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**INVESTIGATING BIOLOGY TEACHERS' AND STUDENTS'
ATTITUDES TOWARDS USING ENGLISH AS A MEDIUM
OF INSTRUCTION**

The Case of Biology Teachers and Students at Larbi Tébessi
University – Tébessa

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Dedication

This work is dedicated to both our dear parents for their love and support, to our sisters and brothers for their encouragement in moments of difficulty and stress, and for all our teachers for their tremendous help in our journey in this university.

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Abstract

Learning scientific subjects through a foreign/second language is a widespread approach of education in higher educational institutions. Accordingly, this study explores the problems that biology teachers and students at Larbi Tébessi University face with the currently used medium of instruction. The study further investigates biology teachers' and students' attitudes towards the use of English as a medium of instruction to teach biology modules. Accordingly, two hypotheses have been formulated; the first one suggests that students and teachers would have positive attitudes towards using English as a medium of instruction in teaching biology modules, and the second proposes that biology teachers and students would face certain problems with French as an instructional language. Thus, a sample of 25 teachers and 500 students responded to semi open-ended questionnaires about the use of English to teach biology subjects. The obtained results suggest a general positive attitude among the majority of both teachers and students towards the use of English for instruction at the Department of Biology. However, a considerable number of participants have shown hesitation about the implementation of an EMI-based programme with regard to the current educational policy and English language teaching in middle and secondary education. In this sense, this study has certain implications related to language education problems encountered by both teachers and students.

Keywords: Medium of instruction, English as a medium of instruction, Attitude, Language education policy, biology modules.

List of Abbreviations/ Symbols

CLIL Content and Language-Integrated Learning

EAP English for Academic Purposes

EMI English as a Medium of Instruction

ESP English for Specific Purposes

L1 First Language

MOI Medium of Instruction

N Number

Q Question

% Percentage

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General Introduction

1. Background of the Study

There is a wide awareness that English has recently become the language of science, technology, economy and travel all over the world. Accordingly, the majority of references are published in English, taking into consideration its wide spread among speakers in the world. However, it is obvious that there are problems with the currently used language of instruction. In this sense, Chemami (2011, p. 231) report that the main purpose behind the Algerian educational policy, which supports the spread of English in Algeria, is the considerable collaboration with the United States of America and Canada who promised to freely boost this educational policy by providing textbooks, training for teachers in English and introducing new technologies.

2. Statement of the Problem

Biology students at Larbi Tébessi University encounter problems with the currently used language of instruction. Moreover, a wide range of references are provided in English because it is the language of science and technology. Students come to interact with English often when they are searching for a scientific document which they are in need for.

3. Aims of the Study

The current study is striving to explore both biology teachers' and students' attitudes towards using English for instruction when teaching biology modules. Moreover, this study aims to investigate the currently used medium of instruction at the Biology Department and the problems associated with its use. Besides, this research tries to detect the possible educational changes that could be adopted to solve those problems related to the used medium of instruction.

4. Research Questions and Hypotheses

Building upon the problem statement, the current study seeks to address the following main research question: What are the attitudes of biology students and teachers at Larbi Tébessi University towards using English as a medium of instruction? In doing so, it tries to answer the following questions:

1. What is the language currently used for instruction at the department of biology?
2. What problems, if any, are associated with using the current medium of instruction?
3. What are the educational changes that could be implemented to overcome these problems?

Accordingly, we hypothesise that biology teachers and students face certain problems with the current language of instruction. Furthermore, this study contains a variety of background variables which could be predictors of teachers' and students' attitudes towards English as a medium of instruction (EMI). Due to those variables, we hypothesise also that teachers and students would have positive attitudes towards using English as a medium of instruction of biology modules. Besides, they would prefer English to the currently used language of instruction.

5. Methodology

5.1. Tools of Investigation

The current study takes the form of a quantitative and qualitative descriptive survey that is set to find the answers to the research questions.

The tools of investigation used in this survey are two questionnaires. Both questionnaires are written in English and each item and instruction is translated into Arabic. The first questionnaire is devoted to teachers. It contains four sections: the first section is about the teachers' general background, the second section is attached to detect the language of instruction at the Department of Biology, the third section to explore teachers' attitudes

towards using English as a medium of instruction, and the last section to gather any further suggestions or comments concerning the topic. The second questionnaire is directed to biology students. It also contains four sections: the first section for the description of students' general information, the second section to detect the language of instruction used at the Department of Biology, the third section to investigate students' attitudes concerning the use of English as a medium of instruction, and the last section to know their suggestions or comments concerning the topic.

5.2. Population and Sampling

The population of this study is composed of both teachers and students at the Biology Department, Larbi Tébessi University, Algeria. The sample is selected following the stratified random sampling to make sure that the sample is representative of the population. Therefore, teachers of different specialities along with students from the five levels and from different specialities participate to the present study.

6. Structure of the Dissertation

The dissertation contains two chapters. The first one is devoted to the theoretical background of the research variables and the literature review. It comprises two sections. The first section investigates the EMI phenomenon whereas the second section is a general overview of attitude and its related aspects. The second section ends with establishing the link between the use of EMI and attitudes through presenting a literature review. The second chapter is devoted to the fieldwork wherein data collection, analysis and discussion are presented. It includes three sections: one section deals with the teachers' questionnaire, the second section tackles the students' questionnaire, and the third section is devoted to comparing the results and providing pedagogical implications.

Chapter One: Literature Review

Introduction

It is undeniable that English has assumed significant status nowadays since it has recently become the most important language worldwide (Crystal, 2003). Thus, the emphasis on English use in education is being an essential part of curricula in higher education that have started to adopt English as a medium of instruction (EMI) in recent decades. These EMI-based programmes have become usual in higher education institutions where English is not the mother tongue (Wilkinson, 2013). However, it is noticed that attitudes towards the use of English as a medium of instruction in education differ from one context to another. In this sense, it is worth mentioning that research tackling attitude has been the core of recent social psychology and human sciences. Over the years, many scholars and researchers have tried to conceptualise the term *attitude* and to understand the way this concept functions. Accordingly, EMI education as well as attitude are going to be tackled throughout this chapter.

Section One: English as a Medium of Instruction

Throughout this section, the EMI phenomenon will be explained in various contexts. Besides, this section will distinguish EMI from other educational programmes as English for Specific Purposes (ESP) and English for Academic Purposes (EAP). Moreover, the present section will examine the growth, challenges and benefits of EMI and its relation with internationalisation.

I.1. Basic Definitions

This part is devoted to define the main concepts included in this section. The first concept is the medium of instruction which is defined by referring to classes as its main context and focusing on its main implementation in classrooms. The second concept being defined under

this title is English as a medium of instruction in which scholars aimed by their definitions to distinguish it from other similar concepts in the field of education.

I.1.1. A Medium of Instruction

The medium of instruction (MOI) is defined by Mkwizu (2003) as the language used for teaching and learning. Mkwizu (2003) describes the medium of instruction as a tool that is used to transfer skills and knowledge where the language of instruction is usually not the official language adopted in a country. Mkwizu (2003), in this sense, relates the medium of instruction directly to teaching and learning, away from other contexts such as business. Noor ul Islam et al. (2015, p. 25) further defines the medium of instruction as:

“the source language used to deliver the contents in the class. It is the language used by teacher to transfer knowledge, skills and values in the classroom. Both teacher and learner used the target language to communicate with each other and to interact among themselves”.

Noor ul Islam et al. (2015), by this definition to the medium of instruction, tends to give a general overview of its possible functions in classrooms.

I.1.2. English as a Medium of Instruction

English as a medium of instruction (EMI) is “the use of the English language to teach academic subjects in countries or jurisdictions where the first language (L1) of the majority of the population is not English” (Dearden, 2014, p. 4). EMI, therefore, is the use of English to teach content subjects in non-English native situations. Dearden (2014) aims to distinguish EMI from Content and Language-Integrated Learning (CLIL) which is defined by Coyle et al. (2010, p. 1) as “a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language”.

Because EMI is newly introduced in the field of education, and because of the different labels given to EMI, there is no academic confirmed definition to EMI yet. In this sense,

Dearden (2014, p. 7) explains that “[t]he term English medium instruction itself is relatively new and no universally accepted definition exists”. According to Briggs et al. (2018), EMI has been labelled differently as follows: English medium of instruction, English as the lingua franca medium of instruction, English medium instruction, English as a medium of instruction and English-medium education.

I.2. English for Specific Purposes, English for Academic Purposes and English as a Medium of Instruction

English for Specific Purposes (ESP), English for Academic Purposes (EAP) and English as a Medium of Instruction are all concerned with the use of English in specific teaching/learning contexts. However, each one of them is used differently.

