/CBO9780511733031

Hyland, K. (2006). *English for academic purposes.* New York : Routledge.

Ismail, N., & Elias, S. (2006). *Inquiry-Based Learning : An Innovative Teaching Method Article. English Language Journal (2006) Vol. 2 (1): 13-24. UPSI Malaysia*.

Javis, C. Z., Farooq, M. U., & Umer, M. (2013). An investigation of the Saudi EFL Learners'Writing Problems : A case Study along Gender-Lines. *Kashmir Journal of Languages Research*, 16 (1),179. https://www.academia.edu/8519164/An_Investigation_of_Saudi_EFL_learners_Writing_Problems_A_Case_Study_along_Gender_lines

Jureckov, A. (1998). Toward More Reality and Realism in ESP Syllabuses. *Forum*, *36*(2): 43-44 .

Kahn, P., & O'Rourke, K. (2005). Understanding Enquiry-Based Learning. In T. Barrett, I. Mac Labhrainn, & H. Fallon (Eds.), *Handbook of Enquiry and Problem-Based Learning (*pp. 1–12). Galway, Ireland: CELT.

Kavlu, A. (2017). Implementation of Project Based Learning (PBL) in EFL (English as a Foreign Language) Classrooms in Fezalar Educational Institutions (Iraq). *International Journal of Social Sciences & Educational Studies*, *4*(2), 67-79. DOI: 10.23918/ijsses.v4i2sip67.

Kennedy, C., & Bolitho, R. (1984*). English for Specific Purposes.* London: Macmillan Press LTD.

Kırkgöz, Y., & Dikilitaş, K. (2018). Recent Developments in ESP/EAP/EMI Contexts. In Y. Kırkgöz & K. Dikilitaş (Éds.), *Key Issues in English for Specific Purposes in Higher Education* (Vol. 11, p. 1-10). Springer International Publishing. https://doi.org/10.1007/978-3-319-70214-8_1

Kothari, C. R. (2004). *Research methodology : Methods & techniques* (2nd rev. ed). Nex Delhey: New Age International (P) Ltd.

Lawton, D. (1983). *Curriculum studies and educational planning*. Hodder and Stoughton.

Lee, H.-Y. (2014). Inquiry-based Teaching in Second and Foreign Language Pedagogy. *Journal of Language Teaching and Research*, *5*(6), 1236-1244. https://doi.org/10.4304/jltr.5.6.1236-1244.

Likaj, M. (2015). Teaching Listening as a Communicative Skill in Military English. *Journal of Education and Practice*, *6*(24), 64-70. Retrieved from https://files.eric.ed.gov/fulltext/EJ1078858.pdf.

Littlewood, W. (1981). *Communicative Language Teaching: An Introduction*. Cambridge University Press.

Long, M.H. & Crookes, G. (1993). Unitis of Analysis in Syllabus Design: the case for the task. In G.Crookes & S.M. Gass (Eds). *Tasks in a Pedagogical Context*. Cleveland, UK: Multilingual Matters.9-44.

Lorenzo, F. (2005). Teaching English for Specific Purposes. *(ESP) UsingEnglish.com*. (s. d.). Retrieved October (2018) from https://www.usingenglish.com/articles/teaching-english-for-specific-purposes-esp.html.

Macalister, J., & Nation, I. S. P. (2020). *Language curriculum design* (Second edition). New York: Routledge.

Mack, N., Woodsong, C., Macqueen, K., Guest, G., & Namey, E. (2005). *Qualitative Research Methods* : A Data Collector's Field Guide. USA:USAID.

Mackay, R. & Mountford, A. (1978). *English For Specific Pursposes: A case Study Approach*. London: Longman.

Mackey, A., & Gass, S. M. (2015). *Second Language Research : Methodology and Design* (2e éd.). Routledge. https://doi.org/10.4324/9781315750606

Markee, N. (1997). *Managing Curricular Innovation*. Cambridge: Cambridge University Press.

Mauranen, A., Hynninen, N., & Ranta, E. (2010). English as an academic lingua franca : The ELFA project. *English for Specific Purposes - ENGL SPECIF PURP*, *29*, 183-190. https://doi.org/10.1016/j.esp.2009.10.001

Mbarushimana, N., & Allida, D. (2020). Curriculum change and teacher participation in technical and vocational education training programs (TVET) : Experiences of Groupe Scolaire Aiper Nyandungu, Rwanda. *Education, 2021*.

McDonough, J. (1984). *ESP in perspective : A practical guide*. Collins ELT.

Mebitil, N. (2011). *An exploration of the main difficulties, challenges and requirements of the ESP teaching situation in Algeria: The case of ESP teachers at Abou Bekr Belkaid University, Tlemcen*. [Doctoral thesis, Abo Bekr BELKAID University- Tlemcen]. Abo Bekr BELKAID University- Tlemcen.

Mebitil, N. (2014). Teaching EST in Algeria : Training or Retraining Language Teachers? *Mediterranean Journal of Social Sciences*. https://doi.org/10.5901/mjss.2014.v5n20p2381

Meziane, M., & Mahi, B. (2010). *The LMD Higher Education System in the Maghreb Countries : The Example of Algeria*. 13.

Mills, G. E., & Gay, L. R. (2019). *Educational research : Competencies for analysis and applications* (Twelfth edition). Pearson.

Mohsen-Alwadi, H.(2018). *Supporting EFL Students' Learning of Theoretical English–Content Through Using an Inquiry-Based Teaching Techniques. English Language Teaching,Vol .11, No.8, p .73-85.* Consulted on 09 November 2018, On URLhttps://www.semanticscholar.org/paper/Supporting-EFL-Students-%E2%80%99-Learning-of-Theoretical-Al Wadi/9878db1d223036ef9356b774adb036f02ed0c934

Mouton, J. (2001). *How to succeed in your master's and doctoral studies : A South African guide and resource book*. Van Schaik.

Mukalel, J. C. (2007). *Approaches to English language teaching*. Discovery Publishing House.

Munby, J. (1978). *Communicative syllabus design : A sociolinguistic model for defining the content of purpose-specific language programmes*. UK: Cambridge University Press.

Nunan, D. (1989). *Designing tasks for the communicative classroom*. UK: Cambridge University Press.

Nunan, D .(1988). *Syllabus Design*. Oxford,UK : Oxford University Press.

Nunan, D. (1991). *Language Teaching Methodology*. New York: Prentice Hall.

Paltridge, B., & Starfield, S. (2013). *The handbook of English for specific purposes*. West Sussex: John Wiley & Sons Inc. http://www.credoreference.com/book/wileyhensp

Pettinari, C. (1982). The function of a grammatical alternation in 14 surgical reports. In *Linguistics and Literacy* (pp. 145-185). Springer, Boston, MA.

Pettinari, C. (1982). The Function of a Grammatical Alternation in 14 Surgical Reports. In Frawley,W. (Eds) . Linguistics and Literacy. Boston: Springer. (pp. 55-76).

Phillips, P. P., & Stawarski, C. A. (2008). *Data collection : Planning for and collecting all types of data* (Vol. 175). John Wiley & Sons. Prabhu, N. S. (1990). There is no best method—Why? *Tesol quarterly*, *24*(2), 161–176.

Prabhu, N. S. (1990). There is no best method—Why?. *Tesol quarterly*, *24*(2), 161-176.

Print, M. (1993). *Curriculum development and design* (2nd ed). Allen & Unwin.

Qi, S. (2009). Case study in contemporary educational research : Conceptualization and critique. *Cross-cultural communication*, *5*(4), 21–31. Richards, J. C. (1983). Listening Comprehension : Approach, Design, Procedure. *TESOL Quarterly*, *17*(2), 219. https://doi.org/10.2307/3586651

Richards, J. C. (1983). Listening comprehension: Approach, design, procedure.TESOL quarterly, 17(2).219- 39. Retrieved from http://onlinelibrary.wiley.com/doi/abs/10.2307/3586651.

