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Exploring ESP Students' Needs and Difficulties

A Case Study of Second Year Biology Students at Medea University

A Dissertation Submitted in Partial Fulfillment of the Requirements for Master Degree in English Applied Linguistics

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Declaration

We hereby, declare that the materials and tools used for this research are the authentic results of our investigation and examination concerning the matter. It does not implement any extra information of substances that were previously mentioned or published by other researchers in exception for those who are indicated in quotations, citations and in the list of references.

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Dedication

Khaoula

I dedicate this work to my beloved parents, whose unwavering love and support have been the cornerstone of my motivation and determination throughout this journey. To my brothers, Abdelhak and Abdelraaouf, your endless patience and belief in my potential have been invaluable. Your calm demeanor and sense of humor have brought stability and warmth to my life; thank you for being the best brothers anyone could ask for. To my friends, whose encouragement, laughter, and understanding have made even the toughest times bearable, I am deeply grateful. Special thanks to my best friends Nadjib, Nasrellah, Sami, Farah, Meroua, and Nouha for making this journey unforgettable. This dissertation stands as a testament to the bonds we share and the unwavering support you have given me.

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Abstract

The current study explores biology students' specific needs and difficulties when studying English for Specific Purposes at Yahia Fares University of Medea. It targeted forty students and five ESP teachers. The data was gathered by the means of a classroom observation and two questionnaires directed to both ESP students and teachers in the biology department. The obtained results were analyzed and presented as percentages in the form of graphs and pie charts. The major findings revealed that biology students appreciate the importance of English due to globalization. Nevertheless, they struggle with various language skills such as reading and speaking. Moreover, they face difficulties with understanding complex concepts, vocabulary acquisition, finding reliable English materials, and comprehending the teacher's instructions. The findings also demonstrated that linguistic competence significantly influences students' comprehension and engagement. Moreover, the students were reported to lack familiarity with the presented topics, often relying on their mother tongue to express their answers and concerns. Consequently, the study recommended more language training, the use of interactive teaching methods and a more comprehensive needs analysis to increase learners' ability to be successful academically.

Keywords: English for Specific Purposes (ESP), Needs, Difficulties, Linguistic competence, English resources and materials.

ملخص

تستكشف الدراسة الحالية الاحتياجات والصعوبات الخاصة التي يواجهها طلاب علم الأحياء عند دراسة اللغة الإنجليزية لأغراض محددة في جامعة يحي فارس بالمدية. واستهدف هذا البحث أربعين طالبًا وخمسة معلمين للغة الإنجليزية لأغراض تخصصية. تم جمع البيانات عن طريق الملاحظة بالمشاركة واستبيانين موجهين إلى كل من طلاب ومدرسي اللغة الإنجليزية لأغراض تخصصية في قسم الأحياء بجامعة المدية. وقد تم تحليل النتائج التي تم الحصول عليها وعرضها كنسب مئوية في شكل رسوم بيانية ومخططات دائرية. كشفت النتائج الرئيسية أن طلاب علم الأحياء يقدرون أهمية اللغة الإنجليزية بسبب العولمة. ومع ذلك، فإنهم يواجهون صعوبة في مهارات لغوية مختلفة مثل القراءة والتحدث. علاوة على ذلك، فإنهم يواجهون صعوبات في فهم المفاهيم المعقدة، واكتساب المفردات، وإيجاد مصادر ومراجع إنجليزية موثوقة، وفهم تعليمات الأستاذ أثناء المحاضرة. وأظهرت النتائج أيضًا أن الكفاءة اللغوية تؤثر بشكل كبير على فهم الطلاب ومشاركتهم. علاوة على ذلك، أفادت النتائج أن الطلاب يفتقرون إلى الإلمام بالموضوعات المقدمة، وغالبًا ما يعتمدون على لغتهم الأم للتعبير عن إجاباتهم ومخاوفهم. وبالتالي أوصت الدراسة بالمزيد من التدريب على اللغة الإنجليزية، واستخدام أساليب التدريس التفاعلية، وتحليل الاحتياجات بشكل أكثر شمولاً لزيادة قدرة المتعلمين على النجاح أكاديمياً.

الكلمات المفتاحية: اللغة الإنجليزية لأهداف خاصة، الاحتياجات، الصعوبات، الكفاءة اللغوية، الموارد والمواد بالإنجليزية.

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List of Abbreviations

ESP: English for Specific Purposes
IT: Information Technology
GE: General English
SWW: Second World War
L2: Second Language

GENERAL INTRODUCTION

1-Background of the Study

Driven by the globalization and the increasing demand of the English language acquisition in professional and academic domains such as the expansion of science, technology, and international business in the mid-20th century created a demand for a specialized form of English teaching. Non-native English speakers needed to acquire language skills tailored to their specific fields. John Swales and other pioneers (1970) began to shape the field, emphasizing the importance of analyzing the linguistic needs of learners in specific contexts. Later on, the focus was on tailoring language instruction to the specific vocabulary, structures, and communicative functions relevant to particular professions or academic disciplines. Consequently, English for Specific Purposes (ESP) became a subfield of English language education focusing on teaching English to individuals with specific needs in academic, professional, or vocational contexts.

2-Statement of the Problem

In today's globalized world, the proficiency of the English language that is required for professional and academic success has become increasingly crucial. General English language education often fails to address the specific linguistic and communicative necessities of learners in specialized fields such as business, medicine, engineering, and academia. This gap results in professionals and students lacking the necessary language skills to perform effectively in their respective domains as most ESP learners are not sufficiently prepared by general English courses for the specialized vocabulary, discourse patterns, and communication techniques needed for their academic majors and professional contexts. Algerian ESP Students may become less motivated and engaged in their classes if they do not perceive the direct connection between their language studies and their academic objectives. Multiple challenges with real-world tasks involving specific language abilities, professionals and students sometimes find themselves unprepared, which negatively impacts their performance and proficiency in their fields. Based on Algerian ESP students' perspectives, despite the importance ESP has gained, it seems there are several challenges faced in this branch. These obstacles and difficulties supposedly hinder the implementation of an effective course, with many students claiming that

either the class is ambiguous or that they are not prepared for the course.

3-Purpose of the Study

This study aims at exploring biology ESP students' needs and difficulties at Yahia Fares University of Medea. It seeks identifying the types of their needs and the severity of the challenges they face with studying English for Specific Purposes. Most importantly, it attains to provide proper recommendations to help ESP students overcome their obstacles and for the teachers to furnish their students abilities to master the English language and understand the course materials related to their major. Additionally, the study intends to improve language proficiency and learners' performance in their specialized sectors by helping to build more effective ESP programs.

4-Research Questions and Hypotheses

The following research questions reflect the intent of this study:

- **Q1:** What are the specific language needs of second-year biology students at Yahia Fares University of Medea when studying English for Specific Purposes?
- **Q2:** What are the main difficulties faced by second-year biology students at Yahia Fares University of Medea in their ESP courses?
- **Q3:** What are the attitudes of ESP teachers towards second-year biology students' needs and difficulties at Yahia Fares University of Medea?

These research questions were explored on the bases of the following hypotheses:

- **H1:** Second year ESP biology students at Yahia Fares University of Medea have specific language needs that are not fully covered in the current ESP curriculum.

- **H2:** The difficulties faced by second year biology students at Yahia Fares University of Medea while taking ESP courses include problems such as understanding complex terms, vocabulary acquisition, reading and listening difficulties.
- **H3:** Both teachers and students of English for Specific Purposes believe that the current methods of teaching are not completely able to meet the language and academic needs of second-year biology students.

5-Significance of the Study

This study strives to delve into the different types of needs and difficulties of second-year biology ESP students at the university of Medea. In other words, it helps to reveal the current necessities and obstacles faced by biology ESP students at Medea University and the reasons behind the downfall of their academic performance. Most significantly, this study helps the students yield their language and communication skills while improving their academic grades by facilitating the learning process with the right approaches and methods to understand their lectures, participate and interact with their peers, master the English language and use it comfortably.

6-Research Methodology

The current study adopted the quantitative and the qualitative research methods as it relied on using two questionnaires as a data gathering tool alongside conducting a classroom observation in order to provide reliable insights, confirm the hypotheses and answer the imposed research's questions to gather the necessary information concerning the participants' perspectives concerning the research's topic. The investigation focused on second-year bachelor's ESP biology students and teachers of Yahia Fares University of Medea as the targeted population. Additionally, the sample included forty ESP biology students and 5 biology teachers who teach English for Specific Purposes. The study was bias-free as the participants were randomly chosen to avoid any subjectivity.

7-Structure of the Study

The dissertation consists of four chapters. The first chapter is dedicated to the theoretical framework relevant to the research's subject matter. It includes ESP definitions, ESP significance, and the historical background and the development of ESP over the years. In addition, it highlights the types of needs and difficulties of ESP learners and it emphasizes on the role of ESP teachers alongside their training.

The second chapter tackles the research methodology and procedure. It sheds the light on the case study and methodology. It approaches the targeted population and sampling of the study by providing a thorough description of both teachers' and students' profiles. Moreover, it explains the adopted data gathering tools that consist of two questionnaires and a classroom observation.

The third chapter attends to the data analysis collected from both the teachers and students' questionnaire and the classroom observation. It offers an extensive and detailed analysis of the gathered data obtained from the teachers and the students' questionnaires as well as the researchers' remarks obtained from the classroom observation.

The fourth chapter handles the interpretation of the major findings obtained from the three implemented instruments. Furthermore, it reinforces the study with presenting multiple pedagogical implications and recommendations dedicated to the teachers and the students that should guide them towards accomplishing their aspirations within the ESP branch and their academic major.

Chapter One

Literature Review

Chapter One

Literature Review

Introduction

1.1. Historical Background

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1.9. Roles of ESP Teachers

1.10. ESP Teacher Training

Conclusion

Introduction

This chapter provides an overview of the students' needs and difficulties in English for Specific Purposes (ESP henceforth) contexts. It defines ESP and highlights its significance. As well, it explains ESP students' needs including its various types and main components. Furthermore, it outlines the main difficulties faced by ESP students. Additionally, it embellishes the role of ESP teachers on one hand and focuses on their trainings on the other hand.

1.1. Historical Background

The teaching and learning of English for Specific Purposes (ESP) have received significant attention in higher education institutions worldwide. Several studies have explored the practices, difficulties, and needs of both students and teachers within various contexts (e.g., Benoumelghar, 2012; Salim, 2018; Bosco, et al. 2020; Pajević and Josijević, 2022; Makhlouf and Arar, 2022).

Benoumelghar (2012) conducted a study to provide insights into current practices in the teaching/learning of ESP in the Biology department at Khenchela University Centre. She aimed to search for students' difficulties and the different reasons that lead to unsuccessful achievement when the learnt materials are written in English. For this purpose, a questionnaire was addressed to students and an interview was held with English teachers. The findings revealed that the lack of a designed material and the negative attitude of the institution towards the ESP module played an important role in lessening both the teaching effectiveness and the quality of learning.

Similarly, Salim (2018) investigated the needs of science and technology students in the use of English for Specific Purposes at Batna University. The data gathering tools were a questionnaire directed to the students and a structured interview destined to the English teachers. The findings revealed the necessity and urgent need of ESP course based on learners' needs.

Correspondingly, Bosco, et al. (2020) explored students' interest in English for Specific Purposes (ESP) and challenges impeding their effective learning. A four Likert Scale questionnaire was used to gather information from forty–five respondents. Results revealed that despite that majority of students are interested in English for Specific purposes, factors such as fear of practice, few or lack of appropriate facilities, class size affect teaching and learning.

Comparably, Pajević and Josijević (2022) searched the potential difficulties that information technology (IT) students face in ESP classroom as well as their attitudes towards the content of ESP classes and materials. The main research instruments were a questionnaire, a semi-structured interview, and a small-scale needs analysis. The results showed that students are aware of the importance of ESP and are motivated to improve their level of professional English in order to be successful in their future careers. The findings also demonstrated that most of the students' value authentic materials and speaking activities, which were both evaluated as positive aspects of ESP classes.

Analogously, Makhlouf and Arar (2022) examined Algerian ESP teachers' and students' needs and difficulties in the Sciences and Technology Departments at Yahia Fares University, Medea. They explored teachers' perceptions about teaching ESP, the main problems encountered in the ESP course, and the strategies implemented to help ESP students. A focus group interview was used to meet the research aims. The findings demonstrated that needs analysis is the cornerstone of designing an effective syllabus for

English Specific Purposes as it improves students' academic performance in target situations. Moreover, the results indicated that there is an urgent need for ESP teacher training in Algerian universities.

Despite the various researches about English for Specific Purposes (ESP) in different academic settings, there remains a notable gap concerning students' needs and difficulties at Yahia Fares University, Medea. In fact, previous studies on ESP have been conducted in science and technology departments or within a wider educational frame but not much attention has been paid to this particular institution. Therefore, this research aims to address this gap investigating specific requirements as well as problems faced by second year biology students in ESP courses taught at Yahia Fares University. This will contribute towards better understanding of teaching English for Specific Purposes in this context. In the following sections, an exploration of various definitions of English for Specific Purposes (ESP) will be provided, offering a foundational understanding before delving into the specific needs and challenges faced students within the ESP context.

1.2. Definition of ESP

Several researchers have tried to establish a definition of ESP over the years, yet there is no universal definition of ESP. According to Mackay and Mountford (1978), "ESP is generally used to refer to the teaching of English for a clearly utilitarian purpose." (p.2). That is to say, ESP is designed to meet the language requirements of a specific field, industry or discipline and ensure that learners acquire the language skills they need to use effectively in their prospective professions or careers, and to understand English discourse based on their specialties. Correspondingly, McDonough (1984) thinks that ESP is a focus of language teaching activity that certainly has its own range of emphasis and priorities. Hutchinson and Waters (1987), however, consider ESP as an approach rather than a product and say that the base of ESP is the question: why does

this learner need to learn a foreign language? In relation to this, Dudley-Evans and St John (1998) state, "the answer to the question relates to the learners, the language required and the learning context, and thus establishes the primacy of needs in ESP." (p.3).

In later years, Schleppegrell (1990) suggests that the common factor in all ESP programs is that they are designed for adults who have a common professional or job-related reasons for learning English, a common context in which to use English, content knowledge of their subject area, and well-developed learning strategies. Here it is possible to infer that the student brings to the ESP class a reason for learning and a context for use of English, knowledge of the vocational or professional field, and well-equipped adult learning strategies. Nonetheless, Basturkmen (2006) asserts that "in ESP—language is learnt not for its own sake or for the sake of gaining a general education, but to smooth the path to entry or greater linguistic efficiency in academic, professional or workplace environments" (p.18). Similarly, Robinson (1991) refers to ESP as people's necessity to pursue the English language for their academic and professional endeavors yet not because of their genuine interests in the English language or English culture. Robinson definition is based on two main defining criteria accompanied with a set of characteristics:

- ESP is normally "goal-directed."
- ESP courses develop from a "needs analysis", which aims to specify as closely as possible what exactly it is that students have to do through the medium of English.
- ESP courses are normally constrained by a specific period of time in which their learning objectives must be accomplished.
- ESP is taught to adults in 'homogeneous classes' in terms of their professions or specialist studies that the students are engaged in. (Robinson, 1991, p.3)

In the same regard, Anthony (1997) argues that "some people described ESP as simply being the teaching of English for any purpose that could be specified (pp.9-10). Otherwise speaking, the goal of ESP is to assist language learners in developing the necessary skills for practical application within a particular field of study, profession, or workplace.

In 2001, Richards mentions that ESP teaching aims are:

- Equipping non-native students with the necessary language skills for academic study in English-speaking environments.
- Providing advanced English language training to individuals who are proficient in general English but require specialized language skills for their professional roles, such as engineers, scientists, or nurses.
- Responding to the needs of the materials of English for Business Purposes.
- Teaching immigrants the English needed to deal with their job situations effectively.

In conclusion, many scholars have tried to define ESP based on what it should or should not be; yet the definitions of ESP have evolved through time. They have agreed that ESP is based on three key aspects which consist of the nature of language to be taught, the learners' needs and wants and the settings in which the learning and teaching process would take place. The coming parts account for the distinction between English for Specific Purposes (ESP) and General English (GE).

1.3. The Difference between English for Specific Purposes (ESP) and General English (GE)

According to Hutchinson and Waters (1987), although there is no theoretical distinction between ESP and General English (GE), there are considerable practical

differences between the two. They claim that ESP like any other language teaching activity has its roots in some basic principles about the nature of language, learning and teaching; but this has commonly been as opposed to General English. They add that the difference between English for Specific Purposes (ESP) and General English (GE) is not just about needing the language, but also about knowing and understanding that need. They think that when learners, sponsors, and teachers know why they are learning English, it really affects what should be taught in the language class. Additionally, it affects finding good chances that can be utilized positively. In the same context, Robinson (1980) posits that "the general with which we are contrasting the specific is that of General education for life, culture and literature-oriented language course in which the language itself is the subject matter and the purpose of the course" (p.6). However, In ESP after the identification and the analysis of specific learning needs, students learn "English on route to the acquisition of some quite different body of knowledge and set of skills" (ibid, 1980, p.6).