ESP is a branch of study that has been growing since the 1960’s. Many scholars tried to give a clear definition to ESP but the debate about it still exist. Hutchinson and Waters (1987, p. 19) see that ESP “ is an approach to language teaching in which all decisions as to content and method are based on the learner’s reason for learning”. Hutchinson and Waters (1987), by their definition to ESP, indicated that the course design of an ESP class is mainly based on students’ needs in their learning process. Another definition is that of Paltridge and Starfield (2013, p. 592) who define ESP as the teaching and learning of English as a second/foreign language in which the learner aims to use it in a specific field. This definition focuses on teaching/learning English in a non-native context with correspondence to the main field of study.

EAP is defined as “the teaching of English with the specific aim of helping learners to study, conduct research or teach in that language” (Flowerdew and Peacock, 2001, p. 8). This definition illustrates the possible purposes that EAP can be used for. In other words, learners, who are taught via English need EAP courses to improve their English proficiency in certain skills to be apt to achieve some educational goals.

Furthermore, EMI-based programmes are designed not to focus on teaching and learning English for the purpose of learning a second/foreign language at the first place. EMI rather focuses on teaching and learning a content subject using English as a tool to achieve specific goals (Dearden, 2014, p. 4). In other words, EMI programmes are designed to teach academic subjects via English where the learners' level in English will be developed simultaneously as they are taught the main subject. Briggs and Smith (2017, p. 28) state the following:

[I]n EMI courses English is the conduit through which content subjects are delivered: students acquire knowledge of content material while, ideally, also improving their English language proficiency. Key to distinguishing EMI from other methods is the ancillary role of English language development—a side effect of instruction rather than an explicit pedagogical target.

In this sense, the development of English proficiency is not the main focus; it is rather a benefit of EMI or an advantage.

Each of ESP, EAP and EMI differs in the magnitude of developing English proficiency. Besides, the three fields have different goals to accomplish; ESP aims to develop language skills in relation to a specific field of study, EAP focuses on developing certain language skills to facilitate the use of English for different academic purposes, and EMI is based on teaching/learning content subjects using English as a means for instruction.

I.3. EMI and Internationalisation

It is noticeable that EMI programmes have become a common strategy to confront with internationalisation purposes in recent decades. Internationalisation is defined by Altbach and Knight (2007, p. 290) as “policies and practices undertaken by academic systems and institutions –and even individuals- to cope with the global academic environment”. In this sense, a considerable number of higher education institutions support the internationalisation of higher education, which causes a considerable increase in the implementation of EMI-

based programmes. Knight (2003, as cited in Tsou & Kao, 2017, p. 3) distinguishes two categories of the internationalisation of higher education. The first category provides educational services as teaching, learning and research within an international context inside a country. The second provides programmes, students, teachers and scholars, over the country frontiers.

Aulakh et al. (1997, p. 15) emphasise the benefits of internationalisation, which demands the use of English for instruction, to students when they say the following:

[I]nternationalization is not merely a matter of recruiting international students, though the presence of international students is an enormous resource for the university. The aim of internationalisation is to produce graduates capable of solving problems in a variety of locations with cultural and environmental sensitivity.

Webb (2005, p. 110) further insures the vital role of internationalisation for students as “graduates need increasingly well-developed lifelong learning skills and attitudes, including an international perspective. [...] Internationalisation of the curriculum therefore incorporates a range of values, including openness, tolerance and culturally inclusive behaviour”. The internationalisation of the curriculum demands the use of EMI, the thing that participates in the propagation of EMI policies. Using English for instruction as a tool, many institutions are competing to accommodate with the international trend.

In addition, Shen (2008, p. 223) argues that several European universities consider internationalisation a key element for “attracting and keeping the best brains from around the world to help develop their own knowledge economies”. The importance of internationalization in higher education is also highlighted by Miklavic (2011, p. 9). He insures that internationalisation is a key element among the activities of higher education and scientific research in which EMI-based programmes are the main instruments used to internationalise higher education. Scholars, such as De Haan (2014) and Lueg (2015), believe

that the main result of internationalisation is the rise of EMI policies in higher education. Accordingly, numerous universities have implemented EMI-based programmes to motivate both national and international students to learn as well as to communicate using English.

I.4. EMI as a Growing Trend

English as a medium of instruction is considered a recently growing state, especially in higher education institutions. According to Wilkinson (2013, p. 3), EMI programmes have become “commonplace in many institutes of higher education where English is not the native language”.

According to Wu et al. (2010, as cited in Zhao & Dixon, 2017, p. 128), 132 universities in China, out of 135, offer EMI-based programmes averaging 44 courses per university. This is one of the most significant examples about the spread of EMI. It is noticed that EMI is growing in Asia to cope with the international trend. Another example of EMI spread is the case in Japan. According to Brown and Iyobe (2014, p. 14), EMI-based programmes for undergraduate students in Japan have been growing during the past 15 years. Brown and Iyobe (2014) further state that 6 out of 8 universities are using EMI-based programmes or working on the implementation of new ones. Besides, a further reason of the spread of EMI-based programmes is the case in Europe in which the creation of a European Higher Education Area, that pursues academic exchange and partnerships, has contributed to increase the use of EMI-based programmes in Europe (Kirkpatrick, 2014, as cited in Tsou & Kao, 2017, p. 7).

Tollefson (2013, p. 143) claims that the insufficient number of teaching materials used for instruction using native languages may be regarded as another cause that participates in the growth of EMI; “the presumed shortage of instructional materials in local languages was repeatedly invoked as an additional argument in favour of English as a teaching medium”. Vu and Burns (2014, p. 2) state that the growing tendency to adopt English as a medium of

instruction, even in such countries where the plurality speaks the native language, is a result of the impact of English in several international educational situations. In other words, the use of English in several educational contexts in the world is considered as an affective factor that helps in the increase of the implementation of EMI. Seitzhanova et al. (2015, p. 74) report that 42 universities in Kazakhstan use EMI-based programmes during the last decade as a result of the country's change and growth to cope with the internationalisation of higher education. According to Tsou and Kao (2017, p. 4), one of the main reason for EMI growth is the potential of universities to obtain a competitive priority in the actual internationalised higher education.

Furthermore, many scholars believe that the implementation of EMI-based programmes is essential for preparing students in the international competition, which is the competition to obtain better job opportunities at the international level. Coleman et al. (2018, p. 708) assure the growth of EMI taking into consideration many leading forces in several fields, as economy, politics and culture, that led to EMI spread when saying "EMI, and the global spread of English more generally, is inevitable as long as there are economic, political and cultural forces that push and pull in that direction".

I.5. Challenges Facing the Implementation of EMI-Based Programmes

Many scholars and researchers believe that implementing EMI-based programmes would be a challenge rather than benefit in education. Accordingly, Zhao and Dixon (2017, p. 178) report that the use of EMI is a defiance when saying that "Using English as the medium of instruction is a challenge for all universities". In this sense, many studies have shown that EMI-based programmes face a variety of challenges and difficulties.

To begin with, many researchers focus on teachers' level of proficiency in English, which is considered a key element in making the EMI-based programme successful in a specific institution. Lin, Gan and Sharpe (1997, as cited in Othman & Saat, 2009, p. 308) explain that

teachers who use EMI-based programmes in Singapore do not have adequate communicative competence to perform as required in class. This study further suggests adopting a more communicative approach to improve teachers' English proficiency. Othman and Saat (2009, p. 313) found that teachers in a Malaysian university lacked the appropriate linguistic tools as well as content-specific instructional strategies. In order to make the EMI-based programmes successful in higher education institutions, teachers should first improve their level of proficiency in English and then, they must be trained to teach using EMI-based programmes. have the suitable level of proficiency in English

Vu and Burns (2014) conducted a study to investigate difficulties that Vietnamese lecturers encounter when using EMI-based programmes. They found that lecturers faced problems in communication with students, mainly when explaining or answering questions. This problem is the result of the low level of teachers' proficiency in English. Besides, Vietnamese lecturers find it difficult to improve students' level of proficiency in English during the short available time. In this context, the time given to study content subjects is not enough to make students improve their level in English as they study main subjects.

Vu and Burns (2014) further found that the variation among students' learning styles and language abilities is another problem that hindered the smooth delivery of the courses by EMI lecturers. Here, teachers find it difficult to teach students using EMI in a class where each student has a different level of proficiency in English and uses a special learning style that differentiates him from other students. Moreover, Vu and Burns (2014) reported that the inadequate resources provided for EMI classes affected both students and teachers. Because of the novice changes in the educational system in which EMI is newly introduced, it is observable that teachers as well as students suffer from the lack of references in English in their field of study

Another challenge that encounters the implementation of EMI-based programmes is related to those difficulties that students face when being taught content subjects via English. Hayes et al. (1994, as cited in Hossain et al., 2010, p. 32) says "[I]ack of a minimum level of competence in English seriously jeopardises the ability of students to listen to, participate in and understand classes, to read textbooks, to sit for written, oral or practical examination and prepare assignments". Hayes et al. (1994) stress the negative impact of the low level of students' English proficiency on their performance in the class.