Richards, J. C. (2001). *Curriculum development in language teaching*. United Kingdom : Cambridge University Press.

Richards, J. C. (2005). Second thoughts on teaching listening. *RELC journal*, *36*(1), 85–92.

Richards, J. C., & Farrell, T. S. C. (2005). *Professional Development for Language Teachers : Strategies for Teacher Learning*. Cambridge University Press. https://doi.org/10.1017/CBO9780511667237

Richards, J. C. (2006). *Communicative language teaching today*. SEAMEO Regional Language Centre Singapore.

Richards, J. C. (2006). Materials development and research—Making the connection. *Relc Journal*, *37*(1), 5–26.

Richards,J, C . & Schmidt,R . (2010). *Longman Dictionary of Language Teaching and Applied Linguistics*. London : Pearson Education .

Richards, J. C., & Schmidt, R. W. (2013). *Longman dictionary of language teaching and applied linguistics*. Routledge.

Richards, J. C., & Rodgers, T. S. (2014). *Approaches and methods in language teaching*. Cambridge university press.

Richterich, R., & Chancerel, J.-L. (1980). *Identifying the Needs of Adults Learning a Foreign Language.* Oxford: Pergamon Press.

Robinson, P. C. (1991). *ESP today : A practitioner's guide*. New York: Prentice Hall.

Robson, C. (2002). *Real world research : A resource for users of social research methods in applied settings* (3. ed). Wiley.

Rus, D. (2020). Creative Methodologies in Teaching English for Engineering Students. *Procedia Manufacturing*, *46*, 337-343. https://doi.org/10.1016/j.promfg.2020.03.049

Schleppegrell, M. (1986). *ESP, Teaching English for Specific Purposes*. Peace Corps, Information Collection & Exchange. Retrieved from https://www.academia.edu/27366496/ESP_Teaching_English_for_Specific_Purposes.

Schwarzer, D., & Luke, C. (2017). Inquiry Cycles in a Whole Language Foreign Language Class : Some Theoretical and Practical Insights. *Texas Papers in Foreign Language Education*, *6*(1), 83–99

Sheldon, L. E. (1988). Evaluating ELT textbooks and materials. *ELT journal*, *42*(4), 237–246.

Smoak, R. (2003). *What is English for specific purposes*. In *English Teaching Forum*,Vol.41,No.2,pp.22-27.RetrievedOctober(2018)from https://americanenglish.state.gov/files/ae/resource_files/03-41-2-g.pdf

Strevens, P. (1988b). *The Learner and Teacher of ESP.* In Chamberlain, D.&, Baumgardner,R;, (red.) ESP in the Classroom: Practice and Evaluation. London: Modern English Publications in association with the British Council, 39-44.

Swales, J. (1985). *Episodes in ESP : A source and reference book on the development of English for science and technology* (1. ed). New York: Prentice Hall.

Thornbury, S. (2005). *How to teach speaking*. Longman: Pearson Education Limited.

Tomlinson, B. (2007). *Developing materials for language teaching*. London: A&C Black.

Ur, P. (1991). *A course in language teaching : Practice and theory*. Cambridge University Press.

Oran1University.(2019,December9).InWikipedea.Fromhttps://en.wikipedea.org/wiki/Oran1University

Van der Yeught, M. (2016). Developing English for Specific Purposes (ESP) in Europe:mainstream approaches and complementary advances. *13th ESSE Conference*. https://hal.archives-ouvertes.fr/hal-01395758

Waters, A. (1993) 'ESP___ Things Fall Apart?'*A Paper presented at the RELC Regional Seminar* (Singapore, April 19-21).

White, R. V. (1988). *The ELT curriculum : Design, innovation, and management*. Oxford: Blackwell.

Wiersman, W. (1995). Research Methods in Education. Boston: Allyn and Bacon

Wilkins, D. A. (1974). I Notional Syllabuses Revisited1. *Applied Linguistics*, *II*(1), 83-89. https://doi.org/10.1093/applin/II.1.83

Wilkins, D. A. (1976). *Notional syllabuses : A taxonomy and its relevance to foreign language curriculum development*. Oxford University Press.

Wright, C. (1992). *The Benefits of ESP*. Cambridge Language Consultants. 5(1992).Retreived from www.camalang.com/art001.htm

Xhaferi, B. (2009). Teaching and learnig ESP vocabulary. *LFE: Revista de lenguas para fines específicos*, *15*, 229–255.

Yalden, J. (1987). The Communicative Syllabus : Evolution. *Design and*. London: Prentice-Hall International

Yassi, A, H. & Kaharuddin, A. (2018). *Syllabus Design for English Language Teaching*.Indonesia: Prenada Media Group.

Yilmaz, K. (2013). Comparison of Quantitative and Qualitative Research Traditions : Epistemological, theoretical, and methodological differences: European Journal of Education. *European Journal of Education*, *48*(2), 311-325. https://doi.org/10.1111/ejed.12014

Yi-Lee, H.(2014). Inquiry-Based Teaching in Second and Foreign Language Pedagogy. *Journal of Language Teaching and Research*,Vol(5)(6),1236-1244.

Yin, R. K. (1984). *Case study research : Design and methods*. Sage Publications.

Yundayani, A. (2018). Present situation analysis: Students' early characteristics in writing for academic purposes. *English Review: Journal of English Education*, *6*(2), 119–126.

Zaghar, F. (2007). *Learners'Attitudes in an ESP Environment: Case of 3 Year Biology Students at the University of ORAN*. [Magister thesis, Mohamed BEN AHMED University-Oran2] Mohamed BEN AHMED University-Oran2.

Zhang, J. (2013). The ESP Instruction : A Study Based on the Pattern of Autonomous Inquiry. *English Language Teaching*, *6*(3), p72. https://doi.org/10.5539/elt.v6n3p72

Appendices

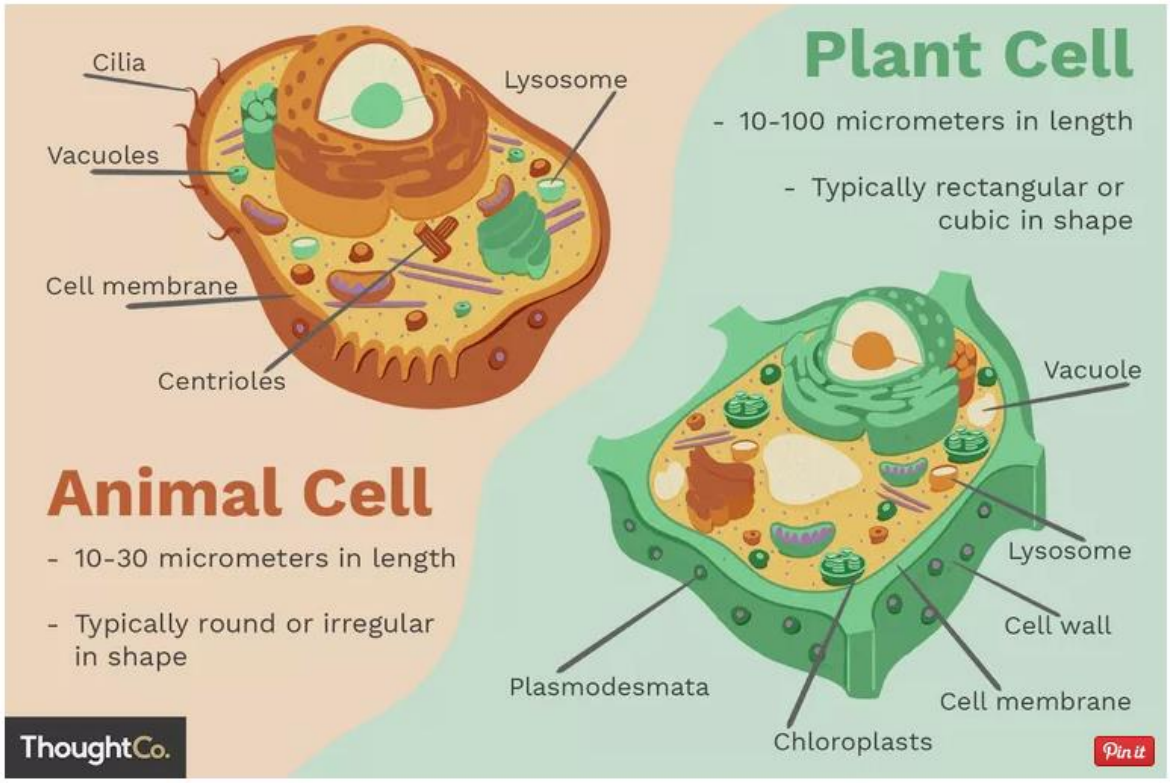
Appendix A

Samples of ESP lectures for the target group of learners

Unit One: Cells Structure and Functions

Lecture 1

Task one: observe the pictures then answer the questions



Task Two

Listen to the tape record then answer the questions (take notes while listening) :

Video record from : https://www.youtube.com/watch?v=XOdK3De8f60

1. Name three items that you would find in a plant cell and that you would not find in an animal cell.

   .....