In sum, ESP is identified by its learner-centeredness as opposed to the language-centered approach of General English (GE). This is because General English (GE) normally covers cultural aspects of English-speaking communities along with a wide range of language proficiency where as Specific English for Specific Purposes (ESP) is more concerned with particular language needs and aims recognized by learners. Therefore, it is crucial to describe the development of ESP over time.

1.4. The Development of English for Specific Purposes over Decades

Research has demonstrated that ESP has developed through different stages. By the end of the Second World War (SWW), English was allotted a crucial role of becoming a universal language to facilitate world-wide activities such as scientific, technical and economic activities. These activities mainly flourished in English speaking

nations including the USA being identified as an economical power. This initiated “a new era of teaching English for different scientific and business disciplines (Hutchinson and Waters, 1987).

The 1960s represented the real emergence of ESP and its different approaches. In this respect, Dudley-Evans and St. John (1998) mentioned that “it was undoubtedly in the mid- to late 1960s, however, that various influences came together to generate the need and enthusiasm for developing ESP as a discipline” (p.19). ESP grew quickly in the mid 60’s for multiple factors. Hutchinson and Waters (1987) stated that there were three main reasons that led for the emergence of ESP: “Demands of a Brave New World”, “a revolution in linguistics” and “focus on the learners”. Nevertheless, Hymes (1972) claimed that the quick development in scientific, technical and economic activities in English speaking countries and the emergence of new linguistic theories were the major contributors in the rapid growth of ESP during this era.

In the 1970s, the Oil-rich countries opened their entryways to the western nations alongside their wealth and culture which resulted to a new era of ESP that emerged as one of the most important disciplines as it was mainly the technical and scientific knowledge that required to be transferred (Hutchinson and Waters, 1987).

The late 1970s and 1980s was marked as the shining period of ESP. It has been agreed upon that the early stages of ESP development were related to “Register Analysis”, Discourse and Rhetorical Analysis, the Learning and Skill-Centered Approach yet, after the learners have achieved maturity, varied approaches and teaching methodologies have been adopted in the realm of ESP (Dudley-Evans and St. John, 1998).

During the past twenty years, ESP has fostered significantly in comparison to the past. Hewings (2002) stated that the increasing number of researches being done in different nations such as the U.S, Central and South America, China and the U.K, have

demonstrated the development of ESP as it became entitled as an academic discipline. Additionally, he concluded that the current trend of ESP related topics is about text or discourse analysis. Thus, teaching ESP requires ESP practitioners to have a deeper knowledge of the different contexts and texts that may occur during the learning process.

In brief, ESP growth over decades has definitely been a matter of interest to multiple researchers as they claimed that its evolution was mainly focusing on teaching methodologies and materials improvement yet, ESP has certainly shaped its principles, assets and areas of focus over time. The coming sections shed light on the importance of ESP.

1.5. Significance of ESP

Many scholars give their perspectives and opinions in the field, showing the deep-rooted meaning and complexity of English for Specific Purposes (ESP). According to Hutchinson and Waters (1987), ESP is very important in helping specialists from various countries communicate with each other, and also helps professionals collaborate and share information. Besides, learners of ESP are taught how to read English literature in their various subject areas, take part in academic discussions and contribute to knowledge in their disciplines (Dudley-Evans and St. John, 1998). In addition, ESP courses have been designed to meet with the exact predication of the learner so that there is relevance and practicality in language instruction. This is particularly important because when such language skills are acquired through specialized subjects such as law or nursing, they become more efficient than general ones (Hewings (2002). Furthermore, ESP helps learners take control over their learning by enabling them acquire language skills that are required in their fields of specification or career paths so that they may assume responsibility over what they learn and undertake various opportunities for improvement in their careers (Dudley-Evans and St. John, 1998).

In brief, English for Specific Purposes (ESP) has the capacity to personalize language courses and programs in such a way that they meet the needs of different groups of learners: Professional employees who need English for work and travel, academic students or researchers using English to publish internationally recognized journals but not native speakers living in their countries of origin. Moreover, ESP also leads to developing communicative competence promoting interdisciplinary understanding through technical writing-making connections between cultures all over the world; hence, its relevance in maintaining peaceful coexistence across borders.

1.6. Needs Analysis

1.6.1. Definition of Needs Analysis

One of the primary concerns when designing ESP courses, materials, assessments, or other evaluating methods is the “needs analysis” (NA henceforth) (Prachanant, 2012). According to Titcomb (2000), needs analysis refers to “the process of identifying and evaluating needs” of the particular group of people, or “target population”. The term “target population” is the same as “learners” called by Hutchinson and Waters (1987). The term “needs” generally means something required or wanted (Khan and Awan, 2011). Needs analysis is also called “needs assessment.” This latter is defined as “the systematic study about knowledge, ability, interest or attitude of a defined audience or group involving a particular subject.” (McCawley, 2009, p.3). Nevertheless, a distinction is made between “needs analysis” and “evaluation”. A needs analysis strives to identify the needs of a particular group of people, whilst an evaluation assesses the extent to which a program serves these needs. Furthermore, as stated by Soriano (1995), needs analysis collects and examines data to ascertain what students "need" and "want" to learn, whereas evaluation measures how well a program fits the needs of learners.

Richards, Platt, and Platt (1992) state that needs analysis is “the process of determining the needs for which a learner or a group of learners acquires a language and arranges the needs according to priorities.” (p.242). That is to say, it refers to the procedure of gathering data and information to develop a course that meets a particular group of learners’ needs. During this process, the teacher is engaged in trying to figure out what the students’ actual needs are and how to approach the matter (how can students learn). Needs analysis, therefore, is considered as the process of determining the "what" and "how" of ESP courses and programs (Dudley-Evans and St. John, 1998).

In short, the needs are language centered in ESP courses. These needs are linguistic in nature. Once the needs have been identified, they can be described in terms of targets and objectives, which are then able to serve as a framework to construct evaluations, resources, lesson plans, and approaches of evaluation.

1.6.2. Types of Needs

Needs are divided into two main types: “target needs” and “learning needs”.

1.6.1.1. Target Needs

Hutchinson and Waters (1987) define target needs as “what the learner needs to do in the target situation” (p.54). In other words, target needs refer to all the skills students must possess to communicate proficiently in a specific situation. Besides, Hutchinson and Waters (1987) identify three types of target needs: lacks, necessities, and wants.

1.6.1.1.1. Lacks

The lacks are considered as the gaps between the current situation and the target situation, which refers to what a learner does not currently have or cannot perform but will have successfully acquired by the end of the course. In other words, lacks represent the gap between the target proficiency and the existing proficiency of the learners (Hutchinson and Waters, 1987).

1.6.1.1.2. Necessities

The necessities are defined as the fundamental language requirements that the learners must acquire to productively perform specific tasks or activities within their academic or professional environment (Hutchinson and Waters, 1987). That is to say, necessities refer to students' required language proficiency that enables them to perform well in their particular academic or professional settings.

1.6.1.1.3. Wants

The wants are learners' personal preferences, which they desire to learn throughout the course, believing they may help them in a target situation. These subjective expectations may or may not align with the other two types of needs (Hutchinson and Waters, 1987). Simply put, the wants are considered as the language skills or abilities and knowledge that students attain to acquire beyond the necessities and lacks. They also can be associated to personal interests, career advancement, or specified objectives within their academic or professional sector.

If the starting point in ESP is called "lacks" and the destination is necessities and wants, the way to go from the starting point to destination is called learning needs

(Hutchinson and Waters, 1993). The following parts examine learning needs as well as describe the procedure of designing an ESP course.

1.6.1.2. Learning Needs

Hutchinson and Waters (1987) propose that learning needs are a set of strategies learners employ in order to achieve their goals from the point of knowing what they lack. To put it in other words learning needs refer to the process learners go through from being in inadequacy state (lacks) to sufficiency state (necessities). This process involves addressing questions such as how learners move towards their goals, what makes them motivated, how board they get and if the method or material used are good. Accordingly, curriculum designers must identify students' needs through studying contexts under which learning occurs as well as subject matter being learnt at present. At the same time, when planning ESP courses, instructional coordinators should neither neglect prerequisite knowledge nor overlook pedagogical concerns of subject teachers.

In summary, "learning needs" are all about the determination of students to learning the language, their preferred learning methods, timing, location, preferred learning style, and available resources. This step is crucial in designing an ESP course to meet individual preferences that align with learning circumstances and avoid learning difficulties.

1.7. ESP Course Design

Hutchinson and Waters (1987) state that:

“Course design is the process by which the raw data about a learning need is interpreted in order to produce an integrated series of teaching-learning experiences, whose ultimate aim is to lead the learners to a particular state of knowledge.” (p.65)

In other words, course design is the establishment of an educational strategy (including assignments and tasks) that accomplishes the desired objectives based on the information collected regarding the intended objectives of learners, their knowledge, and their skills. This product, the educational program, includes the following: designing a syllabus using available theoretical and practical knowledge; selecting, altering, or constructing the related materials; producing a teaching methodology; as well as developing evaluation procedures to assess the program's progress toward achieving its goals. The success of the educational programs depends extensively on the course needs for ESP. Identifying and addressing these demands is crucial for conducting a course that caters to the particular requirements of students in their corresponding fields of expertise.

Therefore, an ESP course design involves assessing the target audience's linguistic and communicative needs, establishing specific learning goals, choosing or producing authentic and pertinent materials for the learners' professional contexts, and setting instructional strategies into practice to encourage language learning and application in specific domains.

1.7.1. Course Needs

The process of creating a course requires going through multiple stages. According to Graves (2000), "most of the models" of both classic and more current ones "agree" on most of the components. These components are "setting objectives based on some form of assessment; determining content, materials, and method; and evaluation." She

illustrated her ideas with a flowchart and stated that course designers are free to "begin anywhere in the framework, as long as it makes sense" for them, rather than viewing the process as a series of phases (p.3).

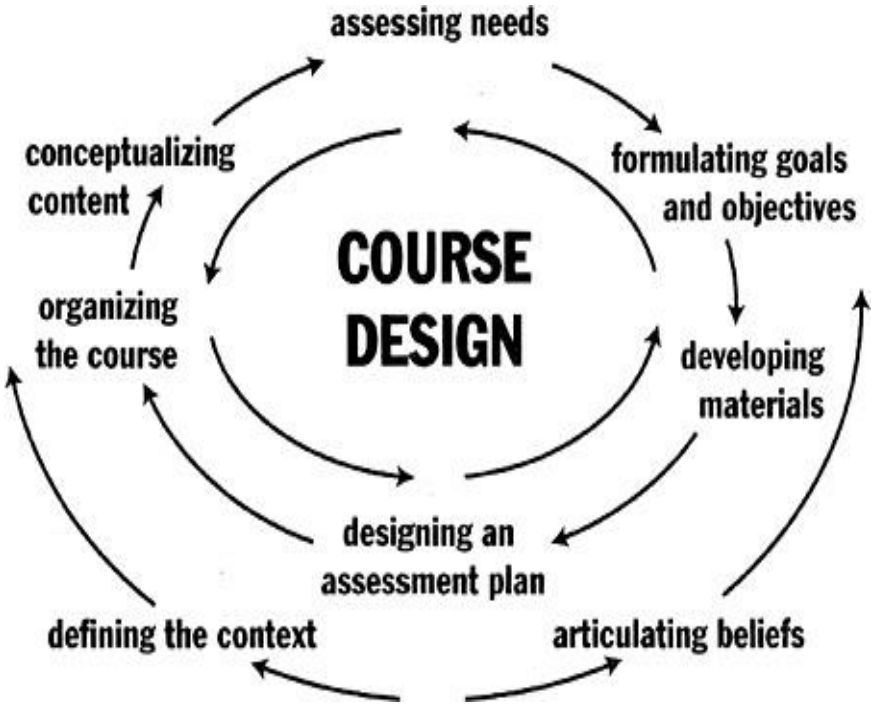


Figure 1.1. A framework of Course Development Processes (Adapted from Graves, 2000, p.3)

The design is systematic because one component affects and is affected by the other components. It comprises the following steps:

- Conducting a thorough needs assessment is a crucial step in building an ESP course since one gets important data on actual language use, communicative purposes as well as course-specific aims that all determine course effectiveness (Dudley-Evans and St. John, 1998).
- Formulating goals and objectives of the course. Like the purpose of a journey is its destination so are the goals of ESP courses future-orientated statements which put emphasis on what the course is set to achieve (Graves, 2000). In ESP contexts, these aims are connected with future employment or communication in a country

where the target language is spoken, and it is important to delineate them in a concrete form, so that to make them well- understood by students within a limited class time (Harmer, 1991, Graves, 2000). Objectives, on the other hand, decompose these goals into small teachable units, establishing a relationship between achieving them and the attainment of more general aims. Creating both goals and objectives makes it easier for teachers to have a clear vision about what they do, allocate priorities and make decisions about what they teach and how they deliver it (Graves, 2000).

- Conceptualizing the content in ESP course design is to decide on what parts of language and language learning should blend harmoniously in order to meet the specific needs and objectives of individual students. The process involves selecting and preparing materials that coincide with course objectives while taking care of different learners' preferences including changing or producing materials where it is essential (Graves, 2000).
- Organizing the course involves structuring the content and activities based on established objectives and principles, sequencing units, and organizing content within each unit (Graves, 2000).
- Designing an assessment plan involves three different kinds of assessments: needs assessment; evaluating students learning progress; with ongoing evaluation being important for determining the course effectiveness and the areas that need improvement (Graves, 2000). Hutchinson and Waters (1987) further categorize testing in ESP into placement tests, achievement tests, and proficiency tests with emphasis on the significance of monitoring students' progress and course effectiveness by use of formative or summative assessments.

1.7.2. Teaching Needs

The term "teaching needs" describes the specific conditions and assets required for efficient learning and teaching. These standards can vary depending

on the situation, particularly the learners' personality, the subject matter material, and their educational background. In this regard, Kennedy (1983) argues that teaching needs "reflect the role of the course participant as teacher and predict the skills that the teacher will need after the course but in which he may need to be trained." (p.76). He also proposes a list of teaching activities that the ESP teacher could perform with the help of linguists or terminologists (language specialists).

- Selecting and evaluating material.
- Preparing lessons with and without the use of teachers' notes.
- Supplementing textbook exercises and designing own materials.
- Conducting a lesson.
- Setting and marking exercises (tests and examinations) (Kennedy, 1983, p.77).

Nevertheless, it is important to note that not all tasks are suitable in all situations, as Kennedy (1983) claimed using teachers' mother tongue for notes would reduce language barriers. However, when the notes are in English yet the professor is poor in reading, sucks at phonetics or when the subject matter is complicated, language issues may as well crop up hence complicating the process. Teachers' guides should thus be in line with the learners' characteristics and abilities. It is, therefore, necessary that when designing teacher-training courses, that one integrates competencies, activities, subject content effectively. The coming sections present ESP difficulties.

1.8. ESP Difficulties

English for Specific Purposes (ESP) is an aspect of English language teaching that is tailored to the unique communication needs of students pursuing various careers. Even though ESP provides individualized language training, there are still difficulties.

1.8.1. Types of Difficulties

The challenges encountered by ESP learners can be categorized into two types: those stemming from student-related factors and those arising from teacher-related factors.

1.8.1.1. Difficulties Related to Students

Hoa and Mai (2016) said that there are a number of difficulties facing students in ESP classrooms such as:

a) Students' demographic characteristics and demands of learning English for specific purposes. According to Suzini et al. (2011), learners' demands are not met adequately because of the following reasons:

- Students may not have sufficient preparation before undertaking ESP courses.
- ESP classes might be large.
- It is common to find out that some ESP lessons have been postponed or cancelled without any explanation being offered.
- ESP appears very peculiar compared to general language that could lead them to think that since this does not belong to their daily conversation then there is no need of mastering it too much.
- Passive teaching methods still prevalent in ESP instruction because most of teachers use one-way communicative methods while teaching even when it comes to specialized content.

b) English proficiency: Variations in English competency among students within and across universities presents notable obstacles in the instruction of English for Specific Purposes (ESP). Students enrolled in foreign language departments

typically demonstrate higher proficiency levels compared to their counterparts enrolled in technical or social science departments. Moreover, students hailing from urban areas tend to exhibit superior English language abilities relative to those originating from rural areas, attributed to varying standards in secondary school English education quality. Consequently, the applicability of ESP course materials becomes notably difficult, especially for departments less English-oriented or in remote regions (Hoa and Mai, 2016).

c) The differences between the mother tongue and English, particularly in the context of English for specific purposes (ESP), present unique challenges for learners. These differences in language phonology, syntax and vocabulary particularly within specialized domains, pose specific difficulties for learners navigating between their native language and English (Hoa and Mai, 2016).

d) Many ESP learners have poor language skills. Lâm (2011) explains that most ESP learners face problems related to vocabulary, organizing ideas, grammar and spelling. They are often impatient to outline, organize ideas logically and connect them together in their writings. This makes ESP learners' written compositions often appear fragmented, unstable, and occasionally demonstrate tendencies toward directly copying from other texts. Correspondingly, Rezaei, Rahimi and Talepasan (2012) add that most ESP learners have difficulties in identifying and understanding the different syntactic structures. This makes reading English difficult and often leads to incorrect comprehension of sentences meaning.

e) Lack of vocabulary: According to Maruyama (1996), among 112 Japanese students majoring in electrical engineering, he gave a list of 60 English technical words to identify the words and their meanings. However, only a single word was recognized by all students, and a few words were familiar to only some students.