According to a study conducted by Noor ul Islam et al. (2015) in Punjab, students face difficulties understanding the syllabus because of the sudden change of the language of instruction into English. In this case, newly introduced EMI-based programmes may affect students' understanding because they are not familiar with the use of English in teaching content subjects.

I.6. The Benefits of English as a Medium of Instruction

Research recently has shown that a considerable number of teachers as well as students are aware of the benefits of using an EMI-based programmes, regardless of its challenges. Islam (2013, p. 134) reported that teachers and students believed that EMI-based programmes were beneficial for their future career because of the importance of the use of English in the world when describing his participants beliefs in his study about the status of EMI in private universities in Bangladesh.

A study conducted by Abdullah al Mamun et al. (2012) in Khulna University of Bangladesh showed that students of life science are aware of the importance of English and, thus, they recognise that the use of EMI-based programmes would offer them more job opportunities and guarantee a good social status. Ryhan (2014) stipulates that the use of English in higher education is quite important due to its considerable position in several fields as education, science and technology.

Belhiah and Elhami (2015, p. 20) found that the implementation of EMI to teach content subjects improved students' English language skills to a considerable extent, provides students with comprehensible input in English, offered more opportunities of being exposed to authentic English oral and written text, and increased students' chances in the job market after graduation. A study carried out by Briggs et al. (2018), about teachers' point of view about the use of EMI-based programmes reported that 79.30% of the respondents believed that EMI was beneficial to students and 18.60% believed that EMI was partly beneficial to students. Those participants had such beliefs because they think that EMI enabled students to learn English as they were learning the content subjects. Secondly, for those teachers, EMI was considered the tool to open the gate to the international competition in the global market for students; the international competition in the global market was the competition between international companies to employ the well staffed employees. Furthermore, participants believed that using EMI-based programmes would improve students' level of education.

This section was devoted to explore the approach of English as a medium of instruction and its use in education. Therefore, different aspects related to EMI, as the growth, the challenges and benefits, have been discussed. Besides, this section provides an overview of the relationship between English as a medium of instruction and internationalisation.

Section Two: Attitude and Related Aspects

Throughout this section, we provide different definitions of attitude. The section also distinguishes attitude from other terms that may interfere in meaning, such as beliefs and opinions. Besides, this section includes other aspects related to attitude as its components, types and measurement. The section also presents the relation between language learning and attitude and how they affect each other. It also presents several examples about attitudes towards English as a medium of instruction from various countries all over the world.

II.1. Definitions of Attitude

The term attitude has been of a considerable interest for scientists and psychologists. Attitude is characterised by Allport (1935, p. 798, as cited in Aiken, 2002, p. 2) as the most discriminatory and fundamental concept in contemporary American social psychology. Several definitions have been given to the construct of attitude trying to cover its main aspects.

Ajzen (1993, p. 41) refers to attitude as the person's inclination to react with a specific favourableness or unfavourableness towards a distinguishable aspect in his surroundings. This definition mainly focuses on the individual being either for or against certain object. Albarracin, Johnson and Zanna (2005, p. 4) also define attitude through focusing on the individual's position towards something without reference to time. They explain that an attitude is "a psychological tendency to view a particular object or behaviour with a degree of favour or disfavour. One can form an attitude towards something usually after evaluating it in terms of being advantageous or disadvantageous" (2005, p. 4).

According to Bohner and Dickel (2011, p. 392), scholars who have defined attitude are classified into two groups; the first group considers it a stable entity stored in memory whereas the second group refers to it as a temporal situation-dependent judgment. Bohner and Dickel (2011, p. 393) used the following figure to better classify those definitions to the concept of attitude:

and Cunningham's et al. (2007) definition as an illustration for those who say that attitude is stable to some extent.

However, there are scholars who take another approach to define attitude —focusing on either the generality or the specificity of the term. In this sense, McKenzie (2010, p. 19) states that the term attitude has been defined from a variety of perspectives in relation to several theories that resulted in “semantic disagreement” about “the generality and specificity” of this concept. According to Eaton, Majka and Visser (2008, p. 167), attitudes are general because they reflect the overall summary valuation of an object. In this sense, Eaton et al. (2008) define attitude focusing only on the generality of this concept. However, Fishbein and Ajzen (2010, p. 76) define attitude as an implicit inclination that holds a certain amount of favourableness or unfavourableness towards a psychological object. Accordingly, Fishbein and Ajzen (2010) link attitude to the persons' mental side solely in which they exclude any other concrete objects.

Briñol and Petty (2012, p. 285), on the other hand, define attitudes as “general evaluations individuals have regarding people (including one self), groups, places, objects, and issues.” In this sense, the definition indicates that the attitude is a general judgment not situation-dependent. Besides, Briñol and Petty's definition links attitude not only to abstract objects but also to concrete ones whereby it is considered as a comprehensive definition to attitude.

II.2. Attitude, Opinion and Belief

Many researchers in the field of psychology have tried to distinguish the concept of attitude from other close concepts. Opinion and belief are examples of those concepts that need to be differentiated from attitude to be able to identify each one clearly.

Furnham (2008, p. 268) explains that the main difference between belief and attitude is that beliefs are not evaluative whereas attitudes have an evaluative component. In other

words, someone's beliefs towards something (concept, event, object, or person) would not be judgemental in the sense that s/he would not say that a particular person, for instance, is bad or good. However, his attitude towards something would show his favour or disfavour towards it. Anderson and De Silva (2009, p. 1) suggest that a belief is an inner feeling about the correctness of something despite the fact that it could be unasserted or unreasonable; however, attitude is the way one can express his beliefs verbally or behaviourally showing whether he is considering it correct or not.

Baker (1949, p. 14) refers to opinion as the explicit expression of one's belief without making an obvious reaction. Baker (1949) further emphasises the fact that opinions are usually verbal expressions of one's thoughts about something as opposed to attitudes which can be hidden and expressed through either verbal or non-verbal communication. Furthermore, Baker (1949, p. 14) shows that attitudes involve effective reaction in contrast with opinions which are not accompanied by real responses. Accordingly, it is easy to know someone's opinion because it is superficial whereas it is difficult to understand his attitude because it could be shown indirectly.

Moreover, Oppenheim (1992, p. 177) states that opinion is the most superficial level of attitude. In this sense, Oppenheim (1992) indicates that one's opinion is the first stage of attitude, which makes opinions more general and more changeable than attitudes. Kleg (1993, p. 120) says that the person's attitude may be recognised through his opinion because opinions make the individual's attitudes apparent to others.

Attitude, opinion and belief are examples about the terms which common people usually use interchangeably. Therefore, one might be confused about the appropriate definition for each one. In this sense, it is important to distinguish the three of them.

II.3. Components of Attitude

For a better understanding to the concept of attitude, it is necessary to discuss its components. Psychologists have tried to identify and distinguish between its main components.

Wicker (2010, p. 4) suggests four components of attitude. The first component is the cognitive component of attitude which Wicker (2010, p. 4) defines as “the knowledge or intellectual beliefs an individual might have about an object, a person, a thing, or a situation”. The second is affective; it is the emotional attachment with a particular objects or activity. The third component is the behavioural component, which is the way that a person reacts, verbally or behaviourally. The fourth component is cognitive dissonance; this refers to the contradiction of knowledge, information, attitudes or beliefs that a particular individual holds in a specific situation.

Weiten (2014, p. 409) asserts that social psychologists believe that attitudes consist of three main components (cognitive, affective and behavioural). Weiten (2014, p. 409) explains that the cognitive component is based on one’s beliefs that they hold towards something. The affective component consists of the feelings prompted by an object of thought. The behavioural component includes a tendency to behave in a particular manner towards a specific object.

Dietz-Verrier (2015, p. 21) affirms that the behavioural view of attitude considers it a single uni-dimensional unit based on people’s responses towards social situations while the mentalist view distinguishes three components of attitude which are the cognitive (knowledge), the affective (feelings) and the conative (action or behaviour).

II.4. Types of Attitudes

Psychologists have different views about the types of attitudes. Their views differ in relation to the variation of contexts in which the attitude is expressed and also in relation to the object being judged in a particular situation.

Mattoon (1985, p. 55) distinguishes two main types of attitude. The first type is the extraverted attitude which is marked by a flow of psychological energy towards the external world, events, people, things and relations. This type of attitude makes the individual more open towards others' ideas and more tolerant towards their thoughts. In contrast, introverted attitude is marked by the internal flow of psychological energy. People with this type of attitude tend to prefer their own ideas when being part of a conversation with others.