2. What are their functions ?

   .....

Task Three

Answer the following sentences by putting the right label:

1. What 'N' controls all the activities of the cell?.....
2. What 'C' contains a coloured pigment? .....
3. What 'V' helps to give a plant cell its shape? .....
4. What 'C' is where most of the chemical reactions in a cell occur? .....
5. What 'C W' gives the plant cell rigidity? .....
6. What 'C M' controls what enters and leaves a cell? .....
7. What 'M' is where respiration occurs? .....
8. Look at your answers to questions 1-7, which four structures are found in both plant and animal cells?

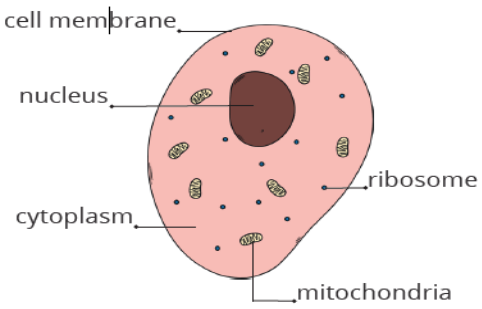
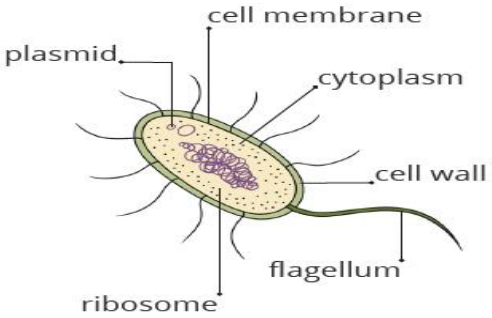
   .....

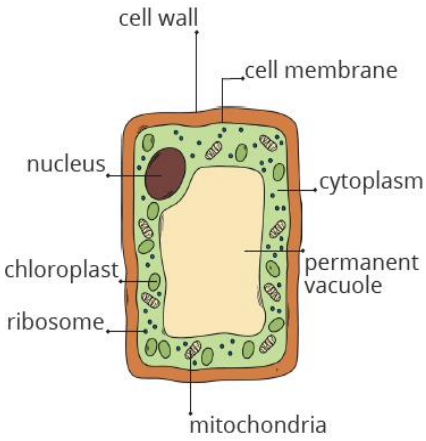
Lecture 2

Task one

Spot the mistake (work in pair)

Read the description of each student of a cell. Spot the mistake in their descriptions , then rewrite the description correctly .

Jihad is describing an animal cell. She says that: it have a central nucleus in the cytoplasm and is surounded by a cell mambrance and cell wall.	
Mohammed is describing a bacterial cell. He says that : it has a central nucleus in the cytoplasm and is surrounded by a cell membrance and cell wall. It can also contains plasmids and has a flagellum.	

Rima is describing a plant cell, she says that : it has a central nucleus in the cytoplasm, a large permanent vacuole,mitochondria and ribosomes. The cell is only surrounded by a cell wall.	

Task Two

Draw an animal cell then label its components.	Draw a plant cell then label its components.

Task Three

Complete the sentences using the given prepositions : and , in, out, with

1. I control the cells activities. (.....)
2. I allow substances to move in and..... of the cell .(.....)
3. Chemical reactions occur .... here. .(.....)..
4. I am involved ..... respiration and provide cells with energy. .(.....).
5. I am only found in a plant cell **.....**contain cellulose. (.....)

Lecture Three

Text

Cell, in **biology**, the basic membrane-bound unit that contains the fundamental molecules of life and of which all living things are composed. A single cell is often a complete organism in itself, such as a **bacterium** or **yeast**. Other cells acquire specialized functions as they mature. These cells cooperate with other specialized cells and become the building blocks of large multicellular organisms, such as humans and other **animals**. Although cells are much larger than **atoms**, they are still very small. (Bruce M. Alberts et al, 2020, from Encyclopedea Britannica)

Specialised cells have a **specific role** to perform. Each specialised cell has a different job to do. They have **special features** that allow them to do these jobs. Muscle cells, for example, are held together in bundles, which pull together to make muscles contract. Most cells share features such as having a nucleus, a cell membrane, cytoplasm and mitochondria. There are differences between cells, too. Each type of cell, has its own job to do. These cells have special features that allow them to perform their functions effectively. Here are some examples of specialised cells and the features they have to help them with their role

Red blood cells carry oxygen around the body. They are well suited to this function because, they contain haemoglobin, which carries oxygen molecules. They don't have a nucleus, allowing more space to carry oxygen. They are a flat disc shape (bi-concave) which gives them a large surface area, and the best chance of absorbing as much oxygen as they can

Nerve cells transmit electrical signals. They are well suited to their function because: They are thin, and can be more than 1 metre long. This means they can carry messages up and down the body over large distances. Nerve cells have branched connections at each end. These join to other nerve cells, allowing them to pass messages around the body.They have a fatty (myelin) sheath that surrounds them. The fatty sheath increases the speed at which the message can travel.

Muscle cells bring parts of the body closer together. They are well suited to this function because: Muscle cells are held together in bundles, which pull together to make muscles contract (get shorter and fatter).There are different types of muscle cell, each perfectly adapted to its function: **Cardiac** (heart) muscle cells are branched, and they join together to make a net. Cardiac muscle cells contract rhythmically, even outside the body. They never get tired. **Skeletal** muscle is joined to bones. Its cells contract to make bones move and joints bend. **Smooth** muscle cells make up thin sheets of muscle, such as the stomach lining. They can also be arranged in bundles, or rings, like that in the anus.

From : https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/zfj3rwx ,
https://www.britannica.com/science/cell-biology/Coupled-chemical-reactions

Task One (oral practice)

1) Read the text then suggest a title

.....

2) Tick on each row to show whether the statement are true or false

Sentences	**True**	**False**
-A single cell is not a complete organism**.**		
- Nerve cells can carry messages up and down the body over large distances.		
-All cells have a nucleus and mitochondria.		

- Muscle cells make parts of the body closer together.		

3) What do the following words refer to in the text ?

These cells (§ 1) .....

They (§2) .....

Which (§ 3) .....

These (§3) .....