Meanwhile, twenty words presented, none were recognized by any of the students.

In Algerian context, studies have found that ESP learners' major challenges are:

- Low value allotted to ESP courses by curricula and institutions.
- The use of a curriculum that is not based on learners' specific needs.
- Complex concepts and notions that make learners feel defeated and consumed by the subject being taught.
- The lack of resource materials for ESP students.
- The lack of motivation.
- The lack of confidence in speaking English language.
- Mother tongue influence.
- ESP learners' low proficiency in English.
- Very heterogeneous groups of learners. Algerian ESP teachers are usually confronted with learners in the same group at various levels of English proficiency, different personalities (such as introverts vs. extroverts), and different mental capacities. This situation makes it even more difficult for the ESP teachers to cater to the different levels in their classes.
- Large class size.
- Limited class time. (Makhlouf and Arar, 2022; Missoum, 2023)

1.8.1.2. Difficulties Related to Teachers

Several challenges are associated with teachers in ESP contexts such as:

- The quality of lectures and textbooks brings about difficulty in learning and teaching ESP. In fact, some ESP textbooks do not match the needs of learners that can differ between colleges, change annually, and vary among individual classes.
- The curriculum for ESP courses in many universities lacks clear delineation. Additionally, there is ambiguity regarding the determination of curriculum designers in terms of prioritizing ESP or general English (GE) content.
- Inexperienced ESP teachers face many challenges, namely teaching adaptation in universities, ESP teaching adaptations that should be different from general English (GE).
- Large classes and inappropriate teaching methods makes students learn passively and decrease their proficiency. (Hoa and Mai, 2016 Septiana, 2018)

In Algeria, research has demonstrated that the main problems that ESP teachers face are:

- ESP syllabus is not available or not appropriate.
- Lack of job security and decent remuneration
- The lack of proper needs analysis. That is, ESP teachers are incapable to cater for students' diversified learning style, proficiency level and intelligence scale.
- The lack of training and workshops for ESP practitioners.
- The lack of resources (instructional materials) in ESP classrooms.
- Most students have a limited English proficiency or vary in their English competencies.
- Large class size.
- The lack of sufficient time in which to conduct ESP courses adequately.

(Makhlouf and Arar, 2022; Missoum, 2023)

1.9. Roles of ESP Teachers

Dudley-Evans and St. John (1998) identified five primary roles of an ESP practitioner: teacher, course designer and materials provider, collaborator, researcher, and evaluator. These roles distinguish ESP practitioners (teachers) from General English teachers.

1. **Teacher Role:** ESP teachers' role is different from that of teachers of General English because learners in ESP programs usually have more expertise in their particular areas. In this case, ESP practitioners employ a learner-centered approach to ensure learners' needs and goals are given priority. They also act as facilitators by laying down clear objectives as well as knowing the topic well. Such qualities as flexibility, responsiveness to learners' suggestions, and audacity to undertake teaching "experiments" are very important.
2. **Course Designer and Materials Provider Role:** ESP practitioners (teachers) have to design courses and choose or develop applicable materials. They also must assess the efficiency of these materials in meeting the course needs.
3. **Researcher Role:** ESP practitioners engage in research to understand the discourse of students' texts, see how students apply the identified skills and analyze text samples. It is also for them to understand the complexity of skills such as written communication.
4. **Collaborator Role**: ESP instructors work together with field experts as well as students to include specialist studies or activities with language instruction, working closely learners who are more familiar with specialized content, or having professionals review and comment on teaching materials.
5. **Evaluator Role:** A major involvement of ESP practitioners is in the evaluation of students, courses and teaching materials. They conduct language proficiency

and skills tests for either academic or professional reasons. They also evaluate the effectiveness of courses and materials.

These roles collectively define the multifaceted responsibilities of ESP practitioners in facilitating effective language learning and communication within specialized contexts.

1.10. ESP Teacher Training

According to Jucious (1963) and Dahama (1979), training in English for Specific Purposes (ESP) implies that a participant has to acquire skills that match with job standards hence improving qualifications and efficiency. In fact, successful ESP teacher training programs engage in "seminar-workshop" aimed at familiarizing participants with some concepts related to ESP with "staff attachments" where practitioners visit institutions, attend classes, and discuss issues (Ewer, 1983).

In his research, Kennedy (1983) laid emphasis on aligning training with language roles, focusing on the variety, purpose, and specificity of language required. A similar view is held by Dudley-Evans (1998) who argues that ESP training should concentrate on course setup, text analysis, and material evaluation, thereby expanding needs analysis to cover contextual and genre analysis as a way of equipping non-native English speakers with the necessary language tools. Needs analysis is pivotal to identify the target needs for syllabus and material development.

Though training is essential for ESP teachers, training is an area of neglect in ESP teaching and learning in Algeria. In this respect, Ziani (2018) characterized the training of Algerian ESP teachers as significantly undervalued, noting its impact on students' attitudes toward learning the target language. She concluded that training has become imperative for teachers to improve the quality of ESP education in Algerian universities.

Similarly, Makhlouf and Arar (2022) confirm the pressing necessity for ESP teacher training within Algerian universities to enhance teachers' competencies and address learners' needs.

Conclusion

In conclusion, this chapter provided an extensive review of the relevant literature on the analysis and categorization of the needs and difficulties of ESP students. It emphasized on the framework, which defined thoroughly the approach of English for Specific Purposes (ESP), the needs analysis and its types, the ESP difficulties and it categorized them into different assets. Moreover, it extensively explained the role of ESP teachers, including the various parts an ESP teacher can represent and their significance in the learning process. At last, the chapter demonstrated the various definitions and explanations of the ESP Teacher training.

Chapter Two

Research Methodology

Chapter Two

Research Methodology

Introduction

2.1. Research Design

2.1.1. Case Study

2.1.2. Methodology

2.2. The Population and Sampling

2.2.1. Students' Profile

2.2.2. Teachers' Profile

2.3. Data Gathering Tools

2.3.1. Questionnaire

2.3.1.1. Students' Questionnaire

2.3.1.2. Teachers' Questionnaire

2.3.2. Classroom Observation

Conclusion

Introduction

This chapter demonstrates the adopted research methods in this dissertation. It accounts for the research design, the sampling and the targeted population, and the data gathering tools. Moreover, it presents the main objectives of the current research.

2.1. Research Design

A research design is a strategic framework for action that serves as a bridge between research questions and the execution, or implementation of the research strategy (Durrheim, 2006, p.29). In other words, the research design aims at answering the research questions and hypothesizes by selecting subjects, research resources and data collection procedures. It is considered as the most crucial component of any research process and it presents a clear scheme for how the study will be carried out through explaining each asset, including the methods and strategies that were used to collect and analyze the resulted data or statistics.

The current study was conducted at the Department of Biology at Yahia Fares University of Medea. Its main focus was on second year bachelor's degree biology students and ESP teachers in the previously mentioned department. This research was carried out in a form of a case study that consisted of applying both the quantitative and qualitative research methods. There were three main research methods used which were: the students' and teachers' questionnaires in addition to the classroom observation.

2.1.1. Case Study

A case study involves a thorough examination of a specific subject, such as an individual, group, location, event, organization, or phenomenon. It is commonly used in

social, educational, clinical, and business research contexts as it provides an in-depth explanation, description and evaluation of the presented research hypothesizes or questions. The case study allows researchers to collect data and information on "why" a certain theory or strategy might be chosen in favor over another one (McCombes, 2024).

According to Stake (2010), case studies provide researchers with an opportunity for greater depth of understanding of an issue. Otherwise speaking, case studies offer researchers a chance to deeply delve into the presented research issue, unlike the commonly used research methods that cover a wide range of subjects, a case study emphasizes on a specific topic while providing a detailed investigation on its context and complexities. Consequently, case studies hold the greatest value as they have the ability to provide beneficial and insightful concepts that may seem peculiar or incredible through more generalized research methodologies. Therefore, this research selects second year bachelor's degree students majoring in biology as a case study.

2.1.2. Methodology

Creswell (2003) defines methodology as a coherent group of methods that harmonize one another and that have the capability to fit to deliver data and findings that will reflect the research question and suits the researcher's purpose. Correspondingly, it is defined as the process by which researchers plan their study so that they can reach their objectives using the selected research instruments. The research methodology includes every vital aspect of research, including research design, data collection methods, data analysis methods, and the overall framework within which the research is conducted (Sreekumar, 2024). Additionally, it incorporates different techniques and procedures in order to highlight and analyze the various information related to a certain research topic.

The given research adopts the mixed methods research which consists of both the quantitative and qualitative methodologies. Accordingly, this methodology aims to leverage the strengths of each method while addressing their respective limitations while the quantitative method involves collecting numerical data and statistical analysis, providing structured and measurable insights into patterns, trends, and schemas. On the other hand, the qualitative methods include gathering non-numerical data through various techniques like classroom observations, and open-ended surveys, offering insightful, detailed and rich perspectives on the presented matter. Moreover, the mixed has been used in conducting this research as it permits the researchers to collect different data from a wide variety of techniques.

2.2. The Population and Sampling

According to Marczyk, DeMatteo and Festinger (2005) "researchers may not be able to examine the entire population of interest" (p.18). Put differently, the population is considered as an uncontrollable entity as it is widely vast, thus the sampling is a necessity to represent the chosen population for the research investigation. As the sampling refer to the strategic selection of a specific category from the suggested population, which is also known as a sample, that is adopted for a detailed study and analysis. The main objective of sampling is to gather sufficient and insightful data from the sample to conduct valid inferences or generalizations about the entire population. Hence, the population of this research is addressed to ESP students at Yahia Fares University of Medea and the sampling is second year bachelor's degree biology students.

2.2.1. Students' Profile

The targeted students in this study were second year bachelor's degree students majoring in Biology at Yahia Fares University. The participants were aged between twenty to twenty-five years old. The sample consisted of forty students, twenty-nine females and eleven males. The investigation targeted specifically second year bachelor's

students to serve as a part of the examination in order to provide accurate and credible results that is bias-free.

2.2.2. Teachers' Profile

The targeted teachers in this survey were ESP teachers at Yahia Fares University of Medea. They were five teachers, three females and two males. They are specialized in teaching ESP for scientific major students. More specifically, they teach ESP for students majoring in biology which serves the main concern of the study.

2.3. Data Gathering Tools

The current research used questionnaires as a data gathering tool, they were being delivered to both students and teachers in an online form, more specifically, using Google forms. Additionally, a classroom observation was conducted during a session that included second year bachelor's students majoring in biology that focused on the way they were studying their biology modules in English.

2.3.1. Questionnaire

Many researchers adopt a variety of methodologies and tools to assure the credibility of the research findings, most of them depend on questionnaires as a reliable data collection tool. According to Dörnyei (2003), "questionnaires are one of the most common methods of data collection in second language (L2) research". In other words, questionnaires are one of the most efficient research methods used to collect, analyze, and interpret data. They are widely used among researchers because they can be designed, answered and analyzed easily. Similarly, Kothari (2004) states that "quite often questionnaire is considered as the heart of a survey operation." (p.101). He adds that the questionnaire includes a variety of questions that can be printed or typed to facilitate the process of answering the questions for the respondents. Consequently, the

researchers applied two questionnaires that were separately dedicated for students and teachers to collect the necessary data for the survey.

2.3.1.1. Students' Questionnaire

The first questionnaire was designed for second year bachelor's students majoring in Biology at Yahia fares University of Medea who were enrolled during the academic year of 2023-2024. Its main purpose was to gather data concerning students' needs and difficulties when learning English for Specific Purposes.

The questionnaire is a mixture of close-ended and open-ended questions. It is based on four sections. The first section contains two questions that concerns the informants' age and gender. The second section includes four questions that aim at acknowledging the students' English level, the student's interests in learning the English language, and the students' opinions about understanding English course materials and teachers' instructions. The third section contains five questions that focus on the students' attitudes towards learning English. The fourth section includes nine questions that aim at knowing students' specific needs and difficulties in ESP classroom.

2.3.1.2. Teachers' Questionnaire

The second questionnaire was administrated to ESP teachers at Yahia Fares University of Medea. This questionnaire aimed at collecting information concerning teachers' perspectives on students' needs and difficulties in ESP classroom for purpose of reinforcing and proving the gathered data from the students' questionnaire.

The teachers' questionnaire consists of fifteen questions that are divided into three sections. The first section contains three questions. It is dedicated to the participants' information including their gender, their profession whether it is a General English Teacher or a Biology teacher, and their experience of teaching ESP to Biology major students. The second section includes five questions and it focuses on the teachers' perceptions towards English instruction in ESP classroom. This section highlights the

impact of the switch from French to English on the teaching and learning process. It additionally focuses on the challenges faced by teachers while teaching English for biology students. The third section contains seven questions that mainly concentrate on the teachers' perceptions towards students' needs and difficulties in ESP Classroom. Moreover, they are requested to explain in detail the type of activities, strategies and methods they use to assess their students.

2.3.1.3. Classroom Observation

Classroom observation is a research method often used in educational studies to collect data on the behavior and interactions of teachers and students within the classroom setting. During classroom observation, a researcher might document teaching methods, student engagement, and interaction patterns. This can be invaluable for thesis work that is looking into educational practices, the effectiveness of teaching strategies, or classroom dynamics (Schoenfeld, 2013).

This research adopted the classroom observation as a data gathering tool. The classroom observation took place in medium-sized theoretical lecture hall at Yahia Fares university of Medea in which the intended audience was second year bachelor's students majoring in biology. The class consisted approximately of 40 students and it lasted for one hour and thirty minutes. The module of the session was related to Genetics studies which is considered as a foundational subject for second year students. The researchers made sure to keep the process of the classroom observation completely anonymous in order to ensure the credibility and authenticity of the research's results.

Conclusion

This chapter was dedicated to the detailed description of the research design, sampling and population, and the data gathering tools in which the research was based on to gather reliable and credible information on the matter. By following these rigorous methodologies, that consist of quantitative and qualitative methods, which enables the researchers to collect new insights and knowledge in order to contribute methodologically to the broader scholarly community.

Chapter Three

Presentation and Analysis of the Results

Chapter Three

Presentation and Analysis of the Results

Introduction

3.1. Analysis of Results Obtained from the Students' Questionnaire

3.2. Analysis of Results Obtained from the Teachers' Questionnaire

3.3. Analysis of Results Obtained Classroom Observation

Conclusion

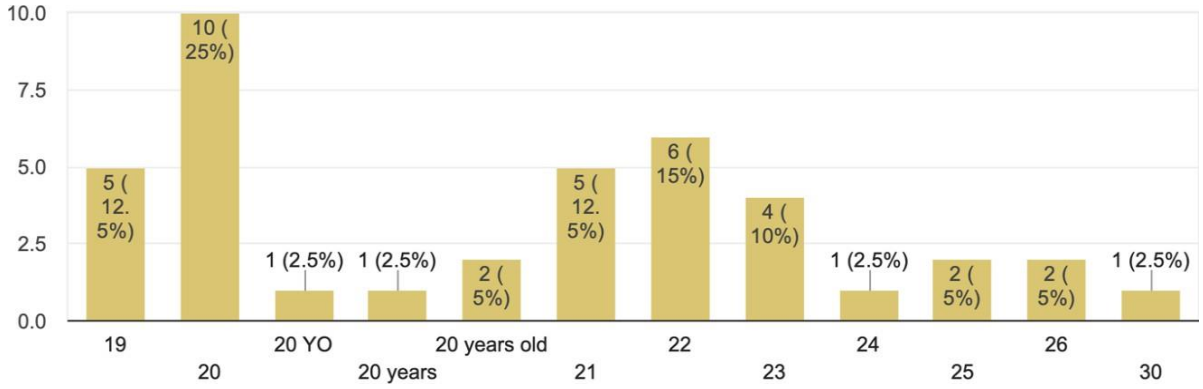
Introduction

The current chapter includes the description of the results obtained from the questionnaires and the classroom observation. The results provide a comprehensive view concerning the needs and difficulties of ESP students. Through the data analysis and the presentation of the results, the research questions and hypothesis are easier to answer by the researchers.

3.1. Analysis of the Results Obtained from the Students' Questionnaire

- **Section One: Informants' Background**

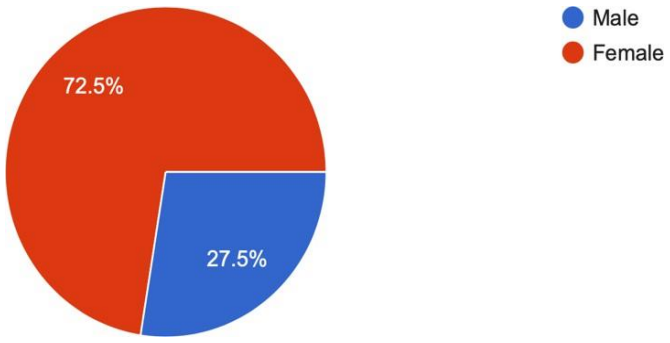
Question One: This question interrogates about the age of the designated students who were provided with this questionnaire.



Graph.3.1. Informants' Age

The obtained results indicate that the category of the students aged between 19 to 22 years is higher than the category of students who are aged between 23 to 30 years old.

Question Two: This question asks about the gender of the students.