FitzMaurice (2011, p. 97) identifies three main types of attitudes. These types are positive attitude, neutral attitude and negative attitude. FitzMaurice (2011, p. 98) firstly defines positive attitudes as the suitable way to "create or accomplish" things. In other words, people must have positive attitudes towards the things that they aim to create or achieve. Moving to neutral attitude, FitzMaurice (2011, p. 98) defines it as the type of attitude that enables the person to be "open to learning about the subjects" he is discovering. Accordingly, neutral attitudes provide more objective insights towards objects. Moreover, FitzMaurice (2011, p. 98) refers to negative attitude as the type of attitude which keeps the person safe from making bad options. In this sense, negative attitudes are considered the best solution to avoid the damage caused by making quick decisions.

II.5. Importance of Attitude

Research has been conducted to investigate the importance of attitude over the years. Researchers have aimed to examine the influence of attitude on learning, in general, and on learning outcomes and language learning precisely. The findings of these studies are considered of great benefits in understanding learners' psychology. Accordingly, teachers

would use these results to help learners control their attitudes to perform better and succeed in the learning process.

II.5.1. In Learning

Many scholars have emphasised the vital role of attitude in learning. They relate attitude to the learners' performance and learning outcomes. Those researchers have the assumption that positive attitudes are usually a key element in a successful learning process.

Cox (2000, p. 136) claims that "it is surely desirable as an educational goal that all peoples should be held to develop a positive attitude to learning which will sustain their motivation both at school and in life beyond". This means that a positive attitude towards learning will have benefits exceeding the learning context to real-life situations. Papaja (2012) carried out a research to examine the influence of university students' attitude towards content language-integrated learning in Poland. Papaja (2012, p. 30) claimed that "attitude is one of the central elements along with motivation and language aptitude in determining success in learning subjects through another language". She emphasised the important role of attitude in the learning process.

Shafaei (2012, p. 514) stresses the relationship between attitude and learning when he claims that attitude is important in learning because it influences the time students spend in learning and it determines the amount of pleasure they obtain when learning. According to Şen (2013, p. 947), positive attitudes enable learners to better comprehend the nature of learning, which makes them more open to learning with increased learning expectations and decreased anxiety. Zhao (2015, p. 2335) believes that learning attitude is considered one of the most essential factors that largely affect learning behaviours. She adds that attitude has considerable influence on the learning process and achievements in learning as it indicates whether learning is going to succeed or fail.

II.5.2. In Language Learning

Gardner (1985) largely emphasizes the ways in which attitudes influence second language learners. If learners are satisfied culturally with a second language that they learn, they are more likely to achieve higher levels of proficiency in the language. However, if learners have negative attitudes and dislike the target culture, they may face some difficulties in achieving high levels of proficiency in the language. Gardner (1985) also claims that learners' attitudes towards the second language have great influence on the level of motivation to learn this language.

Oroujlou and Vahedi (2011, p. 977) state that "it is the student's good or poor attitude that makes life easy or difficult in the foreign language classroom". Accordingly, Oroujlou and Vahedi (2011) shed light on the idea that students' attitudes towards the foreign language being learned can shape their performance and achievements in classroom. Oroujlou and Vahedi (2011, p. 998) further claim that there is a direct relationship between students' motivation and their attitude towards that language and their performance in the language class. Furthermore, Zainol Abidin, Poor-Mohammadi and Alzwari (2012, p. 126) state that attitude is regarded as one of the main components of language learning in which a positive attitude is seen as the umbrella of language learning. Zainol Abidin et al. (2012, p. 126) further claim that learners who form positive attitudes could achieve cognitive performance. Hosseini and Pourmandnia (2013, p. 70) claim that possessing either positive or negative attitude towards a particular language and the way it is perceived can cause a noticeable effect on learners' performance in that language.

II.6. Attitude Measurement

Several methods have been developed by psychologists to measure attitudes. Among those methods, three have been largely used. The first one is the direct method, the second is the quasi-direct method, and the third is the indirect method.

II.6.1. Direct Attitude Measurement

O'Keefe (2002, p. 7) states that the direct measurement of attitude is based on asking the respondents direct questions in the form of an evaluative judgement about the attitude object. This way of assessing attitude is marked by the use of certain questions that show the respondents attitude explicitly. O'Keefe (2002, p. 7) identifies two main techniques for this type of attitude measurement. The first one is the semantic differential evaluative scale, which is usually in the form of a seven-point scale; it depends on the use of evaluative adjectives like *good*, *bad*, *desirable* and *undesirable*. The second technique is the single-item attitude measures; this technique is based on the use of a single questionnaire item asking for the corresponding evaluation (O'Keefe, 2002, p. 8).

Wood and Gannon (2009, p. 101) report that the direct attitude measurement is based on using a simple approach of asking people directly about their attitudes. Wood and Gannon (2002) further explain that this method requires the use of clear and specific questions in surveys to make respondents understand them easily to identify their attitude later.

II.6.2. Quasi-Direct Attitude Measurement

O'Keefe (2002, p. 9) maintains that this type of measurement is based on formulating information clearly related to one's attitude. This type of attitude measurement, therefore, does not offer clear evaluative judgement; it rather presents a comparative evaluation between to objects. O'Keefe (2002, p. 10) further presents the Thurstone attitude scale as one of the techniques of quasi-direct attitude measurement. It depends on using attitude relevant statements, and then, measuring the person's attitude with regard to his reactions to these statements. Another technique used for the quasi-direct attitude measurement is the Likert attitude scale. It is based on drawing inferences about the respondent's attitude from his or her agreement or disagreement, showing also the extent to which the respondent agrees or disagrees, with the statements used to assess attitude (O'Keefe 2002, p. 11).

II.6.3. Indirect Attitude Measurement

Salkind and Rasmussen (2007, p. 54) identify the information-error test as one of the indirect methods used to measure attitude. Salkind and Rasmussen (2007) further state that this test is based on the formulation of a large number of objective knowledge questions about the attitude object. These questions are usually presented in the form of multiple choices whereby the answers suggest several levels of negativity or positivity towards the respondents' position. Salkind and Rasmussen (2007, p. 54) describe another indirect technique of attitude measurement which is Russell Fazio's evaluative priming technique. This technique is based on the idea that our attitudes would be shown automatically when facing the attitude object.

II.7. Related Studies

Research has been conducted to investigate the different attitudes towards the implementation of EMI-based programmes in education. Dearden (2014) carried a survey to investigate the attitudes towards the use of EMI in 55 countries. The results of this study show that 51% of the respondents' opinions are contradictory. It is due to the presence of diverse views about the implementation of an EMI programme. Those views are split as a result of the different attitudes respondents hold. The main purposes standing behind the contrast within the respondents' opinions are the desire to protect the national language and culture, the concern that EMI would not be effective to teach the main policies as clearly as needed, and the concern that the use of an EMI-based programme could cause social inequalities. 38% of the respondents are favourable for the use of EMI and the remaining 11% remained neutral.

II.7.1. English as a Medium of Instruction in Europe

Research in Europe has shown different attitudes concerning the use of EMI-based programmes. On the one hand, there are some countries that are favourable for the use of EMI

due to its varied benefits. On the other hand, other countries still hesitate about the implementation of such programmes.

Several European countries accept the use of EMI-based programmes. Doiz, Lasagabaster and Sierra (2011) carried out a research in a Spanish university that show that English has become the language most used as a medium of instruction. A group discussion in this university showed that respondents have positive views concerning the implementation of EMI. Some of those respondents claim that EMI is beneficial because it provides them with chances to work in English. Others state that EMI based programmes attract foreign students while other claims focus on the idea that EMI enables students to have more job opportunities at both national and international levels. In addition, other respondents believe that the use of EMI opens the gate for better educational experiences. Another idea raised is that EMI is fundamental in the majority of research areas. Besides, a newly conducted study by Dafouz and Camacho-Minano (2016) that compared between the effect of using EMI and using the native language on students final academic achievement in Spain show also that EMI use does not decrease the outcomes of students, which would be considered in favour of EMI implementation.

Conversely, there are other countries that stand against the use of EMI-based programmes. Munteanu (2014, p. 9) made a comparative study which shows that many European educational institutions are still hesitant about introducing EMI-based programmes and do not even try it despite the fact that using EMI-based programmes is a worldwide spreading phenomenon. The study rather focuses on the problems associated with the implementation of such educational programme taking the situations of EMI in both China and Turkey. However, the points of view about the implementation of EMI in higher education show that respondents are aware about its benefits as it offers more opportunities for students at both national and international job markets.