4) Read the text then fill in the table

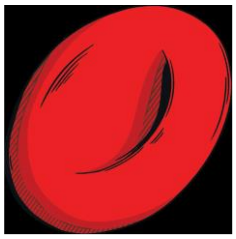
Noun	**Verb**	**Adjective**	**Adverb**
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

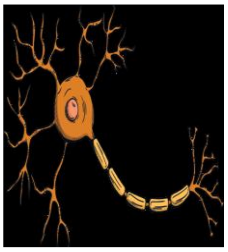
Lecture Four

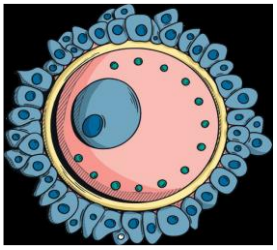
Task one

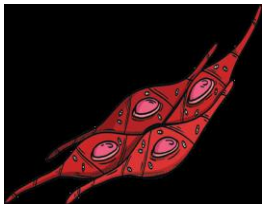
Using the names from the box below name the specialised animal and plant cells

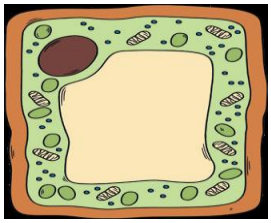
Palisade cell , white blood , cell muscle, root hair cell, nerve cell , egg cell, ciliated epithelial cell

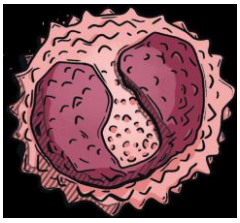


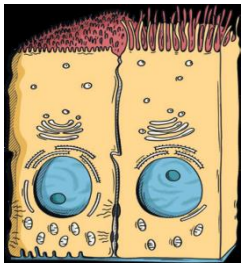


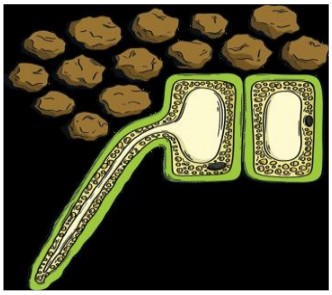






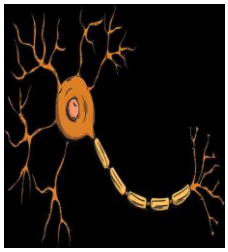


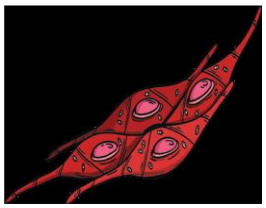
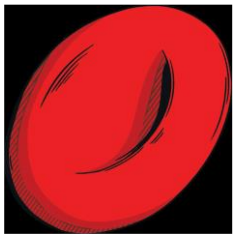
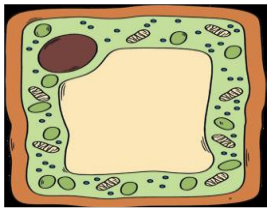
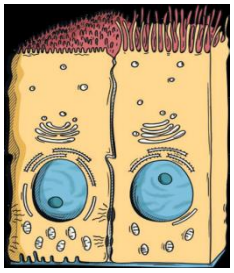
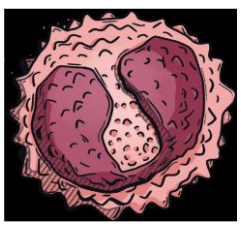


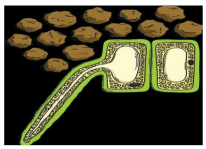


Task Two

Working in small groups, fill in the table below

Diagram	Cell name	Functions
		

Task Four

Put the verb between ( ) into the correct form :

1. Red blood cells .....(not to have) a nucleus.
2. Nerve cells ..... (to transmit) messages around the body.
3. Root hair cells .....(to find) on your head.
4. Lots of egg cells ..... (to realise) each month.
5. Palisade cells ..... (to contain) lots of chloroplasts.

Task Five (giving handouts to the students)

Word search

In the word search below are the names of four specialised cells, three prepositions, one adjective and three verbs. Find them and write their names in below

i i e l e o i c p g r a s t

h l n p i l e c e p o i d i t

e a e a i t g o h o t s t o e

a g i c n s k d t l e a f t s

n t h r e m s h t s t o e t s

o u h d d v a t n e w a d a d

a e i w e i r e n g t t e e h

b e e e r l l e c m r e p s e

n e e c i d o r n n c w h e t

l l e c d o o l b d e r t n i

e l l i u h n e i d a r e i w

l n f p d r e a p g r n l i e

l l e c e d a s i l a p w t i

r e t e a e a c a w i s l n e

k s r l e d a s a w e m e n n

.....cell **..... cell**

..... cell **..... cell**

Prepositions .... Adjectives ..... Verbs .....

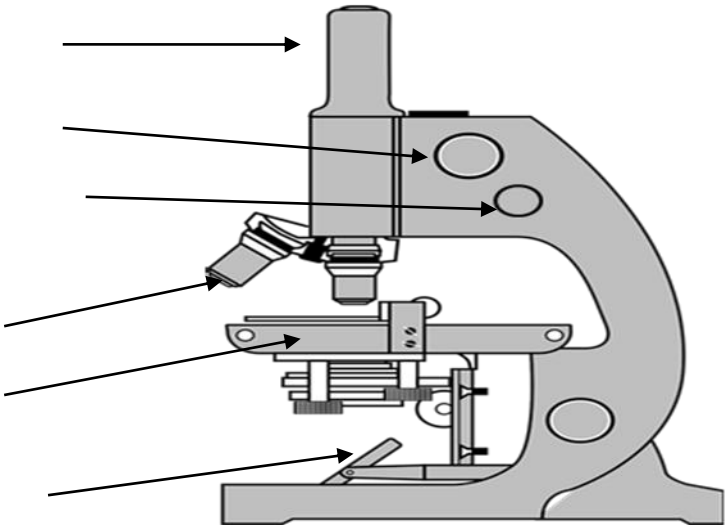
Unit Two :

Aim of the unit:

Lecture Five

Task One: Label the parts of the microscope.

Slide, fine focus, mirror, stage, eye piece lens, objective lens.



Task Tow

The scientific method is a process in which experimental observation are used to answer a question. Complete the collocations for describing the stages in a scientific a method

Conclusions a hypothesis the question an experiment data

Draw .... **Analyse .....**

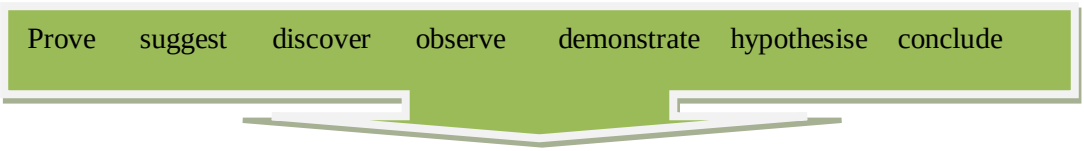
Interpret ..... **Conduct .....**

Form ..... **Define .....**

Design ..... **Collect.....**

Task Three

Fill in the blanks with the right reporting verbs that researchers use in their citations :



..... : to watch something happens, then record it .

.....: to decide something after thinking about it carefully.

..... or ..... : to use an experiment to show that something is true.

.....and .....: to give a possible explanation of something that has not been proved.

..... : to find or learn information , especially when it is new.