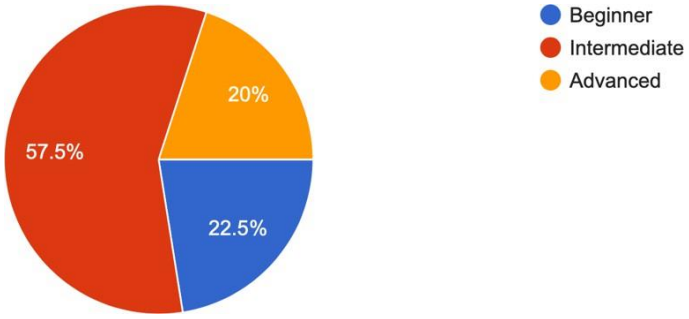


Pie Chart.3.1. Informants' Gender

Pie Chart.3.1 displays that (71.8%) of the students who answered the questionnaire are females, whereas about (28.2%) of the students are males.

- **Section Two: Students' English Proficiency**

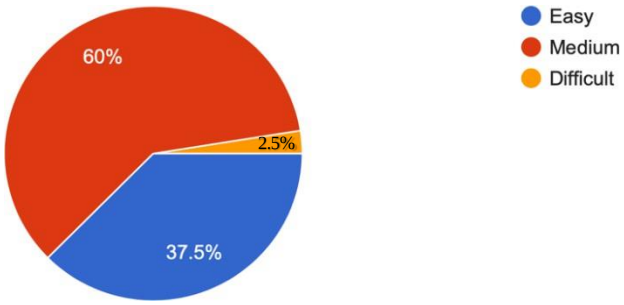
Question Three: This question asks the students to describe their English level ranging from beginner, intermediate to advanced.



Pie Chart.3.2. Informants' Level of English

Pie Chart.3.2 shows that (57.5%) of the students have an intermediate level. While (20%) of the students have an advanced level. In addition, a percentage of (22.5%) of the students who answered the questionnaire have a beginner's level.

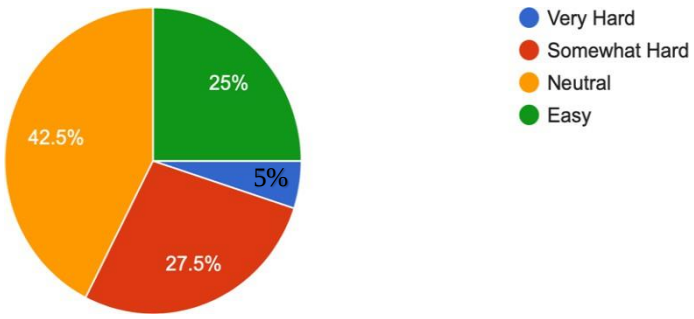
Question Four: This question considers the student's opinion concerning the difficulty of learning the English language.



Pie Chart.3.3. Biology Students' Opinions on the Difficulty of Learning English

Pie Chart.3.3 demonstrates that the majority of students (60%) find learning the English language is medium in difficulty. While a considerable number of students (37.5%) find it easy to learn and only few students (2.5%) find learning English difficult.

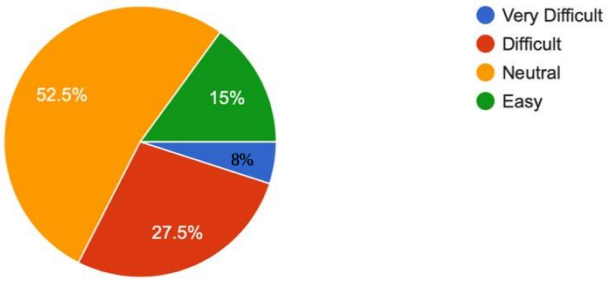
Question Five: This question asks the students about the level of difficulty concerning understanding their English teachers' instructions.



Pie Chart.3.4. Biology Students' Difficulty Level in Understanding English Teachers' Instructions

The results indicate that (25%) of the students find it 'easy' to understand their English teachers' instructions while (27.5%) find it somewhat 'hard' alongside a number of students (5%) who find it 'very hard'. On the other hand, (42.5%) of the students chose to remain 'neutral' in their answer.

Question Six: This question interrogates students about the level of difficulty concerning the comprehension of the English course materials.



Pie Chart.3.5. Biology Students' Perceived Difficulty in Comprehending English Course Materials

Pie Chart.3.5 shows that while most students (52.5%) are neutral in their answers, whereas, (27.5%) of students find it from ‘difficult’ and (8%) find it ‘very difficult’ to understand their course materials in English. However, some students (15%) find it ‘easy’ to grasp the concept of their English course materials.

- **Section Three: Students' Attitudes towards Learning English**

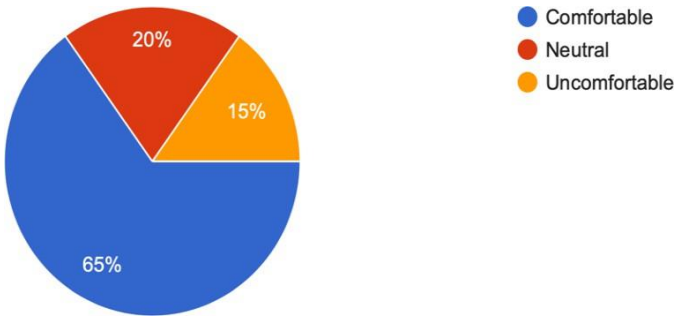
Question Seven: This question asks the students about their opinion concerning the importance of learning English.



Pie Chart.3.6. Biology Students’ Opinions on the Importance of English

Pie Chart.3.6 shows that all the students who answered the questionnaire believe that learning the English language is important.

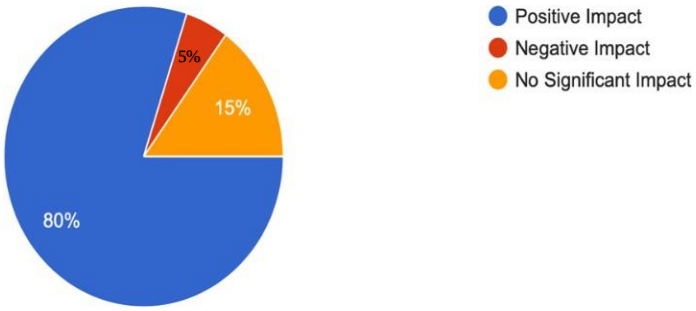
Question Eight: This question considers the students' feelings concerning their comfortability in studying the English language.



Pie Chart.3.7. Biology Students' Comfort Levels in Studying the English Language

Pie Chart.3.7 displays that (65%) of the students are comfortable with studying the English language yet (20%) of the students remained neutral. Additionally, only (15%) of the students are uncomfortable with learning the English language.

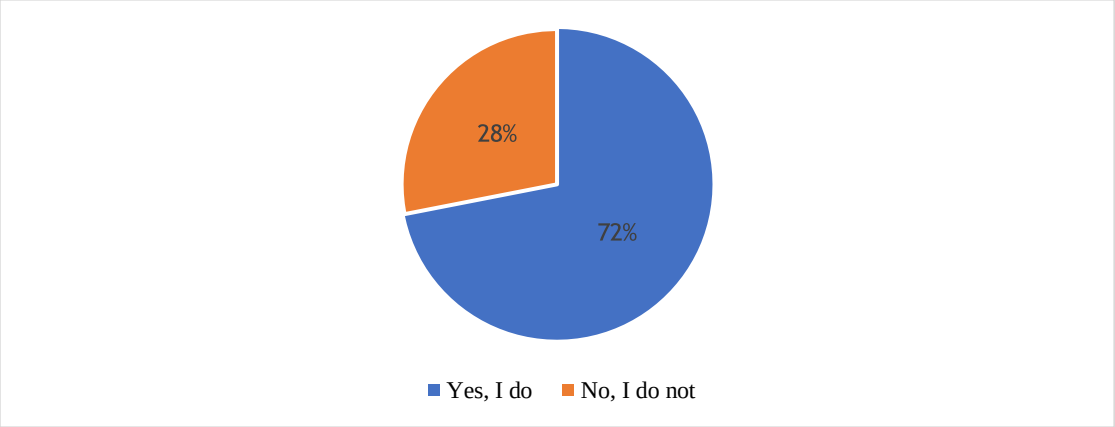
Question Nine: This question asks the students about the kind of impact that the switching to English has done to their academic learning experience.



Pie Chart.3.8. Impact of Switching from French to English on Biology Students' Academic Learning Experience

The results show that (80%) of students have had a positive impact with the switching from French to English within their academic learning experience. However, only (5%) of the asked students have had a negative impact while (15%) of the students have noticed no significant impact.

Question Ten: This question interrogates whether the students think that it is important to study their major in the English language



Pie Chart.3.9. Biology Students' Views on the Importance of Studying Their Major in English

The results imply that (28%) of the students who answered the questionnaire do not believe that it is important to study their major in the English language while (72%) of the students answered with 'yes'.

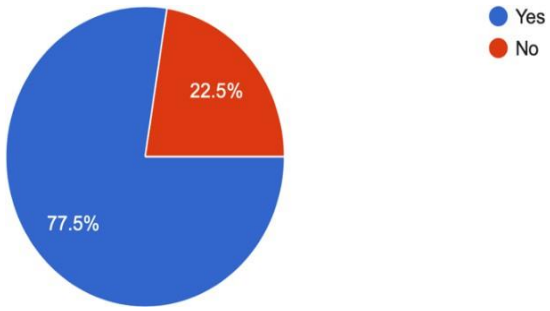
❖ **If 'yes', why?**

The participants stated different reasons such as:

- I believe that studying Biology in English would help me reach my goals and succeed at my future studies.
- I believe it is important to study our major in English because I believe it helps us develop ourselves professionally and personally.
- It is important because most contemporary research and published articles in biology are mainly in English language.

- English is valuable and powerful. It is the language of science and knowledge. Therefore, we should learn it to improve our academic performance.
- I find it important because studying my major English is easier than in French.
- English is an international language that is widely spoken across the globe. Hence, learning it would allow us to access a wealth of academic resources. In addition, many companies and industries use English for business communication; hence, it will broaden our range of opportunities.
- Studying in English can give access to more resources, improve communication skills, and offer international opportunities.
- I think it helps at being able to work abroad.
- I agree with that because English is valued globally and I love learning it.
- We can find more research sources in our major written in English compared to other languages.
- Simply because I prefer English over French. It is more enjoyable and easier.

Question Eleven: This question asks the students about the efficiency of the methods adopted by their English teacher for the acquisition of the necessary language skills.

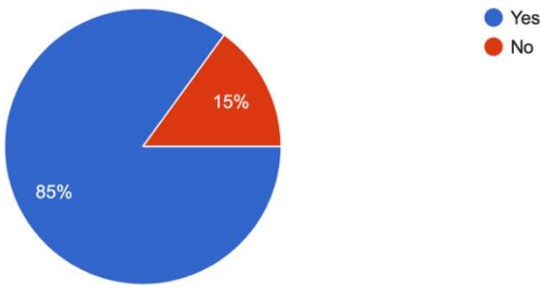


Pie Chart.3.10. Biology Students' Opinions on the Efficiency of Their English Teacher's Methods for Acquiring Language Skills

The results indicate (77.5%) of the students agreed that the methods adopted by their English teacher in class are efficient for the proper acquisition of the necessary language skills. On the other hand, only (22.5%) of the students do not find those methods effective to acquire the necessary language skills.

- **Section Four: Students' Needs and Difficulties in ESP Classroom**

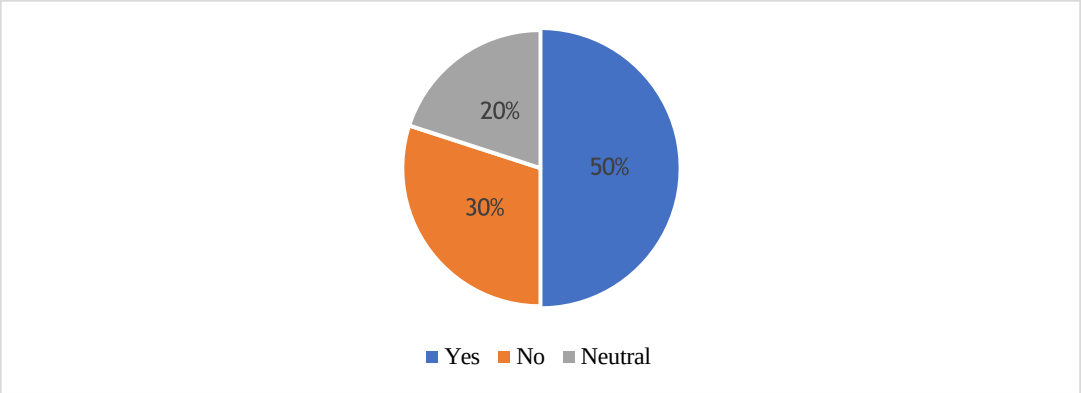
Question Twelve: This question asks about the students' point of view concerning whether studying English for Specific Purposes focused on biology is beneficial or not.



Pie Chart.3.11. Biology Students' Views on the Benefits of Studying English for Specific Purposes Focused on Biology

The results illustrate that (80%) of the students believe that English for Specific Purposes focused on Biology would be beneficial for them. On the contrary, (15%) of the students do not believe that ESP focused on Biology would be helpful for their academic career.

Question Thirteen: This question examines students' opinions on whether their English language proficiency affect their understanding of biological terminologies.



Pie Chart.3.12. Biology Students' Feelings about How Their English Proficiency Affects Understanding Biological Terminologies

The results indicate that the majority of students (30%) do not feel that their English language proficiency affects their comprehension of biological terminologies and only (20%) of the students were 'neutral'. On the other hand, a decent number of students (50%) believe that their English level affects their understanding of biological terminologies which affects their academic courses.

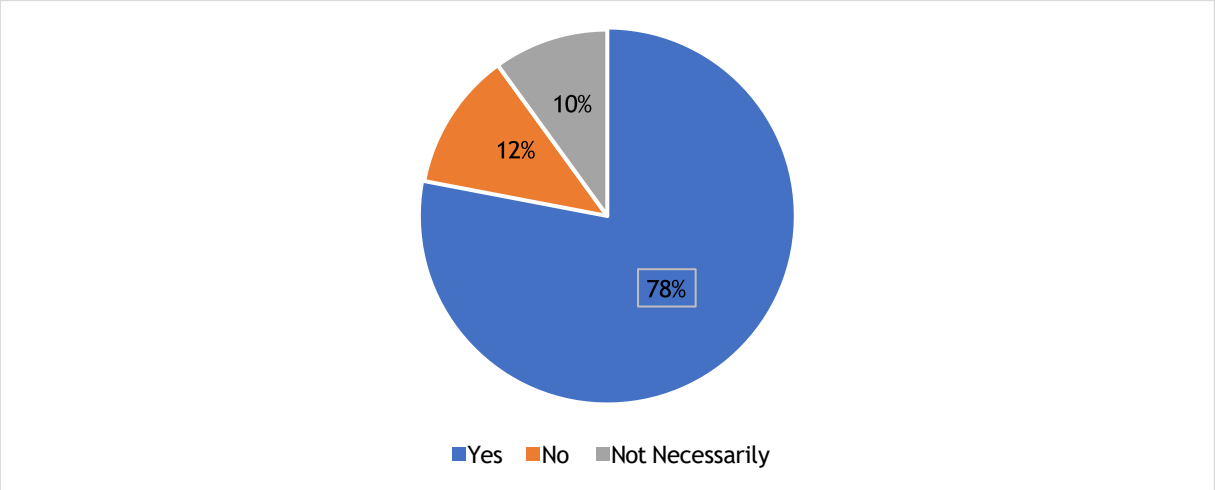
❖ **If 'yes', how?**

When asked whether their English language proficiency affect their understanding of biological terminologies, the informants mentioned the following:

- My English proficiency plays a crucial role understanding my major materials, especially scientific words and terminologies.
- I believe it significantly affects my studies because I shifted from studying in French during my first year to studying in English. It feels like an adventure, but it also makes me worried and afraid.
- If I have a poor English level, understanding biological terminologies and my studies becomes difficult.
- English proficiency influences my ability to understand complex concepts and communicate effectively with peers in the field.

- In order to understand biological terminologies, the students must feel comfortable with English; otherwise, they would face difficulties understanding or using scientific language in biology.
- I believe it does because the strong English baggage supports explaining the content and the lessons' comprehension.
- I believe that it effects most students because if they do not have the necessary English language skills, they cannot understand their major-related studies including biology terminologies that are crucial in our researches and projects.

Question Fourteen: This question interrogates students about their preferences concerning the implementation of extra English language support or language training courses within their biology sessions.



Pie Chart.3.13. Biology Students' Preferences for Implementing Extra English language Support or Training Courses in Biology Sessions

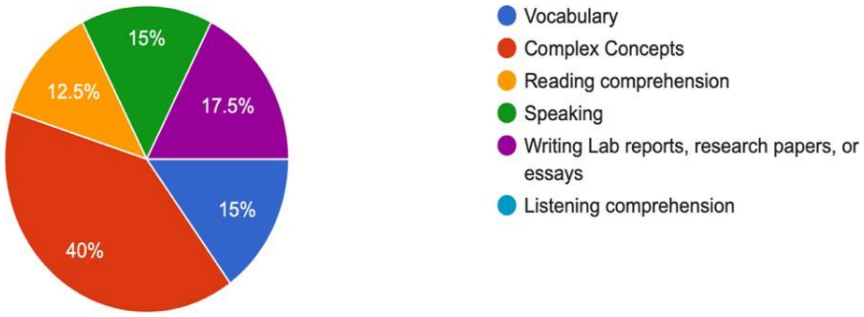
The results indicate that while only (12%) disagreed on the implementation of extra English lessons within their biology courses and only (10%) of the students said 'Not Necessarily'. The rest of the students (78%) agreed to adding extra courses of the English language alongside their biology sessions.