II.7.2. English as a Medium of Instruction in Asia

Abdullah al Mamun et al. (2012) conducted a study to investigate life science students' attitudes towards using EMI at Khulna University in Bangladesh. The results show that students are in favour of using English for instruction. They further consider English the tool to facilitate future search for jobs. A study conducted by Murtaza (2016) to investigate students' opinions about the implementation of EMI at a private school in Bangladesh showed that students had positive attitudes about it. However, it was noticed that teachers had not used EMI solely; they frequently code-switched during instruction between English and Bangla. It is undeniable that the use of EMI may be helpful to develop students' level of proficiency in English gradually as they learn the subject's content. Murtaza (2016) further stated that the frequent switch to the local language as a language of instruction can be a deterrent to students' development of English proficiency as well as a cause to students' failure or less success in EMI. Hence, Murtaza (2016) concluded that teachers must assume the responsibility to abide by the EMI programme fully without the recurrent use of the native language for instruction in classrooms.

However, others in Asia believe that the use of EMI-based programmes may be difficult due to many reasons. Simbolon (2016) carried out a research to explore lecturers' opinions about the implementation of EMI in higher education in Curtin University in Indonesia. Data was collected using focus groups, individual interviews and questionnaires. The findings show that lecturers face lack of understanding about implementing an EMI-based programme. It is advised, therefore, to adopt language and content-integrated learning programmes to improve the use of EMI. The main purposes behind the need for such a programme are students' limited level in English, their desire to enhance their English proficiency and the dual-focused learning aims to develop their capacities in both English language proficiency and the content subjects. Besides, lecturers suggested obtaining further professional

development in EMI pedagogy along with its main implications once it is implemented at the university. According to Dafouz and Camacho-Minano (2016), EMI usage has not really found a great approbation in all Asian universities. Another thing to remark in Asia is that the previously colonised countries, like India and Malaysia, use English as a primary language for instruction. On the other hand, other countries, such as China, began to use EMI by the late 1990s.

II.7.3. English as a Medium of Instruction in Africa

Studies conducted in African countries showed that there are various attitudes concerning the implementation of EMI-based programmes. Melliti (2012) conducted a research to examine Tunisian university science students' views about the use of English for instruction. The findings of this study show that students were aware about English language importance in education. However, they were not motivated to the extent of making efforts to improve their level of proficiency in English. According to Melliti (2012), Tunisian students are not motivated to develop their English due to the availability of French in Tunisian higher education.

Moreover, Tamtam et al. (2013) conducted a study about the impact of the language of instruction on science and engineering education in Lybia. They found that participants are favourable for the use of English for instruction, but not solely in which students suggested using both English and Arabic for instruction, because of its benefits for students. In addition, Wiseman (2015) conducted a research in Zimbabwe which showed that the majority of teachers and learners are favourable for the implementation of English-based programmes for instruction because, they claim, English is the appropriate language to express new complex and abstract concepts and ideas in science education. They also defend the use of EMI-based programmes saying that children will face the use of EMI when carrying further studies.

Belhiah and Abdelatif (2016) carried out a research to investigate doctoral Moroccan students' attitudes towards the use of English for instruction. According to Belhiah and Abdelatif (2016), the demands to use of English instead of French to teach scientific subjects are increasing. The study indicated that doctoral students of science and technology have positive attitudes towards the use of EMI. They believe that using English for instruction will offer them better opportunities in the future.

Another study carried out by Sisiwe (2016) about the status of English as a lingua franca in Namibia shows that teachers have several attitudes about the implementation of English for instruction in education. 62% of the participants report supporting EMI implementation because it is beneficial for learners. They further argue that the use of English facilitates communication between learners and teachers. Besides, English use will allow learners to benefit from many opportunities abroad. However, the remaining 38% of the participants are not favourable to the use of EMI-based programmes as they claim that the implementation of English for instruction challenged the learning and teaching processes in Namibia. Their main argument is that students did not understand the language to the extent of using it for instruction.

II.7.4. English as a Medium of Instruction in the Gulf

Jendli and Troudi (2011) conducted a study to investigate Emirati students' experiences of English as a medium of instruction, and how EMI affected Emirati students' educational achievement and learning experiences. The results show that Emirati students' experiences with EMI in higher education were modelled by their overall view of EMI in primary and secondary schools. In this context, the fact that English is the second language in the Emirati educational system, may lead to affect students' experiences and attitudes towards its use for instruction in higher education. Jendli and Troudi (2011) further said that private schools played an important role in shaping students' opinions about EMI because students with

experience of EMI in those institutions, in addition to the curriculum of public schools, were more prepared to use EMI in higher education.

Another study conducted by Ismail and Shaban (2017) to examine Emirati teachers views towards the use of EMI-based programmes in the kindergarten indicates that teachers have positive attitudes towards the implementation of such a programme because it improves learners' linguistic, social and mental abilities. According to Wenli and Shin-Mei (2017), Emirati social view of EMI was supportive to a large extent, which is different from other Asia social opinions about EMI. This largely helped students accept EMI and even, in some situation, prefer English rather than Arabic for instruction.

On the other hand, a recent study conducted by Al Zumor (2019) to examine Saudi students' attitudes about the implementation of EMI-based programmes showed that EMI-based programmes have negative consequences on students' performance. For those students, EMI is considered the first cause that leads them to fail in tests. Al Zumor's (2019) study further indicates that EMI even has negative psychological impact on students. Al Zumor (2019) illustrated those psychological impacts when he stated that EMI causes anxiety, stress and other psychological problems that led to low academic achievements.

Conclusion

This chapter presents a theoretical background about the research variables. It is divided into two sections. The first section is devoted to providing a clear view about EMI and related concepts. The second section is devoted to speaking about attitude and related aspects. Besides, various opinions about the use of EMI in different countries all over the world have been tackled.

Chapter Two: Fieldwork

Introduction

The present study seeks to examine the attitudes of biology teachers and students towards the use of English as a medium of instruction (EMI). This study aims also to investigate currently used medium of instruction at the Department of and the problems related to their use. This study further attempts to explore the possible academic changes that could be implemented. Thus, data collection, analysis and discussion are fundamental procedures that should be followed in order to answer research questions.

On the basis of the research questions, a quantitative descriptive survey has been adopted in this study. Okolo (1990, p. 106) states that survey research is appropriate for studying large populations and exploring wide scopes. He further explains that survey research is suitable for studies that examine sociological and psychological variables. Thus, survey research is the suitable research design in studies exploring attitudes as the current study aims to do.

The sample of the current study has been identified using the stratified random sampling technique. Following this technique, the population has been divided into sub-groups called strata; each stratum represents a level of study, from first year to Master II, be it in teaching or learning. Taherdoost (2016, p. 21) argues that the use of this technique of sampling ensures that every stratum from the population is appropriately presented in the sample. Therefore, 25 teachers and 500 students from the Department of Biology at Larbi Tébessi University, Tébessa, Algeria, during the academic year 2018-2019, participated to this research.

The questionnaire is a data collection that has several advantages. Downs and Adrian (2004, p. 106) explain that it is considered an appropriate tool to be used with large groups, within a short period of time to cover various topics. It also ensures participants' privacy and enables the researchers to obtain an original recorded data at the moment. Accordingly, in order to answer the research questions of the current study, two semi-structured

questionnaires were designed to explore teachers' and students' attitudes concerning the use of EMI. Each questionnaire is divided into four sections with a total of 15 items. Each item in both questionnaires is written in English and translated into Arabic to ensure that respondents clearly understand the questions.

Accordingly, data collected through the questionnaires administered at the department of biology, after getting permission from both the English and the biology departments, have been analysed and interpreted throughout this chapter. Then, each questionnaire's results have been discussed in a section. After that, the results of both questionnaires have been compared. Moreover, recommendations and pedagogical implications will be presented in the third section of this chapter.

I. Section One: The Teachers' Questionnaire

The present section is devoted to describe the teachers' questionnaire. The form of the questionnaire, its population and its sample will be clearly identified through this section. This section is also devoted to analysing the results and interpreting the data.

I.1. Description of the Teachers' Questionnaire

A semi-structured questionnaire was designed to collect data about the attitudes of biology teachers towards the use of English as a medium of instruction. The questionnaire consists of four sections with a total fifteen questions. The first section was designed to collect information about their background such as teaching experience, the subjects and levels teachers teach and their level in English. The second section is named teaching scientific subjects. It includes four questions designed to specify the languages that use while teaching, the problems that they face when using these languages and how they handle them. The third section, entitled attitudes towards using English as a medium of instruction, contains four questions as well. These questions is attached to investigate teachers' attitudes about the use of EMI-based programmes in teaching scientific and biology subjects. The last section in

the teachers' questionnaire is devoted to gather further suggestions and comments about the possible educational changes.

I.2. The Population

The population under study consists of 75 teachers at the Department of Biology, Larbi Tébessi University, Tébessa, Algeria, during the academic year 2018-2019. Those teachers have different experiences in the field of teaching. They teach various subjects to five different levels (first year, second year, third year, Master I and Master II)

I.3. The Sample

The sample selected to respond to this questionnaire is third of the total population. 25 teachers were selected in a random stratified way.