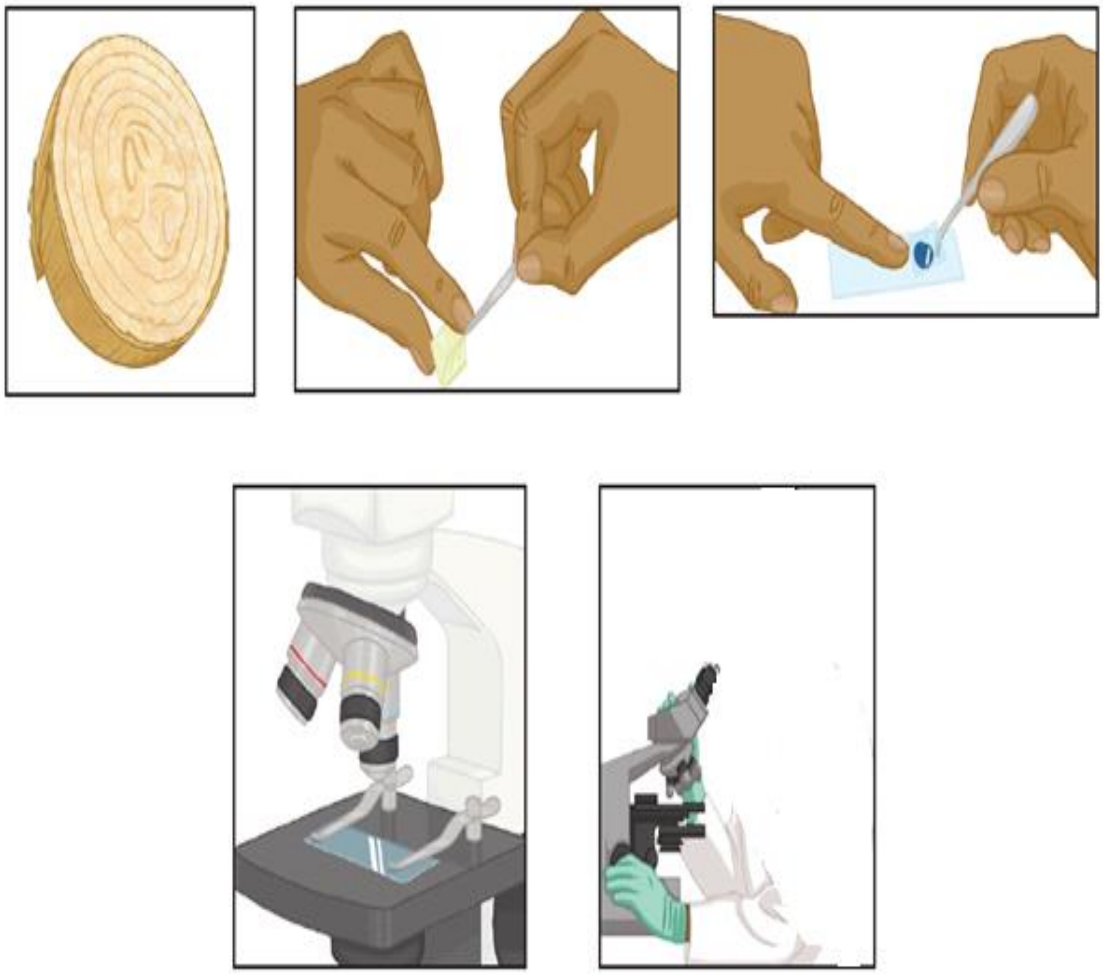
Task Four

Verb	**Noun**	**Adjective**	**Adverb**
Observe	....	.....	.....
Hypothesize	....	.....	.....
Demonstrate	....	.....	.....
Conclude	.....	.....	.....
Discover	.....	.....	.....

Lecture Six

Task One: this activity could be done individually or in pairs

- ❖ Preparing stained onion cells for a microscope slide.



Observing a cell of a plant

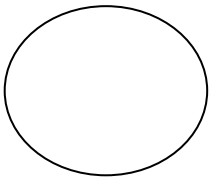
In pairs, examine the previous experiment then fill the table in below :

Aim	
Apparatus	
Method to prepare an onion cell	
Method to view the cell through microscope	
Risk assessment	**Emergency procedures**

Lecture Seven

Task One

Use a pencil and draw what you have observed in the microscope in the following circle :



- Label the different parts that you see in the cell

.....

Task Two (oral practice)

Answer the following questions:

- Which organelles can you identify on the cell?

.....

- Which organelles did you expect to see but you cannot?

.....

- Why is it important to start your observations using the microscope on the lowest magnification setting ?

.....

Task Three

Linking sentences

Describe how you would prepare an onion slide using the following words

In the first place, and, cover slip, then, tweezers, after that,

next, onion epidermis, iodine, spread into , finally, microscope slide, add, 2 drops .

.....

.....

.....

.....

.....

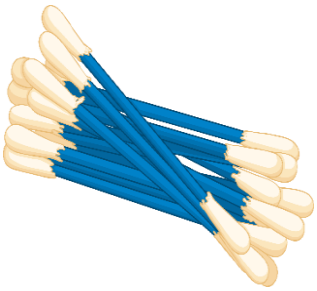
.....

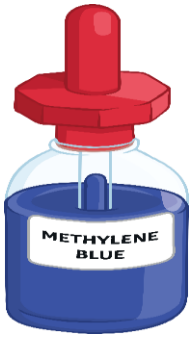
.....

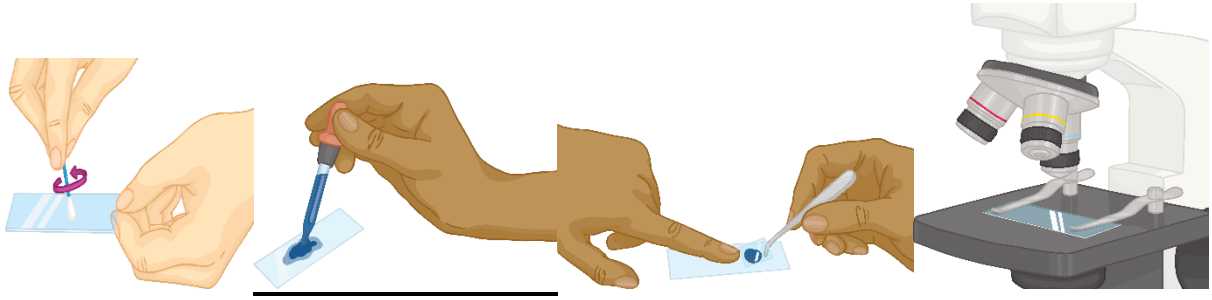
Lecture Eight

Task one

Observing an animal cell







Task one (oral practice)

What is the experiment presented in the pictures ?

.....

In pairs , describe how would you proceed this investigation

The method

- 1
  .....
- 2
  .....
- 3

- 4
  .....
- 5
  .....
- 6
  .....

Which organelles can you identify in the cell ?

.....

Task Tow

Use the boxes below and draw your observation of the cells in the two previous experiments (plant and human cell)

Task Three

Comparative and superlative

Underline the sentences that express comparison and circle the ones that express superlative

- Plant cells can be larger than animal cells.

- Chloroplasts, however, contain a third membrane and are generally larger than mitochondria.

- Red blood cells are a flat disc shape (bi-concave) which gives them a large surface area, and the best chance of absorbing as much oxygen as they can.

- Cells are much larger than atoms.

- Vacuole is the biggest organelle in plant cells.

- Golgi has more complex functions than the stomata.

- The nucleus controls the most important processes that take place inside the cell.

Task Three

Compare and contrast the two cells types ,

Cells	**Animal cells and Plant cells**
Similarities	
Differences	

Task Four

Extending sentences

The plant and animal cells are similar **because**

.....

.....

.....

The animal and the plant cells are different **because** the plant

.....

but the animal cell

.....

.....

.....

Unit Three :

Aim of the unit :

Lecture Nine

Task One (oral practice)

Listen and watch the video record then complete then answer orally the questions

- Give your definition of a leaf **?**

.....

- How do plants make their own foods ? How do we name this scientific function ?

.....

- Label the item involved in this function ?

.....

Task Two

Here are some words linked to photosynthesis but they have become scrambled. unscramble them then write them in the table below:

tohpoynseshsit	gxoyne	nhigltsu	lclhrohoylp
Afel	soecugl	trewa	

How many syllables are there in each word :

One syllable	Two Syllables	Three syllables	More than three syllables

Task Three Listen to the teacher reading the text then complete the task

Fill in the gaps with words from the text that you have listened to

- All living things need e_ _ _ _ _. Animals e _ _ plants or other animals but p_ _ _ _ _ feed in a different way.