❖ **And why?**

The respondents justified their answers as follows:

- I believe extra language support will help us understand the language and understand the topic eventually.
- I prefer language-training sessions added into biology courses because this will help us understand scientific terms better.
- I would prefer extra English language support, because it is easily applicable.
- I believe that without extra language training or support, it is a little bit hard to understand biological terminology and lessons.
- To learn and understand more biological terminology and improve my English skills.
- That would be helpful since it will ensure that all students understand the terminologies and concepts making learning more effective.
- I would very much prefer that as it is going to make our English language skills much more effective.

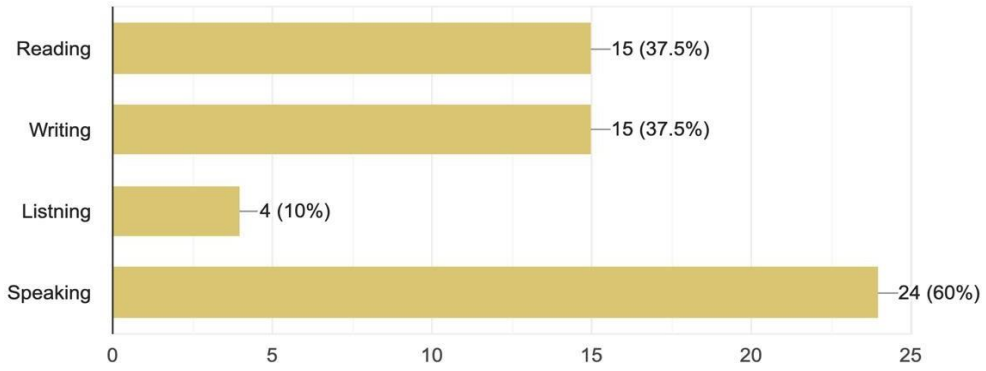
Question Fifteen: This question interrogates students concerning the different aspects of studying biology in English that they find the most challenging.



Pie Chart.3.14. Most Challenging Aspects of Studying Biology in English According to Students

The results demonstrate that (40%) of the students find complex concepts of biology as the most challenging aspect yet (17.5%) of the students said that writing lab reports, research papers or essays are the most difficult aspect. Additionally, (15%) of the students consider speaking as the most challenging while another (15%) of the students find that vocabulary is the most challenging aspect of studying biology in English however only (12.5%) think that reading comprehension causes a difficulty for them in their learning process.

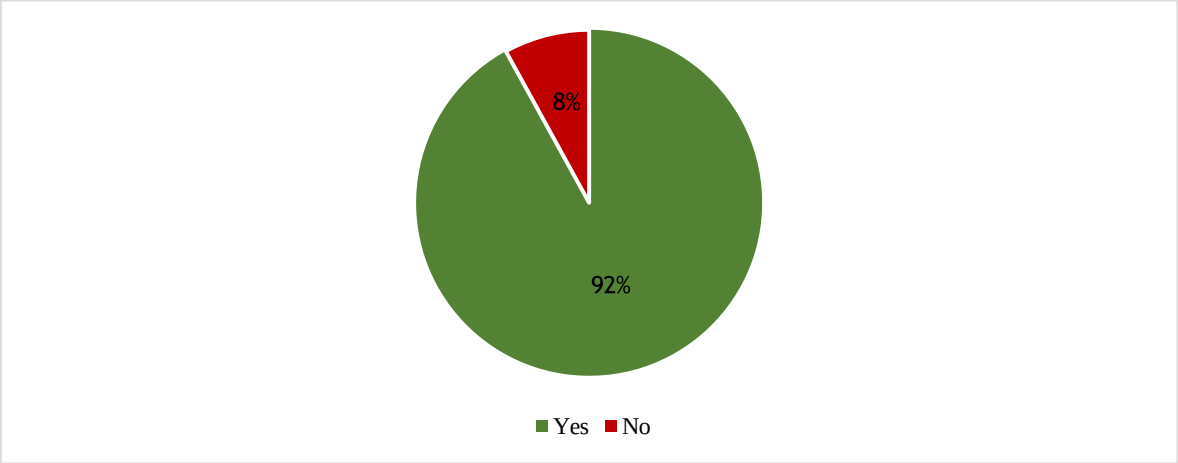
Question Sixteen: This question asks the students about the most crucial language skill they think requires more focus and improvement in their English classes for biology studies.



Graph.3.2. Biology Students' Opinions on the Most Crucial Language Skill for Improvement in English Classes for Biology Studies

The results indicate that (60%) of the students emphasize on the speaking skill as being the necessary language skill to be improved. Then, reading and writing come next as almost (38%) of the students consider them as crucial skills altogether. Lastly, only (10%) of the students chose listening as the specific language they want to focus on in their English class for biology studies.

Question Seventeen: This question interrogates students about whether they have faced any specific difficulties in understanding English-language scientific texts related to biology.



Pie Chart.3.15. Biology Students' Difficulties in Understanding English-Language Scientific Texts in Biology

The results show that the majority of students (92%) have faced various difficulties in understanding English-language scientific texts related to biology. On the other hand, only (8%) of the students said that they have not faced any difficulties concerning understanding English-language scientific texts.

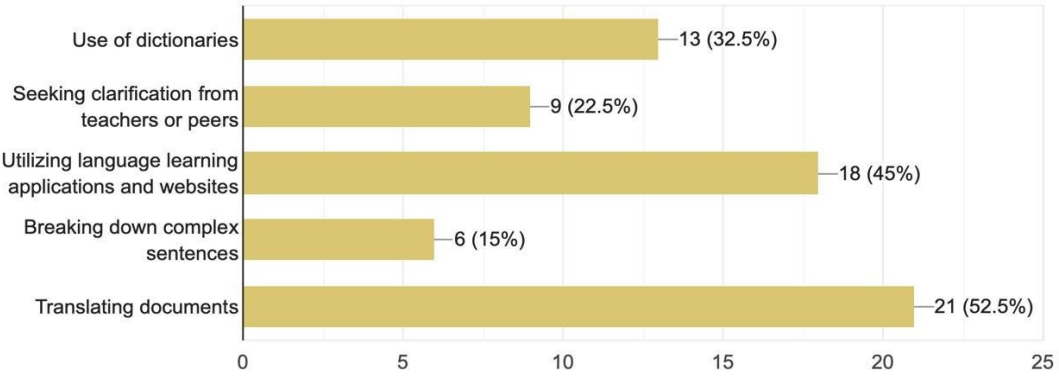
❖ **If yes, how?**

The respondents mentioned the following difficulties:

- I cannot understand the teachers' instructions in the English Language.
- The difficulties I have faced range from reading complexities to the lack of vocabulary related to my major.
- Most of the biology-related terminologies are a bit difficult to pronounce and hard to understand.
- Most students face difficulties when doing homework or conducting projects given to us by our teachers or even revising for our exams.
- New terminologies and concepts in every class.

- Sometimes I might not be familiar with certain scientific vocabulary so I need some research to understand the terms better.
- Complex terminology and sentence structures can sometimes pose challenges in understanding English-language scientific texts related to biology.
- Some scientific terms pose an obstacle in understanding the text.
- Complex scientific terms rarely used in daily life.
- Especially when you have been studying everything in French and suddenly find yourself forced by circumstances to switch in English.
- Shortage of English sources and materials inside and outside the school. Moreover, most English teachers' instructions are not clear and straight to the point.

Question Eighteen: This question requests the student's strategies they adopt to manage language difficulties when doing their homework in English for their biology courses.

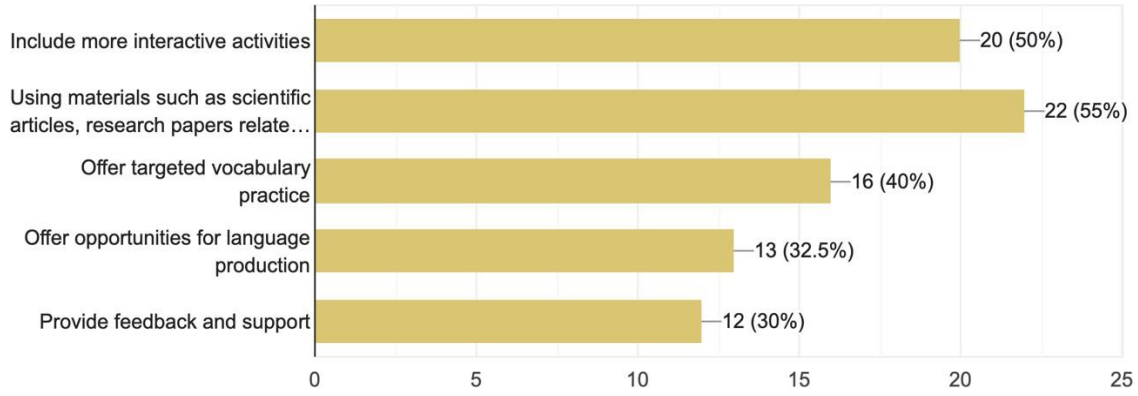


Graph.3.3. Biology Students' Strategies for Managing Language Difficulties in English Homework for Biology Courses

The results indicate that (52.5%) of the students rely on translating documents while (45%) of the students depend on utilizing language learning applications and websites to manage the language difficulties they face when doing their homework.

However, (32.5%) of the students use dictionaries and (22.5%) of them seek clarification from their teachers and peers. On the other hand, only (15%) of the students do their biology homework by breaking down complex sentences.

Question Nineteen: This question focuses on the students' recommendations to improve their English for Specific Purposes learning experience.



Graph.3.4. Biology Students' Suggestions for Enhancing English for Specific Purposes Learning Experience

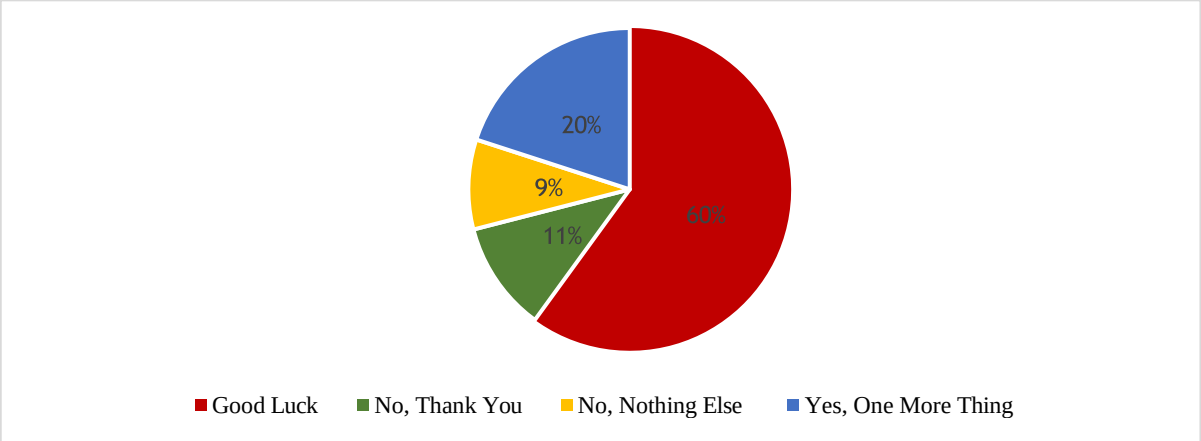
The results reveal that (55%) of the students suggest that their ESP teachers should use authentic materials such as scientific articles, research papers related to biology. While (50%) of the students suggest to include more interactive activities, only (30%) of them suggest that ESP teachers should provide feedback and support and (32.5%) believe that they should offer opportunities for language production. Lastly, (40%) of the students suggest that ESP teachers offer targeted vocabulary practice to improve the learners' English for Specific Purposes learning experience.

- **Others, please specify:**

When students asked to give their suggestions for improving their English skills, they proposed the following:

- Utilizing interactive multimedia resources, providing targeted vocabulary exercises, and encouraging regular practice through discussions and presentations can enhance the English for Specific Purposes learning experience.
- Take educational courses and extra English courses.
- I suggest having speaking sessions in the English language concerning biology related topics.
- I suggest adding more English sessions to the curriculum of biology.
- I suggest starting clubs as an example to encourage our classmates and the students in general to speak more in order to improve their language skills.
- We need additional practice and exposure to the language for instance having regular conversations with native speakers. This will motivate students to excel in their language learning experience.
- Implement enjoyable and beneficial methods that helps anyone learn the language and understand the lessons at the same time.
- One can elevate their language skills by practicing through writing, reading, speaking and listening exercises.
- Organizing language trainings and support groups that permit students to read scientific books in English, to watch videos and documentaries while practicing their new knowledge with their classmates.

Question Twenty: This question requests the students to include extra comments or ideas they have in mind.



Pie Chart.3.16. Participants' Additional Comments and Ideas

The results clearly reveal that (60%) of the students wished 'Good luck' to the researchers while (20%) of the students included their comments and ideas. On the other hand, (11%) of the students said 'No, thank you' and only (9%) of the students said 'No, nothing else'.

❖ **If yes, what would you like to add?**

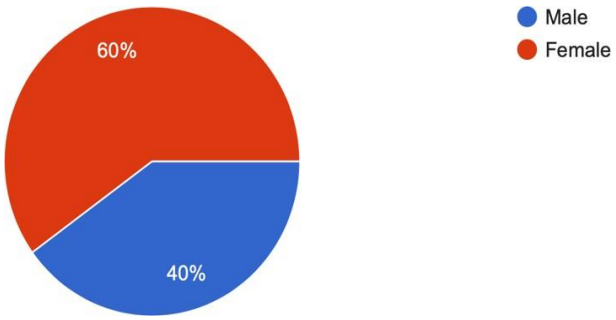
When the participants were requested to give additional comments, they said the following:

- I just want to say that the English language is a language that enables you to achieve great goals and help you know the cultures of other countries.
- I think, in our universities not all the teachers are able to teach scientific subjects in English, it looks difficult for both teachers and students.
- If you can help us with more things to develop our English.
- Teachers should have English training. Additionally, the problem of communication between teachers and students should be addressed. For instance, lessons are delivered in English, but some materials are written in French.
- Both students and teachers are facing difficulties because of the abrupt transition from the French language to the English language at Algerian universities.

3.2. Analysis of Results Obtained from the Teachers' Questionnaire

- **Section One: Participants' Information**

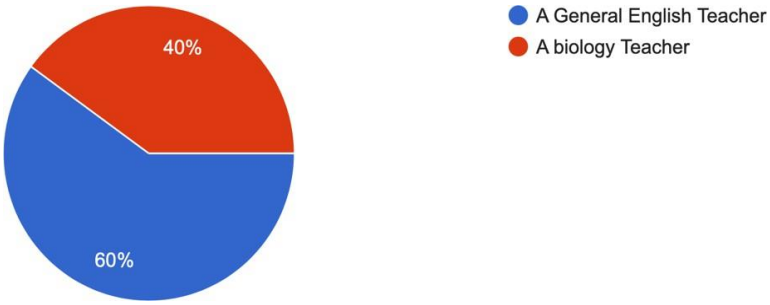
Question One: This question interrogates about the gender of the designated teachers who were provided with this questionnaire.



Pie Chart.3.17. Participants' Gender

The results show that (60%) of the teachers who answered this questionnaire are females while only (40%) are males.

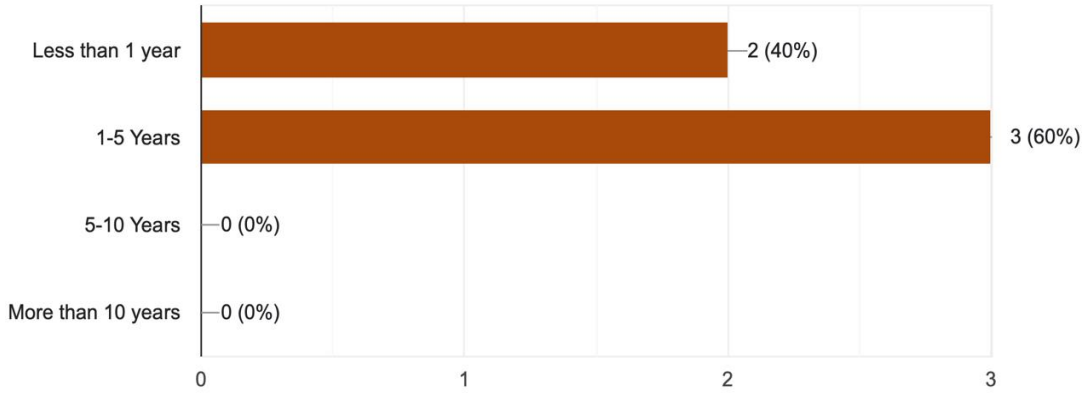
Question Two: This question asks about the teachers' profession whether they are General English Teachers or Biology Teachers.



Pie Chart.3.18. Participants' Professions

The results indicate that (60%) of the teachers are General English teachers and the other (40%) are biology teachers.