I.4. Analysing the Results of the Teachers' Questionnaire

Section I: Background Information

Q.1. How long have you been teaching?

Responding to this question, participants had to specify their years of experience in the field of teaching generally.

Number of Years of General Experience	Number of Teachers	%
[1-5]	12	48%
[6-10]	06	24%
[11-15]	00	00%
[16-20]	01	04%
[21-25]	03	12%
[26-30]	03	12%
Total	25	100%

Table 01: Teachers' General Experiences in Teaching

The results of Question 01 show that the majority of teachers are beginners in teaching as 72% of them have been teaching for 10 years or less. However, it is observable that a considerable number of teachers have been teaching for a long duration as it is shown in the table above wherein 28% of them have at least 16 years of experience in teaching. Teaching

experiences vary as there are teachers who have been teaching for one year and others have been teaching for 30 years. This variation among teaching experiences may affect teachers' attitudes towards the use of EMI in biology. Novice teachers differ from those who have been teaching for a long duration due to the several changes that have occurred in the educational programme as well as the nature of their training.

Q.2. How long have you been teaching at the Biology Department?

To answer this question, participants had to specify the duration they have been teaching in the field of biology.

Teaching Experience at the Department of Biology	N	%
Under one year	01	04%
[1-5]	11	44%
[6-10]	07	28%
[11-15]	02	08%
[16-20]	02	08%
[21-25]	01	04%
[26-30]	01	04%
Total	25	100%

Table 02: Teachers' Experiences at the Department of Biology

Table 02 shows that the vast majority of teachers with 76% are novice teachers in the field of biology since the number of teaching years does not exceed 10 years. Other participant teachers who represent 16% of the respondents, have been teaching for at least 16 years in the Biology Department. Thus, we can say that there is diversity among biology teachers' experiences in the field of teaching. Taking these results into consideration, the number of teachers' years of experience may affect their attitudes towards using another language when teaching in this department.

Q.3. What is (are) the subject(s) you teach there?

This question requires the participants to specify the subjects they teach.

Teachers	Subjects Taught
1	Environment Microbiology, Water & Soil Microbiology, Molecular Biology, Biochemistry, Microbial.
2	Biostatistics, Biometrics.
3	Animal Eco-physiology.
4	Cell Biology, Experimentation.
5	Biotechnology, Biology, Bioclimatology, Chloroplast & Mitochondrion.
6	Parasitology, Medical Insectology, Taxonomy.
7	Ecology, Biostatistics.
8	Ecology
9	Information & Communication Technology, Ecosystem.
10	Botanical, Biology.
11	Molecular Microbiology.
12	General Chemistry & Thermodynamic.
13	Eco-ethology, Animal Eco-physiology, Histology.
14	Biochemistry & Microbial Physiology, Bio-molecular Bioengineering, Genetics, Virology.
15	General Chemistry.
16	Biology, Applied Microbiology.
17	French, Immunology, Virology, Biochemistry.
18	Immunology, Biochemistry.
19	Ecology.
20	Food Safety, Food Packaging, Food Biochemistry.
21	Genetics, Cell Biology, Vegetal Biology, Metabolism.
22	Molecular Genetics, Animal Biology.
23	Botany
24	Cell Biology, Animal Biology, Legislation, Bioethics.
25	Mycology Algology Virology, Molecular Virology, Computer tools and scientific research methods, Pharmacokinetics & Pharmacodynamics, Biological Analysis Techniques, Immunology.

Table 03: The Subjects taught by the Participant Teachers

As shown in Table 03 above, participant teachers teach a variety of subjects depending on the specialisation and level of study. Each field of study has its materials, such as scientific books, references, and the language used by teachers while teaching. Because of this variety in subjects and in specialities, we expect a variety of views about the use of English for teaching biology subjects.

Q.4. Which level(s) are you teaching?

In this question, participants have to choose the letter or letters corresponding to the level(s) they teach. Each level is represented by a letter: (a) refers to first year, (b) to second year, (c) to third year, (d) to Master I and (e) to Master II.

Options	Number of Teachers	%
a	02	08%
b	03	12%
c	03	12%
d	02	08%
a + b	04	16%
a + d	01	04%
c + d	02	08%
c + e	03	12%
d + e	01	04%
b + d + e	01	04%
a + c + d + e	01	04%
a + b + c + e	01	04%
a + b + c + d + e	01	04%
Total	25	100%

Table 04: Levels taught by the Participant Teachers

Table 04 shows that the respondents teach different levels at the Department of Biology. There are 10 participant teachers who teach only one level each; either first year(a), second year(b), third year(c), or Master I(d). There are also 11 teachers who teach two levels each: first and second year (a + b), third year and Master I (c + d), third year and Master II (c + e), first year and Master I (a + d), and Master I and Master II (d + e). One participant teaches three levels (b + d + e), two teach four levels each (a + c + d + e and a + b + c + e) and one teacher teaches all the five levels (a + b + c + d + e).

Q.5. Your level in English is

To answer this question, participant teaches had to describe their level in English.

Options	Number of Teachers	%
Basic	02	8%
Average	08	32%
Good	13	52%
Advanced	02	08%
Total	25	100%

Table 05: Biology Teachers' Perception of their Level in English

As Table 05 shows, 02 of the participant (08%) teachers say that they have a basic level in English. 13 participants, with 52%, report that their level in English is good, and 08 of the respondents (32%) state that their level is average. The remaining 02 teachers (08%) say that they have an advanced level in English. It is worth mentioning that the participant biology teachers think they have an acceptable level of proficiency in English. This leads us to think that it will not be difficult for them to teach and communicate with their students in English.

Section II: Teaching Scientific Subjects

Q.6. Which language do you use while teaching your subjects? (you can choose more than one answer)

Question 06 asks about the language(s) that the participant teachers use while teaching biology subjects.

Options	Number of Teachers	%
Arabic (dialectal and standard)	00	00%
French	12	48%
English	00	00%
French + Arabic	09	36%
French + English	02	08%
Arabic + English	00	00%
All of them	02	08%
Total	25	100%

Table 06: Languages used in Instruction

A majority of 12 participants representing with 48% report that they use only French when teaching biology subjects. Table 6 shows also that no participant uses Arabic and/or English while teaching 09 respondents, 36% of the participants, state that they use French and Arabic together when teaching. 02 participants report that they use French along with English, and 02 say that they use the three languages together when teaching biology subjects. Accordingly, it is obvious that French is the most used language for teaching biology content subjects.

Q.7. How often do you use each of these languages?

This question concerns the participant teachers' frequency of using the previously mentioned languages in instruction.

Options	Never		Rarely		Sometimes		Often		Always		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Arabic	01	04%	04	16%	09	36%	04	16%	07	28%	25	100%
French	00	00%	00	00%	01	04%	05	20%	19	76%	25	100%
English	06	24%	10	40%	08	32%	00	00%	01	04%	25	100%

Table 07: Frequency of Using each Language while Teaching

Table 07 shows that a majority of 19 participants, representing 76% of the respondents, report that they always use French when teaching. 05 teachers representing 20% of the participants say that they often use it, and one teacher (04% of the participants) says that s/he sometimes use it. Concerning the use of Arabic, 09 participants (36% of the respondents) report that they sometimes use Arabic when teaching, 07 teachers representing 28% of the respondents declare that they always use it, and 04 participants (16% of the respondents) say they often use Arabic, and 04 others say they rarely use it. One participant (04% of the respondents) says that s/he never uses Arabic when teaching biology subjects. As for English, a majority of 10 participants representing 40% of the respondents claim that they rarely use it when teaching biology subjects, probably to refer to scientific terminology. 08 participants (32% of the respondents) report that they sometimes use Arabic, and 06 participant teachers

(24%) say that they never use English to teach biology subjects. One participant teacher says that s/he always uses English when teaching.

Q.8. Which language do you face most problems with while using to teach your subjects?

This question is asked to know the language(s) which participants face problems with.

Options	Number of Teachers	%
Arabic (dialectal and standard)	05	20%
French	16	64%
English	03	12%
None	01	04%
Total	02	100%

Table 08: Languages Participants Teachers face most Problems with while Teaching

Table 08 shows that 16 participants forming 64% of the total number of respondents face problems when using French to teach biology subjects. 05 participants (20% of the respondents) claim that they face problems when they teach with Arabic, and 03 (12%) say they face problems with English. One respondent claims that s/he does not face problems when using any language.

Q.9. Please, name these problems.

After translating respondents' answers about the problems they encounter when using each language, we reformulated, grouped and presented them as follows:

The participants who face problems when using French (17 respondents) to teach biology subjects report that the main problems are either students low level of proficiency, the insufficient number of references in French, misunderstanding some concepts, difficulties of constructing paragraphs and even failure to communicate, and their own low level of proficiency in French

Concerning problems with the use of Arabic when teaching scientific subjects, 05 respondents state two main problems: the unavailability of specific equivalence of scientific terms in Arabic and the insufficient number of references in this language.