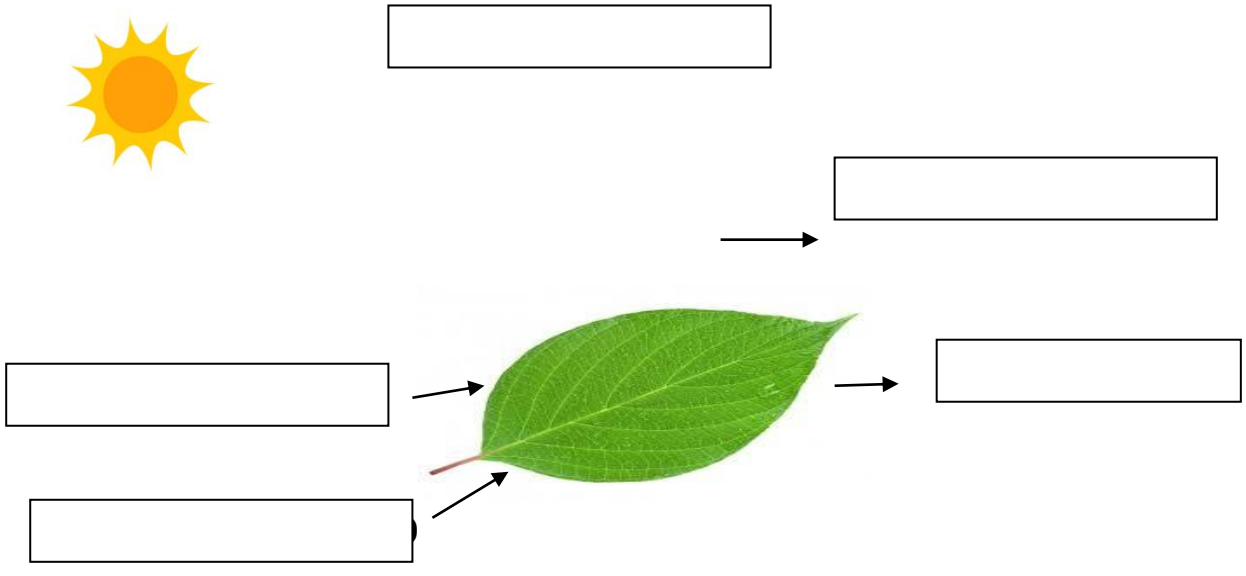
- Green plants can make their own food so we call them p_ _ _ _ _ _ _ _. They make their own food by the process of p _ _ _ _ _ _ _ _ _ _ _ _ _ _.

- To make their own food plants need to absorb s_ _ _ _ _ _ to make g _ _ _ _ _ _ from w _ _ _ _ and c _ _ _ _ _ d _ _ _ _ _ _. During this process a waste gas is also produced that is very useful to plants and animals for respiration. This is called o _ _ _ _ _.

- It is in the l _ _ _ _ _ that most photosynthesis takes place. This is because there are lots of chloroplasts here that contain c _ _ _ _ _ _ _ _ _ _. This is the chemical that makes the plant g _ _ _ _. This chemical traps energy from the s _ _ for photosynthesis.

Task Four

Use your knowledge to add labels to the diagram below showing the reactants and products of photosynthesis.



Complete the following dialogue then **practice** with your friend

Student A : What is the function of chlorophyll in photosynthesis?

Student B : .....

Student A: What are the two gases involved in photosynthesis? Which is a reactant and which is a product of photosynthesis?

Student B: .....

Student A : How does the plant absorb water?

Student B : .....

Student A :Do you think a mushroom can photosynthesise?

Student B :.....

.....

Student A: Explain how the sun provides energy for both plants and animals.

.....

.....

Task six

Read then answer the questions.

Text

An experiment to investigate the effect of light on photosynthesis

Two similar green plants are used in this experiment. One plant (B) is kept in the dark for several days. The other plant (A) is exposed to sunlight for the same period. Both plans are kept at the same temperature and watered daily. The leaves of both plants are then tested for starch.

It can be observed that the leaves of plant B do not contain starch, whereas starch is still present in plant A. We can conclude that the plant which was kept in the dark was unable to

produce starch. The reason for that energy from sunlight is necessary for photosynthesis. During photosynthesis starch is produced in the leaves of plants.

Text Taken from ‘’English for specific purposes’’ by Kennedy and Bolitho page 98

Read the text then answer the following questions:

- What plant is used as a control ?

.....

- Do plant A and plan B go through the same conditions ?

.....

- What conditions are the same and what are not ?

.....

- What is observed after the experiment is done ?

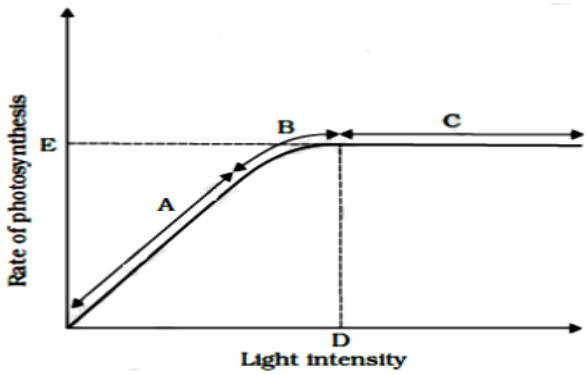
.....

- What is your conclusion of this experiment?

.....

Reporting on an experiment:

Study the figure below which represents ‘‘**The effect of light** on **the rate of photosynthesis**’’



Write a short report of the visual data, placing the sentences with the following headings

Purpose of the study

……

Description of apparatus

……
……
……
……

Procedure of the study

……
……
……
……

observation of results,

……
……
……
……

conclusion,explanation.

……
……
……
……
……

Appendix B

Students' questionnaire

Dear students

This questionnaire aims at exploring ''**ESP syllabuses**'' at the department of biology of the University of Oran1. Your contribution is anonymous and confidential.

Keyword (ESP refers to English for specific purposes)

Part A : Students' Profile and Language Background

Section 1 : Personal information **(put a tick (✓) in the appropriate box)**

1.Student level : Second year ☐ Third year ☐

2.Gender : Male ☐ Female ☐

3.Field of specialty :.....

Section 2 : Language Needs (put a tick (✓) in the Appropriate Box

4 .How long have you been studying English ? .....in years

5. How can you describe your language level?

- Beginner ☐
- Intermediate ☐
- Upper -Intermediate ☐

6. Do you think it is necessary to learn English? Yes ☐ No ☐

7. If yes please, specify why?

.....

Section 3 : Learning purposes

8.Why do you want to learn English ? **Put a tick (✓) in the right box , you can choose more than one answer** .

- To apply for specific jobs ☐
- To carry out research ☐
- To read a paper and take part in conferences ☐

- To write articles, and to read journals and books of biology in English ☐

9 .Other , please specify

.....

10.For what purposes do you need English mostly ?

- For your post -graduation ☐
- For employment opportunities ☐

11. Other, specify

.....

Section 4 : Language Skills to be Improved

12.Please rate your current ability of the following **(put a tick (✓) in the appropriate column)**

	Very poor	**Poor**	**Good**	**Very good**
Listening				
Speaking				
Reading				
Writing				
Vocabulary				
Grammar				
Pronunciation				

13.Other, please specify.....

14. What types of difficulties do you face in grammar courses ?

- Wrong verb tenses and forms ☐
- Adverbs and adverbial phrases ☐
- Misuse of articles ☐
- Active and passive forms ☐
- Misuse of connectors ☐

15 . Other, please specify.....

16 : According to your needs, what are the skills that you would like to improve ?

Listening ☐

Speaking ☐

Reading ☐

Writing ☐

Part B : ESP Teaching Situation

<u>Section 5</u> : Attitudes Towards the Current ESP Courses (put a tick (✓) in the appropriate column)

17.Have you been asked at the beginning of the year about your ESP needs ?

Yes ☐ No ☐

18 .If yes , please explain

.....

19.Do you think that the current ESP courses satisfy your needs ? yes ☐ No ☐

20. If not , please what can you propose ?

.....

21.What are the advantages and the disadvantages of the current ESP courses ?

.....

22.Do you think the current ESP courses are useful for your English language skills improvement ? Yes ☐ No ☐

23.Do you think the current ESP courses are in need of any of the following processes

- Partial Revision of some courses . ☐
- Total changing and replacing with a better one ☐

24 .Others ? specify

.....