Question Three: This question asks about the teachers' level of experience in teaching ESP to biology major students.

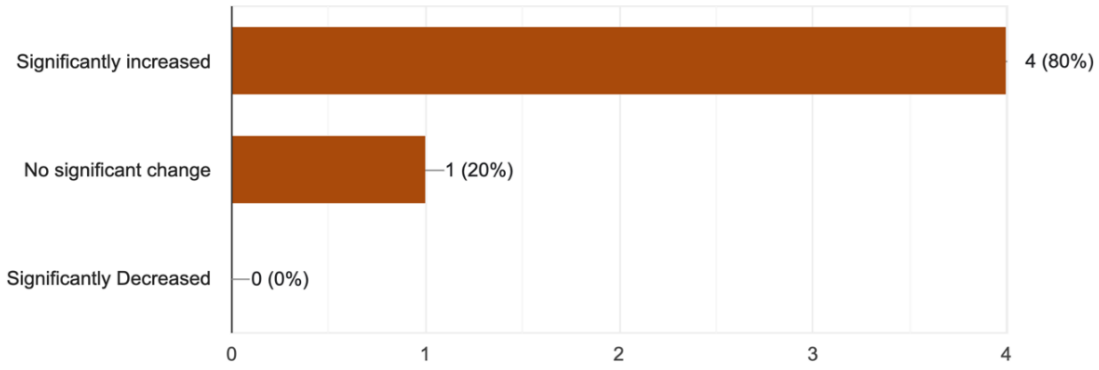


Graph.3.5. Teachers' Level of Experience in Teaching ESP to Biology Major Students

The results demonstrate that (60%) of the teachers have a level of experience that ranges from one to five years while the other (40%) of the teachers have less than one year of experience in teaching ESP to biology major students.

- **Section Two: Teachers' Perception towards English Instruction in ESP Classroom**

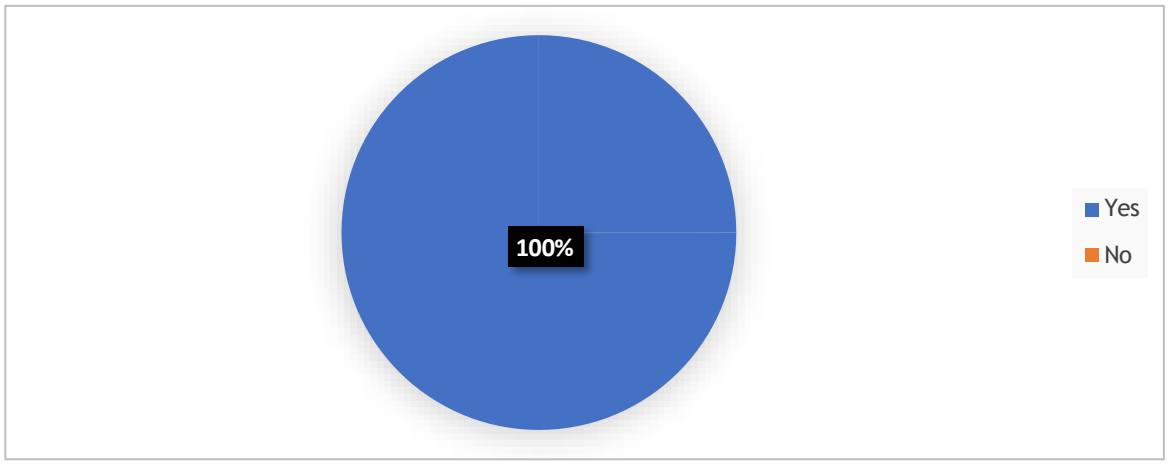
Question Four: This question investigates the impact of the switch to English on the workload of ESP teachers.



Graph.3.6. The Impact of Switching to English on ESP Teachers' Workload

The results reveal that (80%) of the teachers who answered the questionnaire have had a significant increase in their workload as ESP teachers while only (20%) of the teacher have had no significant change on their workload.

Question Five: This question enquires about the teachers' opinions concerning the noticeable difference in students' engagement or comprehension since transitioning to teaching in English.



Pie Chart.3.19. Teachers' Opinions on the Changes in Biology Students' Engagement and Comprehension after Transitioning to English Instruction

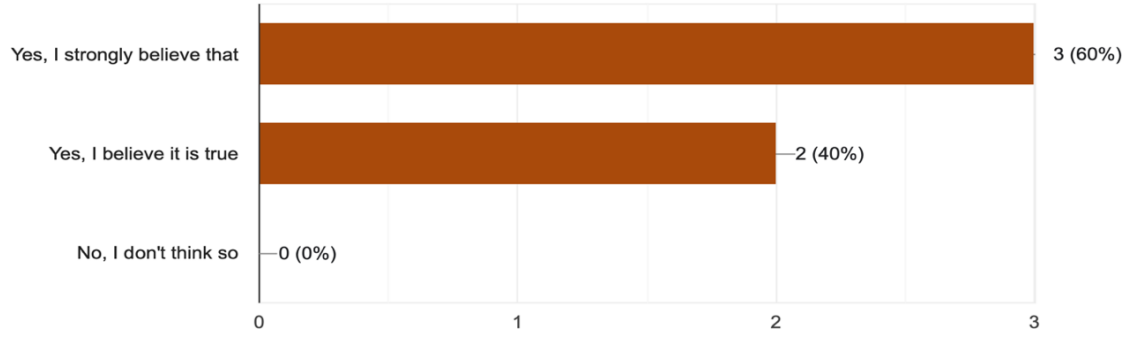
The results indicate that all the participants noticed differences in students' engagement and comprehension since transitioning to teaching in English.

❖ **If yes, please explain:**

The participants mentioned the following:

- Students have started paying more attention to their courses.
- Students have become more comfortable participating and interacting while using the English language.
- Unpleasant differences have negatively affected the students' engagement since transitioning to teaching in English.
- Students' focus has become hard to balance and to maintain since the transitioning.
- The different English levels of the students affect their overall understanding of the course materials as most of time, some students excel better than their classmates.

Question Six: This question takes into consideration the teachers' point of view concerning the new opportunities that opened-up to biology students to conduct successful research since they started teaching in English.



Graph.3.7. Teachers' Perspectives Concerning the New Opportunities that Teaching in English has opened-up for Biology Students

The results show that (60%) of the teachers strongly believe that teaching in English has offered new opportunities to biology students in order for them to conduct successful researches in the future while (40%) of the teachers agree with the matter.

❖ **And, why?**

The participants stated a number of justifications such as:

- Teaching in English is remarkably important and it does open up several opportunities especially because most of the scientific research and articles are written in English such as the well-known website for medical research « pub med ».
- The greatest bulk of scientific research conducted up until today is in English. Therefore, I dare say that teaching in English has reduced some burden previously placed on students. In the past students were required to translate English articles into French in order to communicate their research.
- Globalization has made the students aware of the real-world situation. With everything now being taught and explained in English, learning English has become crucial for their personal and professional development. Today, they can conduct researches, contribute to the community and improve their skills to succeed in the future.

Question Seven: This question enquires about the teachers' adequate support or training they have received to teach in English since the switch occurred.

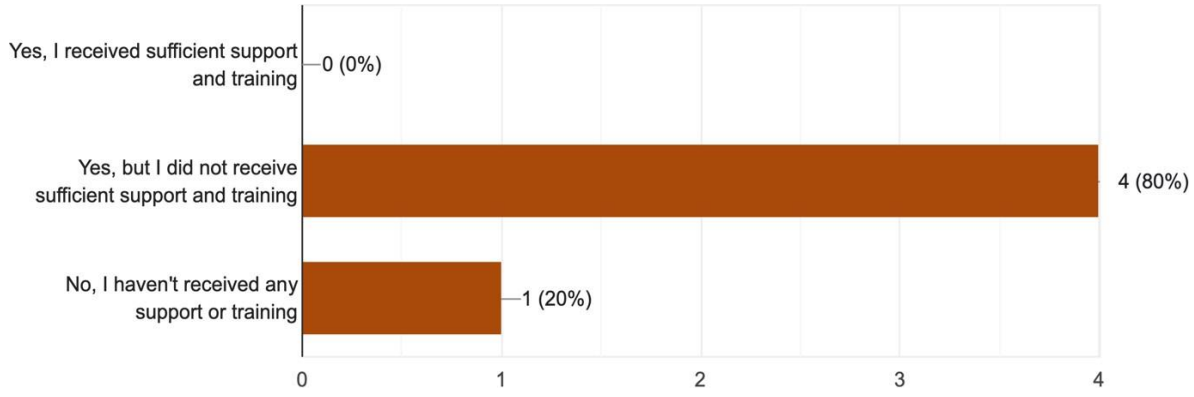
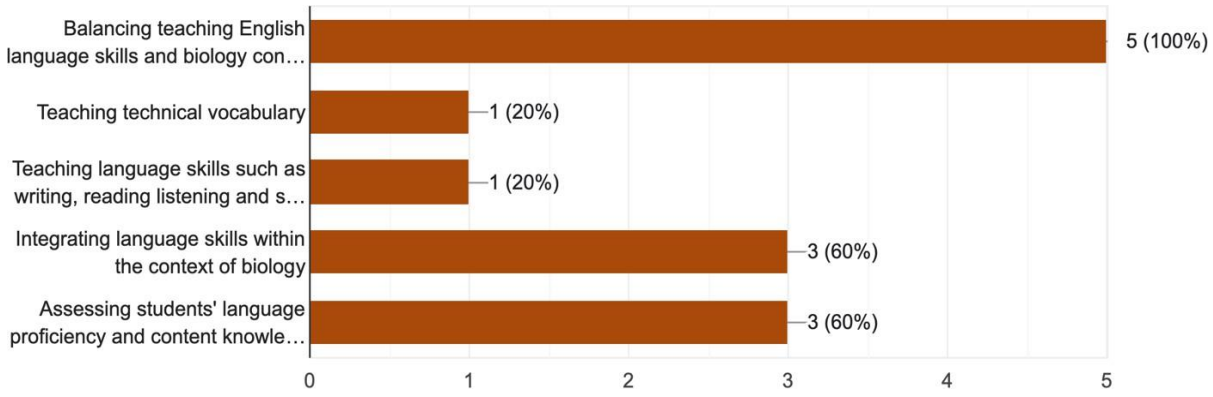


Chart.3.8. Evaluating Teachers' Support and Training for English Instruction Following the Transition from French

The results reveal that while (80%) of the teachers are qualified to teach English but they did not receive sufficient support and training, only (20%) of the teachers have not received any support or training to teach English for biology major students.

Question Eight: This question interrogates the teachers about some of the challenges they faced in teaching biology in English.



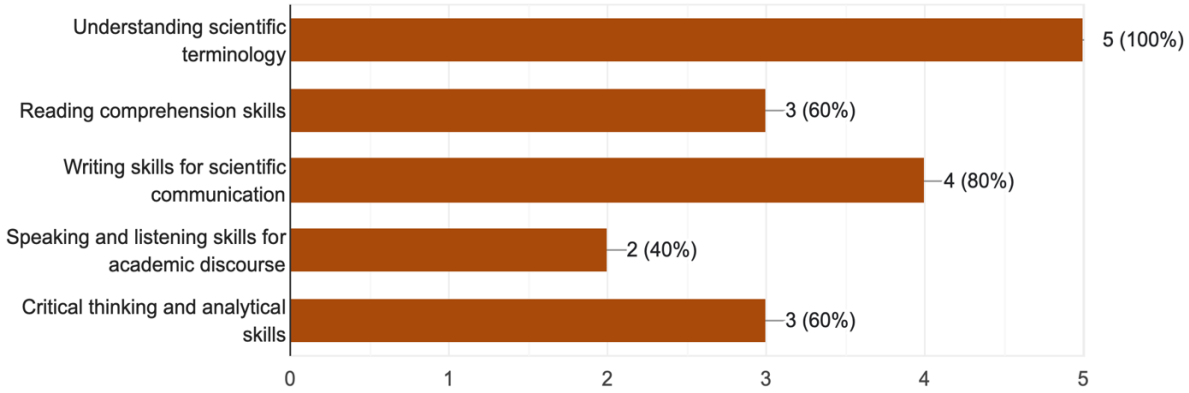
Graph.3.9. Teachers' Challenges in Teaching Biology in English

The results indicate that all the participants (100%) face troubles concerning balancing teaching English language skills and biology content. Moreover, (60%) of the

respondents find it difficult to integrate language skills within the context of biology. Similarly, (60%) of the participants consider assessing students' language proficiency and content knowledge as the difficult task. Meanwhile, (20%) of the informants find difficulties teaching technical vocabulary, and another (20%) of the teachers assume that teaching the four necessary language skills is the most challenging part in ESP teaching.

- **Section Three: Teachers' Perception towards Students' Needs and Difficulties in ESP Classroom.**

Question Nine: This question takes into consideration the teachers' opinion concerning the specific areas that needs prioritizing by the English teachers when teaching English to biology students.

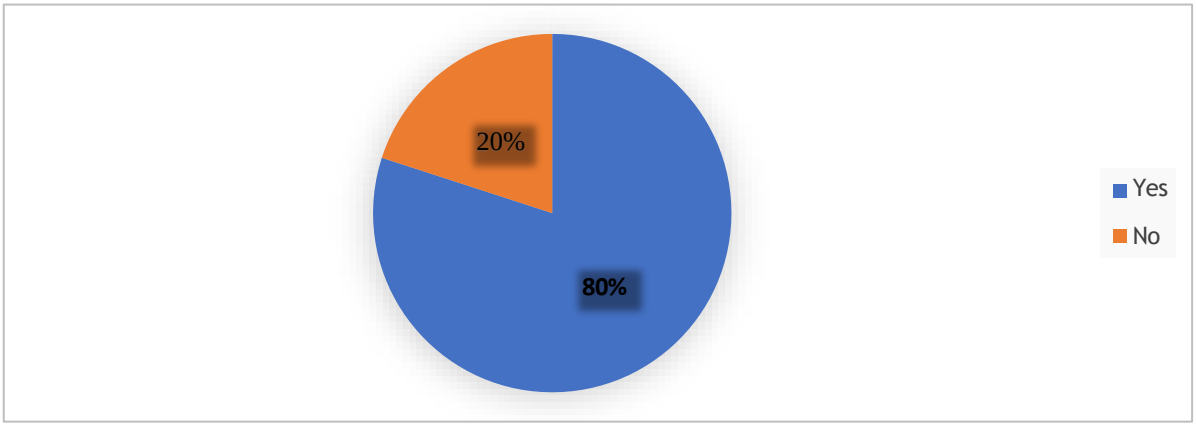


Graph.3.10. Teachers' Opinions on the Specific Areas that they should Prioritize when Teaching English to Biology Students

The results reveal all the teachers (100%) agree that the top priority is 'understanding scientific terminology'. Furthermore, (60%) of the teacher believe that 'critical thinking' should be prioritized, while (80%) of the teachers emphasize the importance of 'writing skills for scientific communication'. Moreover, (60%) of the teachers consider 'reading

comprehension skills' to be vital, and (40%) of them suggest that 'speaking and listening skills for academic discourse' are the most necessary areas requiring attention.

Question Ten: This question asks the teachers about their perspectives towards the current English curricula and course content for teaching biology adequately in order to meet the needs of the students.



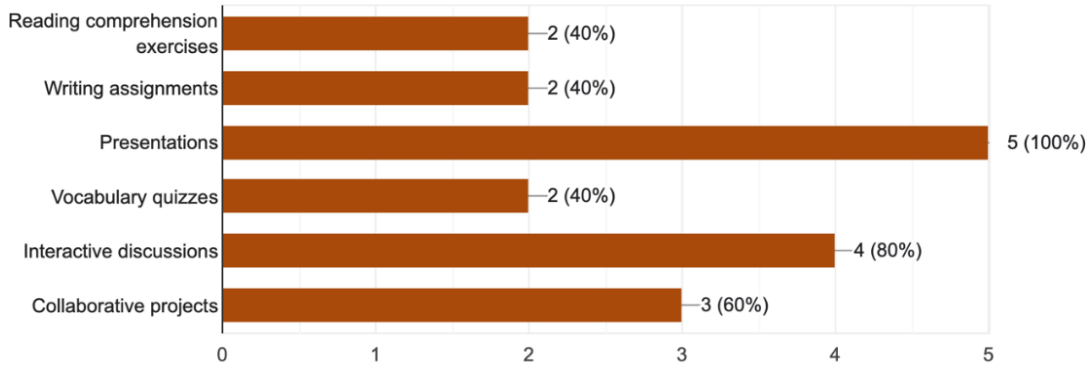
Pie Chart.3.20. Teachers' Perspectives on the Adequacy of the Current English Curricula for Teaching Biology

The results demonstrate that (80%) of the participants believe the current English curricula and course content are adequate and meet students' needs, whereas (20%) assert that they are not.

- **If no, why?**

The participants mentioned that the current English curricula and course content place students in a situation where they must study their major in a language they have not mastered and were not adequately prepared for.