As for the use of English when teaching biology subjects, 03 participants report that the main problem is related to their poor level of proficiency in English that usually results in a limited performance of language skills.

Q.10. How do you deal with these problems?

After translating respondents' answers about the way they handle the problems they encounter when using each language in teaching, we reformulated, grouped and presented them as follows:

Participant teachers having problems when using French, Arabic and English in teaching scientific subjects use different procedures to overcome the problems depending on the nature of these problems and the language that those problems are encountered with. The 17 respondents who face problems with the use of French while teaching report that they prefer to use translated handouts and exam papers mainly in Arabic to make sure that all students understand the lesson or the exam questions. Another procedure is the use of dialectal Arabic when explaining.

As far as the problems encountered when using Arabic for teaching biology modules are concerned, 05 respondents report that they try to provide explanations rather than translations when dealing with scientific terms. Accordingly, they further explain that students' understanding of the phenomenon itself is needed more than knowing what a term means. Moreover, respondents state that they use dictionaries and websites to overcome the difficulties that may hinder the progression of the lesson. Another way to deal with problems encountered with the use of Arabic is to present scientific terms in their original language(s) which are usually Greek or Latin language.

The respondents who have difficulties using English in teaching report that they use translated handouts or exam papers in more than one language so that the message is transmitted easily, clearly and rapidly. In addition, respondents state that they are working on improving their level of proficiency in English to cope with any sudden problem that may occur during the lesson, which reveals that teachers are aware of the importance of English.

Section III: Attitudes towards using English as Medium of Instruction

Q.11. Do you think that teaching using English helps students understand better? Please explain your answer.

Respondents, in this question, are asked to choose the option correspondent to their attitude.

Options	Number of teachers	%
Yes	14	56%
No	10	40%
Neutral	01	04%
Total	25	100%

Table 09: Teachers' Attitudes about the Influence of EMI on Students' Understanding.

Table 11 above shows that a majority of 14 respondents representing 56% of the participants believe that the use of English in teaching would help students understand better. In this sense, participants acknowledge the fact that English is the most used language for scientific fields. They explain that it is the most used language for publishing articles. In addition, respondents claim that the use of English is easier than French especially in the field of biology. However, respondents say that it would not be possible to use English to teach biology subjects unless it was studied appropriately in the previous phases of education (primary, middle and secondary). 10 participants representing 40% think that using English in teaching would not help students understand better. Respondents further argue that the change of the language of instruction does not influence students' comprehension because both English and French represent a foreign language for them. One respondent chooses to be

neutral as s/he believes that science have no specific language and students failure and success is related to their motivation about the learning process itself.

Q.12. Do you think that your students may feel more at ease when participating, asking questions, or presenting research in English? Please explain your answer.

Participants, in this question, are asked to choose the option correspondent to their attitude.

Options	Number of teachers	%
Yes	09	36%
No	14	56%
Neutral	02	08%
Total	25	100%

Table 10: Teachers' Attitudes about Students' Use of English

Table 10 shows that 14 participants (56%) believe that students will not feel more at ease when participating, asking questions or presenting research using English. They argue, when asked to explain, that most biology students have a poor level in English, the thing that may negatively influence their performance in the class. Participants state also that English is not used in the department of biology to the extent that enables students to use it when participating, asking questions, or presenting research. Other respondents report that they themselves do not have the needed level of proficiency in English which can be used for teaching.

Besides, all of them report that they are hesitant about the use of English as a medium of instruction because they have never tried it before. 09 respondents forming 36% believe that students' use of English to participate, ask questions and present research would help students feel more at ease. They further explain that English is the language of development in which its use will attract students more to engage in classroom discussions. Moreover, those participants believe that the use of EMI-Based programmes would increase the smoothness of grasping information and would also enables students to use English references that serve

their field of study without wasting time in translation. Others state that English is an easy language by nature in compare to French. The remaining two respondents remain neutral claiming that they cannot decide about the use of English as a medium of instruction in biology subjects teaching because they did not try this educational policy before.

Q.13. Do you think that students find more documents in English than in French when doing research or looking for references in your subjects? Please explain your answer.

Participants, in this question, are asked to choose the option correspondent to their attitude.

Options	Number of teachers	%
Yes	24	96%
No	01	04%
Total	25	100%

Table 11: Teachers' Attitudes about the Availability of References in English and French

Twenty-four respondents forming 96% report that students find more documents in English than in French when doing research or looking for references in their subjects. This result strongly supports our assumption saying that most references in biology are in English. Respondents support their view, when asked to explain their answers, stating that English is the first used language in scientific fields worldwide and biology is one of them. They add that the plurality of scientific research projects, books, conferences, journal articles and theses are published in English and even if the journals are published in French, it is essential to insert an abstract in English. Others state that students find general research (as definitions, anatomy and physiology) easily in French. However, for specific research, it is easier to find information in English rather than French. Besides, participants argue that references in English are easier to access and contain valuable information that biology students may

benefit from. One respondent is against this view because s/he believes that most references are available in French.

Q.14. What do you think of teaching using English in the scientific fields? Please explain your answer.

To answer this question, participants had to choose the option that corresponds to their attitude.

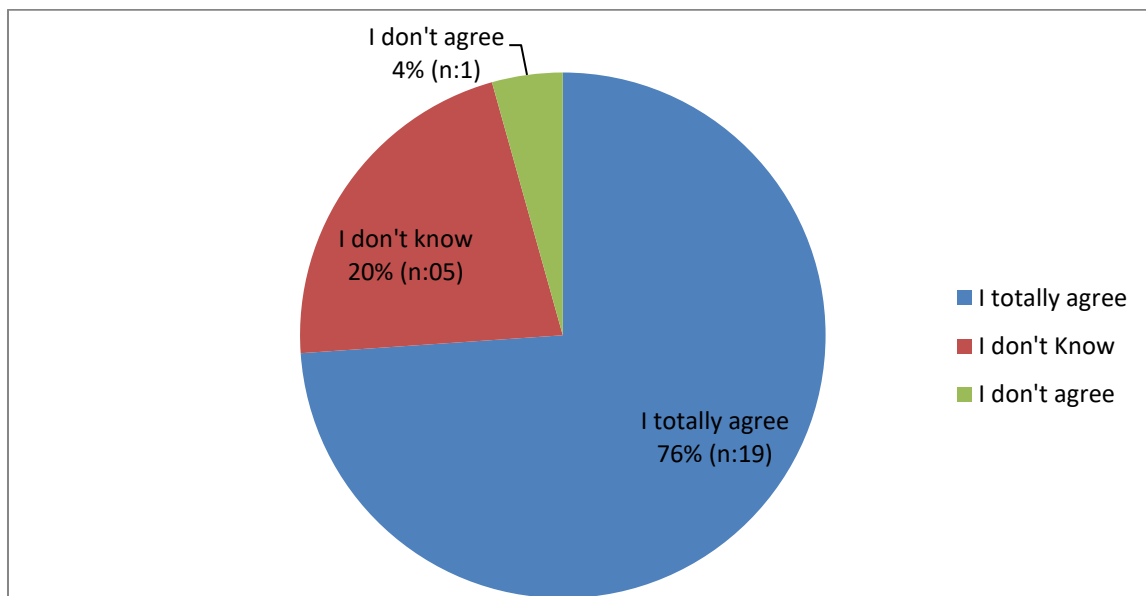


Figure 02: Teachers' Attitudes about Teaching Using English in Scientific fields

Figure 02 above shows that 19 participants representing 76% agree with using English to teach in the scientific fields. This contributes to proving the research main hypothesis to a great extent. In this sense, respondents believe that English is the first international language that both students and teachers should master. They further claim that the use of English as a medium of instruction would be in favour of biology students as it enables them to cope with the age progression in the scientific fields. Participants also argue that the use of EMI enables students to benefit from research they need in their field of study. Besides, other respondents believe that science is developing worldwide and French is not sufficient to cope with this development in regard to its use among speakers. This lead to making the use of English more desirable. Furthermore, those respondents strongly believe that students' level of proficiency

in English should be improved using extra courses as they study content subjects. They also stress the fact that English should be taught appropriately in the earlier phases of education (primary, middle and secondary).

Five respondents forming 20% say that they do not know because they have never tried it before. Accordingly, some of those respondents report that they have suffered from several problems using Arabic and French to teach biology subjects. So, it is not sure that the use of English as a medium of instruction will make the situation better or more difficult. One respondent does not agree with the idea of using English to teach scientific subjects stating that learning English in the previous stages of education (primary, middle and secondary) was modest to a great extent. This would make it extremely difficult for students to understand, speak and write using English at the university level.