25. Do you this the current teaching methodology adopted in the ESP courses is

Motivational ☐

☐

Satisfactory to all my needs

Ineffective or Weak or inadequate ☐

Part C : Learning Suggestions and Recommendations

Section 6 : Learning needs

26. How can you rate your current content knowledge in your specialty?

Not much ☐ basic knowledge ☐ ☐ very much

27.Do you think learning English using science is important in your field ? Yes☐ No ☐

28. Specify why ?

.....

29.Suggest some important topics that you would like to see in your ESP courses

....
.....

30.How do you rate the importance of English in the following language functions in your biology field ?**(put a tick (✓) in the right column) .....or Comment on the following statements**

Language function	Very important	Important	slightly Important	Not important
.Describing a procedure of an experiment in English				
.Interpreting results of a scientific investigation in English				
.Making hypothesis of a scientific enquiry in English				
.Using tables and diagrams and summarizing data in English				
.Understanding charts and verbalizing numbers in English				
.Giving instructions or directions in English				
.Solving problems and puzzles of scientific tasks and formulating reports about them in English .				
.Asking and giving information in English.				
.Mastery of science terms and vocabulary in English .				
. Learning from real-life tasks				
Others (specify and rate)				

31.Do you like learning by using (you can choose more than one answer)

Videos tapes ☐ CD/ tape records ☐ ☐ Pictures

Books ☐ Texts related to your fie ☐

32. When you are asked to perform classroom activities , do you prefer to work ?

Individually ☐ in pairs ☐ ☐ in groups

33 .Other, please specify.....

34 . Would you please suggest some recommendation or comments to ameliorate your ESP learning / teaching situation in your department ?

.....

.....
.....
.....
.....
.....

Thank you for your participation

إستبيان الطلبة Appendix C

أعزائي الطلاب

أطلب منكم التكرم بالإجابة على هذه الأسئلة لمساعدتي في بحثي المتعلق بدراسة منهج تعليمية اللغة الإنجليزية المتخصصة و كذا معرفة إحتياجات الطلبة البيولوجيا من وراء دراسة اللغة الإنجليزية المتخصصة

شكرا لكم

معلومات شخصية

1 المستوى الدراسي

سنة ثانية ☐ سنة ثالثة☐

2 جنس أنثى ☐ ذكر☐

التخصص : ....

الإحتياجا ت اللغوية

كم من عام درست اللغة الإنجليزية ؟ ..... عام

ما هو مستواك في اللغة الإنجليزية ؟

مبتدئ ☐ فوق المتوسط ☐ متوسط☐

هل تعلم اللغة الإنجليزية ضروري؟ نعم ☐ لا ☐

لماذا ؟ .....

الإحتياجات التعليمية

لماذا تريد تعلم اللغة الإنجليزية ؟

أحتاجها في وظائف خاصة ☐

لمزاولة الدراسة☐

قراءة ومشاركة في مقالات علمية ☐

لكتابة مقالات و قراءة كتب في بيولوجيا باللغة الإنجليزية ☐

إحتياجات أخرى .ماهي ....

ما سبب إحتياجك للغة الإنجليزية

للدراسة في ما بعد التدرج ☐

من أجل العمل ☐

أشياء أخرى . حدد .....

المهارات اللغوية

	ضعيف جدا	ضعيف	جيد	جيد جدا
السمع				
الكلام				
القراءة				
الكتابة				
المفردات				
النطق				

أخرى حدد ....

ما هي العراقيل التي تواجهها في النحو ؟

ماهي المهارات التي تريد أن تتحسن فيها

السمع ☐ الكلام ☐ القراءة ☐

الكتابة ☐

حالة تعليمية اللغة الإنجليزية المتخصصة

هل تم إستجوابك في بداية السنة الدراسية حول إحتياجاتك في اللغة الإنجليزية؟ نعم☐

لا ☐

إذا نعم وضح كيف . ...

هل دروس اللغة الإنجليزية تلبي حاجيتك ؟ نعم ☐ لا ☐

إذا لا ماذا تقترح ....

ما هي إيجابيات و سلبيات دروس اللغة الإنجليزية المتخصصة ؟ ....

هل تساهم دروس اللغة الإنجليزية المتخصصة في تطوير مهاراتك؟ نعم ☐
لا ☐

هل تحتاج دروس اللغة الإنجليزية المتخصصة إلى

تغير جزئي لبعض الدروس ☐

تغيير كلي للدروس ☐

أشياء أخرى حدد..... ....

هل المنجية التعليمية في دروس اللغة الإنجليزية المتخصصة ؟.

محفزة ☐ تتلأم مع إحتياجاتي ☐ ضعيفة و غير ملائمة ☐

إحتياجات تعليمية

ما هي نسبة معرفتك في ميدان تخصصك؟ ليس بكثير☐ لا بأس به ☐ كثير ☐

هل تعلم اللغة الإنجليزية من خلال المحتوي العلمي في مادة التخصص مهم ؟ نعم ☐
لا ☐

ما المواضيع التي تحب تعلم الإنجليزية من خلالها ؟ أذكر بعض منها .....

كيف تصف أهمية اللغة الإنجليزية في الوظائف اللغوية الأتية

الوظائف اللغوية	**مهم جدا**	**مهم**	**مهم نسبيا**	**غير مهم**
وصف إجراء تجربة باللغة الإنكليزية				
تبادل نتائج التحقيق العلمي باللغة الانكليزية				

فرضية الاستفسار العلمي باللغة الانكليزية				
استخدام الجداول والرسوم البيانية وتلخيص البيانات باللغة الانكليزية				
الخرائط غير الدائمة والأرقام الشفوية باللغة الانكليزية				
التعليمات أو التوجيهات المعززة باللغة الانكليزية				
حصر المشاكل والألغاز في المهام العلمية وصياغة التقارير عنها باللغة الانكليزية				
وظائف أخرى حددها				

هل تحب تعلم اللغة الإنجليزية من خلال إستعمال

أشرطة الفيديو ☐ أقراص مدمجة/أشرطة مسجلة ☐ صور ☐
الكتب النصوص المتعلقة بمجـ☐

عندما يطلب منك القيام بأنشطة الفصل هل تفضل العمل ؟

فرادى ☐ في أزو☐ في مجموعات

:غير ذلك ، يرجى تحديد

.....

يرجى اقتراح بعض التوصيات أو التعليقات لتحسين وضعك التعليمي/التعليمي في قسمك ؟

.....

.....

....

Appendix D

Teachers' Questionnaire

Dear teachers,

I am conducting this study to increase our understanding of how ELT teachers have experienced the teaching of ESP at the biology departments. You are in the ideal position to give us first-hand information from your own perspective, and your participation will be a valuable addition to the research and could lead to greater public understanding of the challenges pertaining to ESP teaching.

All data will be collected anonymously; participants will not be personally identified in any report.
Thank you.

Part 1 Teachers' Background and ESP teaching Situation

Section 1 : Teachers' profile

1.What is your degree ? Master ☐ Magister ☐ Doctorate ☐

2.What is your status at the biology department ? Full -time teacher ☐ Part- time teacher ☐

3.What is your experience in ELT ? .....

4.What is your experience in ESP ? .....

Section 2 : ESP Teaching Objectives and Learners' Needs

5. Have you undertaken students' needs analysis at the beginning of the year ?

Yes No

6 .If yes , indicate how ? .....

7.What are your learners language needs ?

.....

8.How can you assess your students language level?

Upper-intermediate ☐ Intermediate ☐ Beginner ☐

9. Are your students motivated to learn English ? Yes ☐ No ☐

10. Explain please.....

11.What skills do you most focus on while teaching English for biologists ?

.....

12.Does the Institute or the University department provide you with a specialized teaching syllabus ?

.....

13.Do you think that the content of this syllabus can satisfy your learners' needs ?

14. Please, explain

.....

15.Do you think that the use of syllabus is crucial in the ESP teaching/learning process ?

Yes ☐ No ☐

16.Do you think the absence of this tool can effect the teaching/ learning of ESP ?

Yes ☐ No ☐

17. If yes , how is that

.....