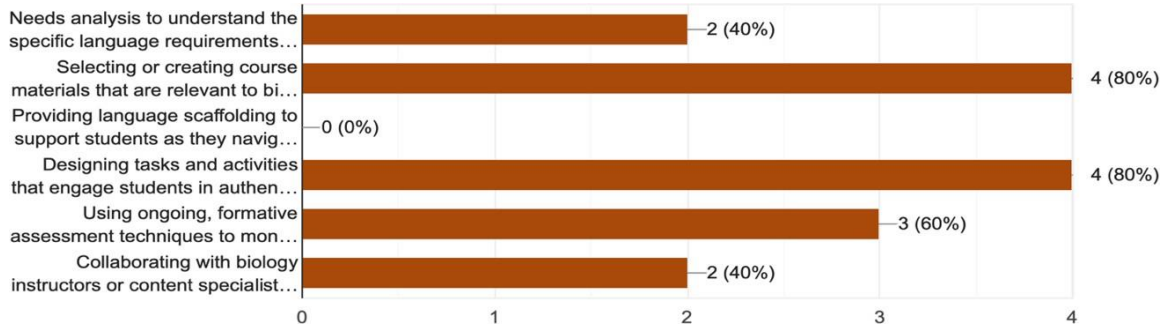
Question Eleven: This question enquires about the type of activities adopted by teachers to assess their students' English skills.



Graph.3.11. Teachers' Adopted Activities to Assess their Biology Students' English Skills

The results indicate that 'presentations' are the most commonly adopted activity, used by (100%) of the teachers. Additionally, (40%) of the teachers suggest that 'reading comprehension exercises' are frequently used, while (40%) also use 'writing assignments,' and another (40%) incorporate 'vocabulary quizzes.' To assess their students' English skills, (80%) of the teachers employ 'interactive discussions,' and (60%) use 'collaborative projects.'

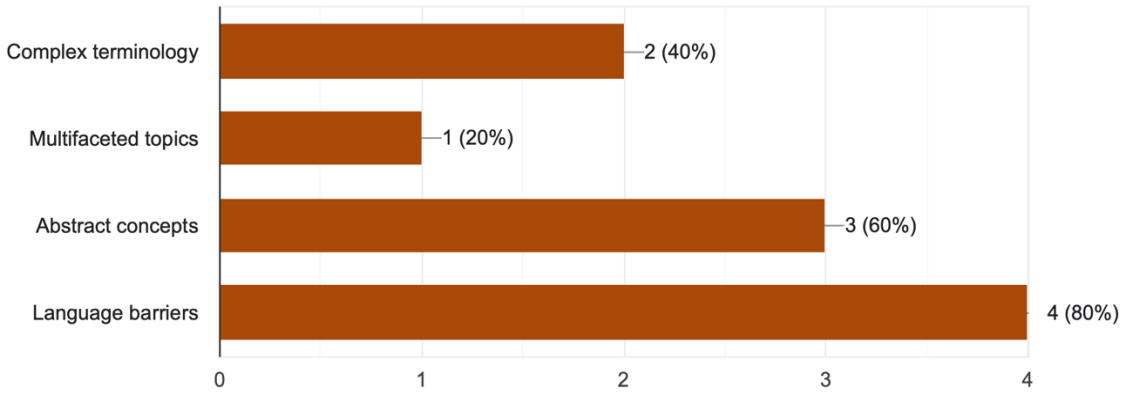
Question Twelve: This question interrogates the teachers about the strategies they use to provide effective English courses for their students.



Graph.3.12. Teachers' Adopted Strategies to provide Effective English Courses for Biology Students

The results reveal that (80%) of the teachers follow certain strategies that include selecting or designing course materials that are relevant to biology topics and tailoring tasks and activities that engage students in authentic, real-world language use related to biology. Additionally, (60%) of the teachers who answered the questionnaire adopt the strategy of using ongoing, formative assessment techniques to monitor students' progress and provide timely feedback on their language development. While (40%) of the teachers tend to rely on the needs analysis to understand the specific language requirements of biology students, another (40%) of the teachers collaborate with biology instructors or content specialists to ensure alignment between language instruction and biology curriculum goals in order to provide effective English courses for students.

Question Thirteen: This question takes into consideration teachers' perspectives concerning the main challenges biology students face when they try to understand scientific terminology and concepts in English.



Graph.3.13. Teachers' Perspectives on the Main Challenges of Biology Students in Understanding Scientific Terminology in ESP Classroom

The results demonstrates that (80%) of the teachers said that the students have issues concerning language barriers, while (60%) said that they find troubles with

abstract concepts. On the other hand, (40%) of the teachers noticed that students face difficulties when it comes to complex terminology, and only (20%) of the teachers said they find the multifaceted topics the most challenging in ESP instruction.

- **Other, please specify:**
  - Lack of familiarity with topics related to the field of study.
  - Most students lack sufficient background knowledge concerning biology lessons or scientific research papers in English, as they are more familiar with French language resources.
  - One of the most noticeable issues is that students are reluctant to make extra efforts outside of the classroom. These efforts could include searching for biology-related documents, videos, lessons, and course materials in English.
  - Students' limited English language proficiency significantly hinders their ability to fully understand the lessons presented to them.
  - Pronunciation and vocabulary are the most challenging aspects for my students, as they struggle daily to memorize each term and concept in English.

Question Fourteen: This question requires the teachers to provide recommendations for ESP teachers instructing biology students.

They participants suggested the following:

- Insist on the development of language skills including writing, speaking, reading and listening
- Focus on improving students' ability to understand complex articles and scientific-related documents.
- Provide adequate and beneficial course materials.
- Include activities that makes the students practice their acquired knowledge.
- Use effective methodologies for explaining the lessons, especially when dealing with complex terminologies.

Question Fifteen: This question asks the teachers to provide additional comments if applicable.

All participants indicated that they have no further comments to add.

3.3. Analysis of Results Obtained Classroom Observation

This research adopted the classroom observation in order to collect credible information that relates to the research hypothesis and questions. The researchers ensured that the classroom observation is based on highlighting the teaching methods, students' needs and difficulties they face inside the classroom.

The researchers noticed that the teacher adopted a combination of traditional lecture-based teaching and learning techniques in addition to the student-centered approach. The lecture started with a review of the previous session's lesson and key points that the students stated accordingly by raising their hands and briefly summarizing the concepts they learned. The teacher had a PowerPoint presentation projected to the whole classroom that summarized the essential concepts and crucial terminologies related their lessons.

Furthermore, the biology ESP teacher followed the review by introducing the title of session's lecture but instead of continuing with a traditional method of explaining in a form of a monologue, the teacher engaged the students by posing a series of questions and randomly picking who should answer in order to stimulate the students' critical thinking. For instance, the teacher asked "is there anyone who can explain how genetics linkage affects the inheritance of traits?" before the teacher chose a student to answer, several students were prompted to raise their hands immediately, shortly after that, the

teacher called upon a few students to share their perspectives and idea concerning the matter. The researchers evaluated this as an interactive approach that helped students to remember their previous knowledge and apply it properly to explain further details.

The students' engagement varied throughout the period of the session yet it was overall vivid and interactive. The researchers observed that the aspect that made students engaging and participating with their teacher was the use of visual aids such as diagrams, charts, short videos, documentaries and clips which facilitated the learning and teaching process. The previously mentioned multimedia tools catered to the needs of students to visualize and demonstrate the complex concepts of their lecture. Moreover, the implementation of the real-world examples and samples enhanced the students' engagement in the classroom. By explaining and relating the key concepts of the lecture to the real-world situations, the students were able to comprehend the lesson while applying their knowledge and interests on the practical side. During the last part of the session, the teacher assigned the students to a group activity in which they were asked to form groups of 5 students each where they had to analyze genetic data and construct a schematic plan related to their lesson. The groups of students were huddling together, discussing and debating the best approaches to adopt in order to construct an appropriate answer, the researchers observed that the hustle of the students not only deepened their understanding of the course material but also shaped their collaborative skills.

Lastly, the researchers noticed that the classroom set-up was not helpful or supportive for the learning process as most chairs and tables were in a form of a cinematic set-up. However, the availability of technological tools such as projectors and whiteboards facilitated the dynamic teaching and learning experience as the group work and individual work was reinforced by slideshows and presentations of graphics and images. The dedicated lecture hall was well-equipped and spacious, which minimized the outside distractions and helped maintain the students' focus on the teacher and lecture only.

Conclusion

This chapter aimed to investigate the needs and difficulties of second year bachelor's ESP students majoring in biology at Yahia fares University of Medea in 2023-2024. The results of the collected data from the three adopted instruments, the students' and teacher's questionnaire alongside the classroom observation, were analyzed in this chapter using the percentage method which helped the researchers to prove the hypothesis of the research and answer the research questions. Based on the results, ESP students require extra language training, scientific-related sources and course material in English. Additionally, they lack the necessary linguistic competence that leads them to face obstacles like understanding complex terminologies, lessons and course materials. ESP teachers suggested integrating presentations, lesson sheets and folders in English alongside focusing on enhancing the four vital skills of the English language, improving the students' collaborative work and communication skills, thoroughly explaining scientific-related articles and documents in forms of assignments and homework in order for the students to overcome these challenges. Recommendations for the students consisted of extensive reading and internet suffering about scientific articles and research papers, improving their grammar and vocabulary with regular practice and seeking aid from their peers and instructors.

Chapter Four

Discussion of the Major Findings, Pedagogical Implications, Recommendations and Limitations

Chapter Four

Discussions of Findings, Pedagogical Implications, Recommendations, and Limitations

Introduction

4.1. Interpretation of Major Findings.

4.1.1. Interpretation of the Major Findings Obtained from the Students' Questionnaire

4.1.2. Interpretation of the Major Findings Obtained from the Teacher's Questionnaire

4.1.3. Comparison between the Major Findings of the Students' Questionnaire and the Teachers' Questionnaire

4.1.4. Interpretation of the Major Findings from the Classroom Observation

4.2. Pedagogical Implications and Recommendations

4.3. Limitations

Conclusion

Introduction

This chapter is divided into different sections. The first section examines how the obtained results responded to the research questions and discuss them in relation to previous chapters. The second section presents the pedagogical recommendations aimed at helping ESP teachers and students overcome the challenges in ESP learning. The last section outlines the study's limitations and offers suggestions for further research.

4.1. Interpretation of Major Findings

The research used three different data gathering tools in order to deliver reliable and credible results. By applying three different instruments, the researchers analyzed and compared the findings that help them identify the research major problem and validate the results by proving the hypotheses and answering the research questions. The adopted multi-method approach improved the reliability of the study as it provided a detailed understanding of the research problem and it eliminated any form of bias or error from only depending on one source of data.

4.1.1. Interpretation of the Major Findings Obtained from the Students' Questionnaire

The findings obtained from the students' questionnaire provided a clear support for the hypotheses and research's questions. The results demonstrated that while the majority of ESP students have adapted to studying their major in the English language, they faced a variant of difficulties throughout their learning journey. The students think that learning the English language is extremely important especially when it comes to

studying their major in English. However, they have mentioned that they lack sufficient resources, documents, articles, and course materials that are related to their major in English (Chapter 3, Section 3.1). Moreover, the sudden switch to the English language teaching have negatively influenced their understanding of scientific-related terminologies in particular and their academic performance in general (Chapter 3, Section 3.1). The results also indicated that understanding complex concepts, vocabulary use and acquisition, reading and listening comprehension, pronunciation, conducting lab reports or research papers, comprehending the teacher's instructions are significant challenges faced by second-year Biology students when having ESP courses (Chapter 3, Section 3.1). These results come in accordance with the reviewed literature (Hoa and Mai, 2016; Lâm, 2011; Maruyama, 1996; Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.1).

With regard to the teachers, the students posited that the current methods adopted by their English teachers are sufficient and beneficial yet a bit ineffective in certain circumstances due to the non-avoidable lack of adequate course materials in English such as textbooks, documents and lesson sheets (Chapter 3, Section 3.1). These findings agree with the research claiming that the lack of resource materials is a major challenge for Algerian ESP students (Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.1). Furthermore, the respondents feel that their English proficiency affects their academic performance in general as the majority of students faced multiple difficulties in understanding biological terminologies, complex scientific concepts (Chapter 3, Section 3.1). Nonetheless, they found that they could effectively communicate with their peers and instructors because most students considered studying biology in English enjoyable and makes them feel comfortable. Additionally, other challenges are related to linguistic competence that have posed a difficulty for the students to understand the course materials and the teacher's instructions in English (Chapter 3, Section 3.1). These findings confirm the idea that variations in English competence among students presents notable obstacles in the instruction of English for

Specific Purposes (ESP) (Hoa and Mai, 2016) (Chapter 1, Sub-section.1.8.1.1). Besides, the majority of ESP students encounter difficulties understanding the teacher's instructions due to the influence of the mother tongue (Chapter 3, Section 3.1). This supports the research that emphasizes that mother tongue impedes the ESP learning (Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.1). Consequently, the majority of ESP students preferred to be enrolled in additional English language support or training sessions alongside their biology courses because they believe that the language support would help them overcome their challenges of communication, pronunciation, scientific vocabulary acquisition, developing their language skills and mastering the language while exceling in their major (Chapter 3, Section 3.1). These findings corroborate the research demonstrating that the lack of training and workshops cause difficulties for Algerian ESP practitioners (Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.2).

Moreover, the results demonstrated that the students strongly focus on improving their speaking skill as they considered it a crucial skill to be acquired through the guidance of their teachers (Chapter 3, Section 3.1). These results support the claim asserting that the lack of confidence in speaking English language is one of the main obstacles for Algerian ESP practitioners (Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.1). The findings showed that second-year biology students use different strategies to conduct their homework or projects such as translating documents, using dictionaries, seeking clarification from their teachers or peers, utilizing language learning applications and websites to breaking down complex sentences (Chapter 3, Section 3.1).

As a conclusion, the results obtained from the students' questionnaire demonstrated that the main concerns of ESP students majoring in biology were the lack of vocabulary, deficiency in communication skills, inability to comprehend complex concepts or terminologies. In addition, they mentioned that they have encountered

problems with the proper pronunciation of scientific-related terminologies alongside their explanation that consequently affect their academic performance.

4.1.2. Interpretation of the Major Findings Obtained from the Teacher's Questionnaire

The majority of the teachers acknowledged that their level of experience in teaching ESP to biology students range from one year to five years in the field yet they have not received sufficient support or training (Chapter 3, Section 3.2). These results concur with the reviewed literature that stresses on the fact that the lack of training reduce ESP teachers' performance (Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.2). They have also noticed that their workload as an ESP instructor have significantly increased since the switch to English while only a minority of teachers have not noticed any significant changes within their duties as an ESP teacher (Chapter 3, Section 3.2). These results contradict with the research stating that ESP teachers do not have sufficient time in which to conduct ESP courses adequately (Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.2).

The findings revealed that the teachers strongly believed that teaching in English has offered new opportunities for biology students. They asserted that the majority of students have gained enough confidence to participate and interact with their peers and instructors using English. However, the teachers mentioned that the classroom overall progress was affected by the different English proficiency and levels that differ from a student to another which made their concentration difficult to balance and the course materials hard to understand (Chapter 3, Section 3.2). These findings support the notion that differences in English proficiency among students create significant challenges in teaching English for Specific Purposes (ESP) (Hoa and Mai, 2016) (Chapter 1, Sub-section 1.8.1.1). Furthermore, the respondents included that although they have received support and training to teach English since the switch from French to English occurred,

it was neither adequate nor sufficient on the academic or professional scale (Chapter 3, Section 3.2). These findings align with the idea that Algerian ESP teachers do not receive appropriate training (Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.2). Moreover, most teachers claimed that they have faced several difficulties concerning teaching English since the switch. These difficulties consist of facing troubles with balancing teaching the English language skills alongside the content of biology, assessing the students' language proficiency, teaching technical vocabulary and maintaining a progress concerning integrating the four necessary language skills within the biology courses (Chapter 3, Section 3.2).

Based on the results obtained from the teachers' questionnaire, the areas that students find as the most challenging are the use of technical vocabulary, proper pronunciation of scientific terminologies, memorizing scientific terms, comprehending abstract concepts, mastering the four language skills, and understanding complex scientific terminologies (Chapter 3, Section 3.2). These findings accord with the reviewed literature (Hoa and Mai, 2016; Lâm, 2011; Maruyama, 1996; Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.1). In addition, all the teachers asserted that the current curriculum is insufficient and inadequate because it places students in a situation where they are forced to study in a language they do not master or adequately prepared for (Chapter 3, Section 3.2). These results agree with research indicating that the current curricula and course materials do not fit with ESP students' needs (Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.1). Moreover, the majority of teachers believed that language barriers put the students in difficult situations because of their limited English language proficiency that significantly hinder their ability to fully communicate and understand their lessons and lectures (Chapter 3, Section 3.2). These findings confirm Lâm (2011), Hoa and Mai (2016) claims that mention that students' insufficient English proficiency negatively impact their academic performance (Chapter 3, Section 3.2). Finally, the results indicated that the teachers adopt various types of activities in order to assess their

students' English skills such as presentations, reading comprehension exercises, vocabulary quizzes, and collaborative projects (Chapter 3, Section 3.2).

4.1.3. Comparison between the Major Findings of the Students' Questionnaire and the Teachers' Questionnaire

According to the results obtained from both instruments, the students and teachers recognized the vital importance of the English language proficiency for the students' academic progress in their major. Most students and teachers agreed that the English language proficiency affects the students' academic performance (Chapter 3, Section 3.1; Section 3.2). Students clearly acknowledged that mastering the English language is a necessity for expressing their concerns, understanding their course materials, and their teachers' instructions. This aligns with the teachers' perspectives that emphasized that proficiency in English enables ESP students to be interactive with the global scientific communities (Chapter 3, Section 3.1; Section 3.2).

Based on the findings collected from both questionnaires, both teachers and students reported the lack of adequate English resources and course materials that are specifically designed to meet the needs of ESP biology students such as documents, articles, textbooks and lessons sheets (Chapter 3, Section 3.1; Section 3.2). This supports the idea that the use of inadequate resource materials for ESP students hinders ESP learning (Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.1). Besides, the teachers and the students agreed that an improved English- language level was vital for the establishment of an effective learning experience. Additionally, the collected data revealed differing perceptions concerning the aspects of the classroom engagement and participation. Although there were some students who stated that they are struggling with major communication issues, the majority of students feel comfortable communicating with their peers and teachers in English. On the other hand, the teachers responded that they have observed a significant increase in students'

engagement and participation using the English language. However, they noted that the overall progress of the classroom is hindered by the various English levels of the students (Chapter 3, Section 3.1; Section 3.2). Moreover, the findings demonstrated that both the teachers and the students have highlighted several challenges that were associated with vocabulary acquisition and use, communication skills, pronunciation, and the acquisition of the English language skills. While the students emphasized on certain difficulties that made the learning process hard for them, the teachers agreed on most of the difficulties of the students but they highlighted broader challenges such as critical thinking, communication, analytical skills, and collaborative work. They added that students struggled with understanding basic abstract concepts in English and explaining complex topics to their peers or during presentations due to their limited English resources, English proficiency and background knowledge (Chapter 3, Section 3.1; Section 3.2). Eventually, both teachers and students adopted distinguished strategies and activities to enhance the learning experience. As for the students, they employed techniques that consist of using dictionaries and websites for resources, translating documents, and seeking explanations from their teachers or peers. While the teachers encouraged those methods adopted by the students, they implemented a range of tasks to evaluate the students' English skills such as assigning presentations, research papers, collaborative projects, vocabulary quizzes, and reading comprehension exercises. These activities focused more on compensating the lack of sufficient course materials for biology ESP students while assessing the students' level and monitoring their progress by providing constant feedback (Chapter 3, Section 3.1; Section 3.2).

As a conclusion, there were multiple areas of agreement and divergence among the teachers' and the students' replies regarding the needs and difficulties they face when having ESP courses. However, the results highlighted biology students' needs and difficulties that could be addressed and improved through the implementation of certain strategies and interventions aimed at creating a more effective ESP learning environment.

4.1.4. Interpretation of the Major Findings from the Classroom Observation

The researchers noticed that the class was very crowded hinting towards the large classroom number (Chapter 3, Section 3.3). This corroborates the notion that large classes have a negative influence on ESP practitioners (Hoa and Mai, 2016; Suzini et al. 2011; Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.1). Moreover, it was observed that the teacher used a data show to deliver the lecture. The content of the lecture was mainly in English. Yet the lecture was delivered by the teacher using both English and French languages, with the latter being the dominant one and being used as an escape hatch, hinting towards the influence of the dominant language (French in this case) (Chapter 3, Section 3.3). The findings support the research confirming the detrimental effect of the matrix language (dominant language) on the substrate language (embedded language) (Hoa and Mai, 2016; Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.1). Additionally, the researchers noted that there is minimal interaction between the class and the teacher, as the latter dominates the lecture with little engagement from students, except for a few at the front. This confirms that ESP teachers use passive methods for delivering the lesson (Hoa and Mai, 2016; Suzini et al. 2011) (Chapter 1, Sub-section.1.8.1.1). It was also noticed from these few participations that the students have problems expressing themselves in English, with their main concern being the vocabulary part of the lesson (Chapter 3, Section 3.3). This comes in accordance with the research emphasizing the ESP learners' low proficiency of English language (Hoa and Mai, 2016; Lâm, 2011; Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.1). Besides, the researchers noticed that the teacher was conducting the lecture at a fast pace, hinting towards a time problem (Chapter 3, Section 3.3). This comes in accordance with the studies indicating that time insufficiency is one of the main challenges faced by ESP practitioners (Makhlouf and Arar, 2022; Missoum, 2023) (Chapter 1, Sub-section.1.8.1.1).

The researchers concluded from the classroom observations that:

- Students suffer from a lack of linguistic competence related to the lesson.
- The students seem consumed by the lecture and seemed uninterested with it.
- The class was of a very large size concerning the number of students.
- The influence of mother tongue on the lesson
- The teacher used a passive method of teaching.
- The limited and insufficient the assigned time frame for the course. (Chapter 3, Section 3.3)

4.2. Pedagogical Implications and Recommendations

Based on the findings of the present study, most of the participants including students and teachers highlighted the necessary requirements that ESP students need for an effective learning outcome and the difficulties they considered as the most challenging within their learning experience. In ESP teaching and learning, the major concern of many ESP teachers is the inability to meet their students' needs and to overcome their challenges and issue they encounter when studying English for their major. Hence, teachers must focus on analyzing and meeting the needs of their students through:

- Reviewing the students' previous academic performance, projects, assignments, evaluations and assessments to be able to clearly identify the areas of strengths and weaknesses in their English language skills and background knowledge related to their major.
- Designing more tasks and activities concerning vocabulary acquisition and use since most students are finding major difficulties with technical and scientific-related vocabulary.

- Monitoring their students' progress and academic performance throughout formative assessments, positive and critical feedback, ongoing observation alongside quizzes or tests to adjust the students' evolvement accordingly.
- Engaging in-group or individual discussions with their students to establish a clear understanding of the student's perspectives, needs and wants, concerns and difficulties, learning preferences and interests while relating the language acquisition to the content of their major.
- Collaborating with biology content specialist or colleagues within their professional environment to effectively combine the language instruction with the curricula aspirations.

As for the students, they are concerned with following recommendations:

- Students should set clear and achievable goals to enhance their English language level while considering the specific areas that need focus and improvement.
- Students should participate in regular practice activities presented by their teacher inside the classroom or they can make additional efforts by including reading scientific-related articles, listening to lectures from different professors, writing research papers and seeking correction from their teachers.
- Students should actively participate in group discussions, collaborative projects, presentations, and classroom group tasks in order to enhance their communication skills and critical thinking while being able to excel at their academics by evolving their English proficiency.
- Students should apply the English language skills they have acquired in the real-world situations such as volunteering in scientific clubs or organizations, resenting research findings, publishing research papers about certain scientific-related topics.

- Students should pay more attention to fostering a motivational learning environment that allows their classmates to feel respected and accepted for their diverse linguistic and cultural background.

4.3. Limitations

The limitations of this study include the following:

- The limited number of participants who took part of answering the questionnaire because the questionnaire was dedicated to the entire section of second-year biology students yet only forty students responded and the teachers' questionnaire was sent to ten teachers but only five of them responded.
- The classroom observation was conducted with a mixture of students from different groups of students in an overcrowded and oversized lecture hall, limiting the specificity of the findings to other settings or student populations.
- The evaluation did not account for the potential variability in teaching methods or student engagement across different instructors and class sizes.
- The research focus on a specific academic year and institution may not fully capture broader trends and challenges faced by ESP students in other contexts or over time.

Conclusion

The current chapter explained and discussed the major findings obtained from the students and teachers' questionnaires and the classroom observation in reference to the literature review. Moreover, it compared and contrasted the major results obtained from the different research tools. It also provided some pedagogical implications for both ESP teachers and students. Additionally, it shed light on the main challenges faced by the researchers. The findings showed that the majority of ESP students face difficulties with

vocabulary use and acquisition, understanding complex and scientific-related terminologies. Furthermore, they proved to have poor communication skills, and inept language competence.

GENERAL CONCLUSION

General Conclusion

One of the most important sections of the English language is English for Specific Purposes (ESP. It is considered as a branch of English that focuses on teaching students the language skills they need for a particular purpose.

The aim of this study was to identify the needs and the difficulties of second-year biology students at Yahia fares University of Medea and to highlight the different areas that require more fucose and the most important challenges that occurred since the switch to teaching and learning in English in order to facilitate the learning process.

The current research consisted of four chapters. The first chapter reviewed the literature related to the topic. It provided a thorough explanation of the terms related to English for Specific Purposes (ESP), types of ESP students' needs and difficulties, ESP course design and the role of ESP teachers. Additionally, it tackled the significance of ESP and its emergence. The second chapter discussed the research design and methodology. It also accounted for the population and sampling. Moreover, it shed light on the data gathering tools and research procedures. The third chapter described and analyzed the results obtained from the research instruments. The fourth chapter interpreted and discussed the major findings of the current study. Besides, it delivered several recommendations, pedagogical implications, and acknowledged the limitations of the current study.

The collected data revealed that ESP students are comfortable with studying their major in the English language due to the globalization and its importance in the real-life circumstances. However, students mention that there are multiple language skills such as reading, writing, listening and speaking require improvement. Furthermore, the results obtained from both the students' and the teachers' questionnaires demonstrated that the majority of students face various difficulties that range from understanding complex

concepts and terminologies, vocabulary use and acquisition, reading and listening comprehension, conducting lab reports or research papers, understanding the teacher's instructions to participating and communicating effectively during the courses. These challenges obstruct the overall comprehension and progress of ESP students as they need to master the language to be able to understand their course materials. In addition, the collected information from the teachers' questionnaire revealed that they believe that one of the main challenges that ESP students face is the linguistic competence. The latter significantly influence the students' grasping of lectures and engagement with the current curricula as either most students lack familiarity with the presented topics or they rely on their mother tongue to express their answers and issues.

To address these obstacles, ESP students need to enroll in additional language trainings and participate in constant tasks or projects assigned to them by their teachers to elevate their language skills and eventually master the English language while exceeding in their academic studies without facing any troubles with understanding the course materials or expressing themselves among their peers. In order to reach this goal, ESP teachers should provide additional aid for their students by adopting interactive teaching methods that consist of designing tasks and activities tailored to their students need such as vocabulary acquisition, collaborative projects, debates and oral discussions.

Subsequently, the research questions and hypotheses were answered and confirmed based on the major findings. Lastly, ESP students' needs and difficulties must be addressed through a needs analysis conducted by their teachers to assess their weaknesses and strengths in order to minimize students' use of their mother tongue and start using the English language to communicate, learn and succussed in their academic or professional journey.

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APPENDICES

Appendix One : Students' Questionnaire

This questionnaire is dedicated for Biology students, it serves as a data gathering tool for our Master's dissertation entitled: Exploring Students' Needs and Difficulties in ESP Classroom: A Case Study of Second Year Biology Students at Yahia Fares University, Medea. We would like to inform you that the questionnaire is anonymous and meant for purely academic purposes, thus, all measures will be taken to protect and ensure the confidentiality of the information you have provided. Thank you in advance for your cooperation and contribution

- **Choose the answer that suits your opinion and write your elaborated answers or explain when it is required.**

❖ **Section One: Informants Background**

1- Your Age: …….

2- Gender:

Male ☐ Female ☐

Section Two: Students English Proficiency

3- How would you describe your English Level?

Beginner ☐ Intermediate ☐ Advanced ☐

4- Do you think learning English is

Easy ☐ Medium ☐ Difficult ☐

5- How hard is it to understand your English teachers' instructions?

Very Hard ☐ Somewhat Hard ☐ Neutral ☐ Easy ☐

6- How difficult it is to understand the course materials (lessons) in English?

Very Difficult ☐ Difficult ☐ Neutral ☐ Easy ☐

❖ **Section Three: Students Attitudes towards Learning English**

7-Do you think it is important to learn English?

Important ☐ Neutral ☐ Not important ☐

8- How comfortable are you studying in English?

Comfortable ☐ Neutral ☐ Uncomfortable ☐

9- What kind of impact does switching to English have on your academic learning experience?

Positive Impact ☐ Negative Impact ☐ No Significant Impact ☐

10- Do you think it is important to study your major in the English language?

Yes ☐ No ☐

And why?

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11- Does your English teacher's method help you acquire the necessary language skills?

Yes ☐ No ☐

❖ **Section Four: Students Needs and Difficulties in ESP Classroom**

12- Do you think that studying English for Specific Purposes focused on Biology would benefit your academic performance?

Yes ☐ No ☐

13- Do you feel that your English proficiency affects your understanding of biological terminology?

Yes ☐ No ☐

If yes, how?

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14- Would you prefer extra English language support or language training sessions added into Biology courses?

And why?

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15- What aspects of studying Biology in English do you find most challenging?

Vocabulary ☐ Complex concepts ☐ Reading comprehension ☐ Writing lab reports, research papers, or essays ☐

Speaking ☐ Listening comprehension ☐

Others, please specify:

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16- Is there a specific language skill that you feel need more focus in your English class for Biology studies?

Reading ☐ Writing ☐ Listening ☐ Speaking ☐

17- Have you faced any specific difficulties in understanding English-language scientific texts related to Biology?

Yes ☐ No ☐

If yes, how?

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18- How do you manage language difficulties when doing your homework in English for your Biology courses?

- Use of dictionaries ☐
- Seeking clarification from teachers or peers ☐
- Utilizing language learning applications and websites ☐

- Breaking down complex sentences ☐
- Others, please specify:

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19- What would you suggest to improve your English for Specific Purposes learning experience?

- Include more interactive activities ☐
- Using materials such as scientific articles, research papers related to biology ☐
- Offer targeted vocabulary practice ☐
- Offer opportunities for language production ☐
- Provide feedback and support ☐
- Others, please specify:

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20- Is there anything else you want to add?

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*** Participants can select multiple answers in questions 15, 16, 18, and 19 by ticking more than one option.**

Appendix Two: The Teachers' Questionnaire

This questionnaire focuses on Exploring Students' Needs and Difficulties in ESP Classroom: A Case Study of Second Year Biology Students of Yahia Fares University, Medea. Your valuable insights will help us better understand the challenges ESP students face in comprehending scientific concepts and terminology within the biology major. It is that kind of flexibility and dedication that will help this survey to be more credible. Please, be sure that the information you provide will be used for research purposes only. Thus, we kindly ask you to give sincere and precise answers.

- **Section One: Participants Information**

Put ✓ in the suitable place:

1- Gender

Female ☐ Male ☐

2- Are you a general English teacher or a biology teacher?

A General English Teacher ☐ A Biology Teacher ☐

3- What is your level of experience in teaching ESP to Biology major students?

Less than 1 year ☐ 1-5 Years ☐ 5-10 Years ☐ More than 10 years ☐

- **Section Two: Teachers' Perceptions towards English Instruction in ESP Classroom**

4- How has the switch to English impacted your workload as an ESP teacher?

Significantly increased ☐ No Significant change ☐ Significantly Decreased ☐

5- Have you noticed any differences in students' engagement or comprehension since transitioning to teaching in English?

Yes ☐ No ☐

If yes, please explain:

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6- Do you find that teaching in English has opened-up opportunities for Biology students to conduct successful researches?

- Yes, I strongly believe that. ☐
- Yes, I believe it is true. ☐
- No, I don't think so. ☐

And why?

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7- Have you received adequate support or training to teach in English since the switch occurred?

- Yes, I received sufficient support and training. ☐
- Yes, but I did not receive sufficient support and training. ☐
- No, I haven't received any support or training. ☐

8- What are some challenges in teaching biology in English?

- Balancing teaching English language skills and biology content. ☐
- Teaching technical vocabulary. ☐
- Teaching language skills such as writing, reading, and speaking. ☐
- Integrating language skills within the context of biology. ☐
- Assessing students' language proficiency and content knowledge. ☐

- Others, please specify:

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- **Section Three: Teachers' Perceptions towards Students' Needs and Difficulties in ESP Classroom**

9- In your opinion, what specific areas should English teachers prioritize when teaching English to biology students?

- Understanding scientific terminology. ☐
- Reading comprehension skills. ☐
- Writing skills for scientific communication. ☐
- Speaking and listening skills for academic discourse. ☐
- Critical thinking and analytical skills. ☐

10- Do you think the current English curricula and course content for teaching biology adequately meet the needs of students?

Yes ☐ No ☐

If no, why?

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11- Which kind of activities do you use to assess your students' English skills?

Reading comprehension exercises ☐ Writing assignments ☐ Presentations ☐ Vocabulary quizzes ☐ Interactive discussions ☐ Collaborative projects ☐

- Others, please specify:

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12- What strategies do you use to provide effective English courses for students?

- Needs analysis to understand the specific language requirements of biology students.

  ☐
- Selecting or creating course materials that are relevant to biology topics.

  ☐
- Providing language scaffolding to support students as they navigate complex biology concepts and terminology in English.

  ☐
- Designing tasks and activities that engage students in authentic, real-world language use related to biology.

  ☐
- Using ongoing, formative assessment techniques to monitor students' progress and provide timely feedback on their language development.

  ☐
- Collaborating with biology instructors or content specialists to ensure alignment between language instruction and biology curriculum goals.

  ☐
- Others, please specify:

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13- In your opinion, what are the main challenges Biology students face when trying to understand scientific terminology and concepts in English?

- Complex terminology. ☐
- Multifaceted topics. ☐
- Abstract concepts. ☐
- Language barriers. ☐
- Others, please specify:

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14- What recommendations do you have for ESP teachers instructing biology students?

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15- Is there anything you would like to add?

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Thank you!