Part 2 : Teachers' Difficulties and Recommended Solutions

Section 3 : ESP Teaching Difficulties and Recommended Solutions

18.How many students do you have per class ?

.....

19. Do you think that the number of students per class can have a side effect on the ESP teaching/ learning process ?

.....

20.What criteria do you take into account when designing your ESP courses?

.....

21.Do you find difficulties when planning your ESP courses ? Yes ☐ No ☐

22.If yes , specify

.....

23. According to you, what are the topics that motivate your learners?

.....

24 . Is there specific methodologies or teaching techniques that you follow while delivering your ESP courses ?

.....

25 . How do you assess your learners ?

.....

2 6 .Does it happen to you to evaluate your ESP courses ?

27- If yes how and how often do evaluate them ?

28. Do you think that the use of technological means is important for the success of the teaching / learning process? Yes, No

29- If yes, explain

30. Are technological materials available at your department? Yes No

31.Do you think the time allocated for teaching ESP course (One hour and a half) is sufficient ?

Sufficient ☐ Not sufficient ☐

32. If not, what can you suggest

.....

33 -According to you, what should be the ESP teaching time per week?

.....per week

34. What can you suggest to improve the current teaching situation of ESP at the department of biology?

.....
.....
.....
.....

THANK YOU FOR YOUR COLLABORATION

Appendix E

Teachers' Semi-Structured Interview

1- What are the purposes of teaching ESP at the department of biology ?
2- As an ESP teacher, what is your ESP teaching styles ?
3- According to your current ESP teaching situation, what are the biologists learners' needs ?
4- According to you, what are the topics that motive your students to learning English ?
5- Do you think that syllabuses are important tools in the ESP teaching learning process ? How ?
6- How would you describe the existing syllabus at the department of Biology ?
7- Does it happen to you to rewrite your syllabus ? if so , can you tell us how do you formulate your own syllabus then ?
8- Briefly describe to us how do you evaluate your students ?
9- Can you please describe to us the teaching materials that do you use ?
10- As an ESP teacher at the department biology, can you tell us about the difficulties that do you encounter?
11- What pieces of advice would you give for making the teaching learning of ESP more effective at the biological departments?

Thank you for your collaboration

Appendix F

Classroom Observation Sheet

LESSON OBSERVATION SHEET

Institution..... Academic Year /.....
Date .....Number of students present.....
Observer.....
Aims of the lesson as expressed by the teacher ESP teacher.....
.....
.....

Course conduct	Students'Language Analysis	Classroom Activities	Teaching Materials	Teaching Methodology

« Exploring Algerian ESP Syllabuses. Case of English for Biologists at the University of Oran1»

Abstract

This study examines the ESP teaching context at the Biology Department of the University of Oran1 in the view of devising a more effective and context- sensitive syllabus that uses enquiry learning to make the ESP students more active and committed. In order to conduct this research objective, the researcher devised and applied four research tools, namely, teachers' questionnaire, students' questionnaire, teachers' semi-structured interview, and classroom observation. The findings have shown that ESP teachers face considerable obstacles in implementing the ESP course. Amongst these hurdles are the absence of a comprehensive and adequate syllabus, lack of teacher training, and lack of ESP documentation. Based on the findings of this study, an ESP syllabus has been devised for this research population to meet the needs and expectations of both the students and the teachers. To prove the worth of the suggested teaching syllabus, a checklist questionnaire was sent to three ELT teachers to review the content of the innovative syllabus, results showed that the new course guide is promising and more effective than the existing meager syllabus. Therefore, this study recommends for the Algerian Ministry of Higher Education to provide teachers with more elaborate course guidelines and train Algerian ESP teachers to devise their syllabuses in such a way that they can meet the needs and expectations of ESP students in various Algerian universities and specialities.

Keywords : Biology learners, ESP, ESP teachers, syllabus design

« Exploration des Programmes Algériens de l'Anglais Spécialisé : Le Cas de l'Anglais pour les Biologistes à l'Université d'Oran1»

Résumé :

Cette étude examine le contexte de l'enseignement de l'Anglais Spécialisé au département de biologie à l'Université d'Oran1 en vue d'élaborer un programme plus approprié et qui utilise l'apprentissage par l'enquête pour permettre aux étudiants de l'anglais spécialisé de participer de façon active au processus d'apprentissage. Pour réaliser ces objectifs de recherche, on a utilisé quatre outils de recherche, un questionnaire aux enseignants, un questionnaire aux étudiants, une interview semi-structurée avec les enseignants et l'observation en classe. Les résultats ont montré que les enseignants d'Anglais spécialisé rencontrent de véritables obstacles concernant la préparation de leurs cours. Parmi ces obstacles figurent l'absence d'un programme complet et adéquat, le manque de formation des enseignants et le manque de documentation en matière de l'Anglais pour des Fins Spécifiques. Sur la base des résultats de cette étude, un programme d'Anglais spécialisé a été conçu pour ces apprenants. Pour prouver la valeur du programme d'enseignement suggéré, un questionnaire de vérification et d'évaluation a été envoyé à trois experts dans le domaine de l'enseignement de la langue Anglaise afin d'examiner le contenu du programme suggéré. Les résultats ont indiqué que le nouveau guide de cours est bénéfique et plus approprié que le programme déjà existant. Par conséquent, cette étude recommande au ministère Algérien de l'Enseignement supérieur de fournir aux enseignants des directives de cours plus élaborés et d'offrir des formations solides aux enseignants Algériens de l'Anglais spécialisé afin qu'ils puissent répondre aux besoins et aux attentes des étudiants de diverses spécialités.

Mots clés : Anglais pour des Fins Spécifiques, Enseignants d'Anglais spécialisé, Elaboration de Programmes, Etudiants de Biologie

الملخص

رغم وجود دراسات حول تصميم المناهج الدراسية التعليمية إلا أن أساتذة تعليم اللغة الإنجليزية لأغراض خاصة يشكون من عدم وجود إرشادات بيداغوجية و منهج تعليمي شامل حول تصميم المناهج التعليمية لفروع اللغة الإنجليزية ذات أغراض خاصة. تهدف هذه الدراسة إلى تسليط الضوء على العراقيل التي تواجه أساتذة تعليمية اللغة الإنجليزية لأغراض خاصة في قسم البيولوجيا جامعة وهران 1. من أجل هذه الدراسة , تم إستعمال أربع أدوات بحثية منها إستبيان لأساتذة اللغة الإنجليزية لأغراض خاصة , إستبيان للطلبة, مقابلة مع أساتذة اللغة الإنجليزية لأغراض خاصة ,ملاحظة أقسام . أثبتت النتائج وجود عدة عراقيل تواجه أساتذة تعليمية اللغة الإنجليزية لأغراض خاصة كغياب المنهج الدراسي , نقص في التكوين, نقص في التوثيق في مجال اللغة الإنجليزية المتخصصة. إستنادا إلى النتائج التي توصلت إليها هذه الدراسة, تم إقتراح وتصميم منهج دراسي نظري مبسط لفروع اللغة الإنجليزية ذات أغراض خاصة المرفق بدوره بالمنهج التعليمي القائم على الإستفسار لتلبية كل من إحتياجات الأساتذة و طلبة البيولوجيا . للإثبات جودة المنهج الدراسي المقترح , تم إرسال إستبيان لثلاثة خبراء في تعليمية اللغة الإنجليزية من أجل مراجعة محتوى هذا المنهج . أظهرت النتائج أن هذا الأخير واعد وأكثر فعالية من المناهج الدراسية القائمة. في الأخير وجب على وزارة التعليم العالي الجزائرية تزويد أساتذة تعليم اللغة الإنجليزية لأغراض خاصة بمبادئ توجيهية أكثر تفصيلا في مختلف الجامعات والتخصصات.

مفتاحية كلمات : أساتذة تعليم اللغة الإنجليزية لأغراض خاصة , اللغة الإنجليزية لأغراض خاصة, تصميم برنامج ,طلبة البيولوجيا