Section IV: Further suggestions

Q.15. Do you have any further suggestions or comments?

In response to question 15, participants have suggested a variety of procedures that they think can ameliorate the educational situation at the Department of Biology. These procedures differ in relation to participants' attitudes towards the language of instruction.

Those who stand for the use of EMI-based programmes to teach biology subjects suggest several arrangements in order to adopt English in the teaching policy. One of those suggestions is the organisation of training days to improve teachers' level of proficiency in scientific English in particular. Others state that it is quite important to make English a main language in the educational system from the early years of study. Besides, some respondents believe that the educational system should be changed gradually to adopt English in order to avoid any possible problems that could be a result of the sudden change. In addition, some respondents suggest fully replacing French by English to be officially the second language. In this sense, respondents claim that the use of English in teaching content subjects increases

students' performance and improves their level. They also report that the use of English would be of considerable benefit for students' future in the country and abroad.

However, those who are against the use of English as a medium of instruction to teach content subjects believe that students generally perform better when being taught in their mother tongue. Therefore, they advise to use exclusively Arabic as a medium of instruction at the Department of Biology. Other participants state that it could be better to use both English and Arabic but give Arabic priority.

I.5. Discussion of the Results

The results will be discussed in the light of the research questions and the literature related to teachers' attitudes towards the use of English as a medium of instruction to teach content subjects. For this purpose, we established four areas to focus on; the currently used medium of instruction at the Department of Biology, the problems that teachers' encounter with the use of that language as a medium of instruction, the strategies used to overcome those problems and, mainly, teachers' attitudes towards the use of EMI.

The first research question seeks to know the currently used language for instruction at the Department of Biology, while the second is asked to know if there are any problems associated with the current medium of instruction. When analysing the results of the teachers' questionnaire, we found that the majority (52%) uses French with at least one other language, and 48% uses only French. In this case, we can say that despite the fact that French the dominant language of instruction, most of the respondents do not use French alone to teach biology modules. Table 07 further shows that the majority of them (76%) always use French when teaching content subjects, and other results reveal that French is the language that the majority of participants (64%) face most problems with. These results confirm the first hypothesis. Those problems result from students' and teachers' poor proficiency level, the shortage in references published in French, communication problems, students' inability to

comprehend certain scientific terms and the difficulty to find appropriate equivalence to scientific terms in French. In this sense, it is worth mentioning that biology teachers are still using French as the main language for instruction despite of the problems they encounter when using it. Data also reveal that French is not the only used language for instruction at the Department of Biology (Table 06), and not the only language that they face problems with (Table 08). Arabic and English are also used when teaching biology subjects, even if it is less than French, and there are some problems when using them as facing difficulties to find appropriate equivalence to scientific terms in Arabic and teachers' poor level of proficiency in English.

Concerning the main research question related to teachers' attitudes towards the use of English as a medium of instruction, the results indicate that the majority of participants (56%) believe that using English when teaching biology subjects would help students understand better (Table 09). In contrast, Table 10 shows that the majority of respondents (56%) believe that using EMI will not improve students' performance in using the language in the classroom regardless of their awareness concerning the availability of references published in English as shown in Table 11.

It is noticed that background variables –such as teachers' teaching experiences (Tables 01 & Table 02), the subjects and the levels they teach (Table 03 & Table 04), and the participants' level of proficiency in English (Table 05)- contribute to shaping participants' attitudes towards the use of English for instruction. Accordingly the majority of respondents' (76%) stand for the use of English as a medium of instruction, which confirms the second hypothesis. Respondents, in this sense, believe that the use of EMI-based programmes will be beneficial to students through the learning process as well as in their future career, taking into consideration that English is the most used language in the scientific fields and the main tool to cope with development of sciences all over the world.

Furthermore, it is clear that those participants are aware of the status and the importance of English in this globalised world. However, their beliefs are not free of hesitations. There is a significant number of participants who have negative attitudes towards the use of EMI-based programmes due to many reasons. In other words, participants are afraid of the challenges that an EMI-based programme might bring. These results are similar to those found by Munteanu (2014, p. 9) reporting that higher education institutions are hesitant about the implementation of EMI-based programmes because of the challenges that could be brought with it. Respondents further argue that English has not been taught as appropriately as it should have in earlier levels to be used for instruction in higher education. Another factor that makes teachers' hesitant about the implementation of EMI is their level of proficiency in English as they believe that their modest level is insufficient to communicate effectively during the session. Besides, a number of respondents (Figure 02, 20%) chose to remain neutral arguing that they cannot judge a situation that has never been tried before. Other participants believe that the language of instruction is not the factor that influences the learning process; it is rather the students' level of motivation that shapes their academic performance.

The third research question explores the educational reforms that could be implemented to overcome the problems that biology teachers encounter with the current medium of instruction. Thus, participants suggest several educational changes because they believe they may be radical solutions to overcome the previously mentioned obstacles related to the use of each language for instruction. In this sense, respondents' suggestions differ according to the language they face problems with and their attitudes towards the use of an EMI-based programme. On the one hand, those who face problems with French and have positive attitudes towards EMI suggest gradually adopting EMI to be used at the Department of Biology and train teachers to be competent in scientific English. They also suggest replacing

French totally by English to be the second language in higher education in the country. Other respondents suggest using both English and Arabic for instruction to ensure that students' academic achievements will not be influenced by the change of the language of instruction. On the other hand, those who have negative attitudes towards the implementation of EMI-based programmes, despite the fact that they encounter various problems resulting from the use of French for instruction, suggest using only Arabic (standard and/or dialectal) as a medium of instruction because it is the students mother tongue. Besides, other respondents advise using both Arabic and English, but making Arabic the dominant language of instruction. They further recommend organising language courses to improve both teachers' and students' level of proficiency in French in order to overcome the previously mentioned problems.

Throughout this section, a detailed description of the teachers' questionnaire has been made. Besides, the data were carefully analysed and interpreted in the light of previous literature and research questions.

II. Section Two: The Students' Questionnaire

The present section describes the students' questionnaire. The form of the questionnaire, the population and the sample will be clearly identified through this section. Finally, an analysis of the results obtained and their interpretation will be provided.

II.1. Description of the Questionnaire

A semi-structured questionnaire was designed to be administered to biology students. This questionnaire consists of fifteen questions divided into four sections. The first section is collects students' background information as gender, level of education, field of speciality and their level of proficiency in English. The second section was designed to know the languages used for instruction in their classes, the problems the students encounter when being taught via these languages and how they overcome those problems. The third section is about

students' attitudes towards the use of English in teaching biology subjects and the last one is devoted to any further suggestions or comments about the topic.

II.2. The Population

During the academic year 2018-2019, the population of the students at the Faculty of Biology, Larbi Tébessi University, Tébessa, Algeria, consists of 2394 students studying at five different levels (first year, second year, third year, Master I and Master II). They are into 677 in the first year common core, 586 in the second year core, 448 in the third year students divided into 08 different fields, 430 in Master I classes with 09 fields, and 253 students in Master II classes with 09 fields.

II.3. The Sample

Using the stratified random sampling, a sample estimated at about one-fifth (20.88%) from the whole population has been selected. Therefore, 500 students were selected to respond to this questionnaire taking about one-fifth from each level and each field of study to ensure that the sample will appropriately represent the whole population. Accordingly, 140 students (20.68%) have been selected from first year students, 122 (20.82%) from second year students, 94 (20.98%) from third year students, 89 (20.68%) from Master I and 55 (21.74%) from Master II students.

II.4. Analysing the Results of the Students' Questionnaire

Section I: Background Information

Q.1. Your gender is

Responding to this question, participants had to choose the option correspondent to their gender.

Options	Gender	Number of Students	%
First Year	Male	36	25.71%
	Female	104	74.29%
Second Year	Male	32	26.23%
	Female	90	73.77%
Third Year	Male	26	27.66%
	Female	68	72.34%
Master I	Male	20	22.47%
	Female	69	77.53%
Master II	Male	13	23.64%
	Female	42	76.36%
Total		500	100%

Table 12: Students' Gender

Table 12 shows that the vast majority of biology students are females with 74.60% of the whole number and the remaining 25.40% are males. This disparities in terms of gender are found in the five levels: in the first year, 74.29% of the students are females and 25.71% are males; in the second year, 73.77% of the students are females whereas 26.23% are males; in the third year, 72.34% of the students are females while 27.66% are males; in Master I, 77.53% of the students are females and 22.47% are males; and in Master II, 76.36% of the students are females whereas 23.64% are males. Thus, the student population at the Department of Biology is dominated by female students as they are almost three times as numerous as male students. This may affect students' overall attitudes towards the use of English as a medium of instruction.

Q.2. Your level of education is

In this question, respondents had to select their level of education.

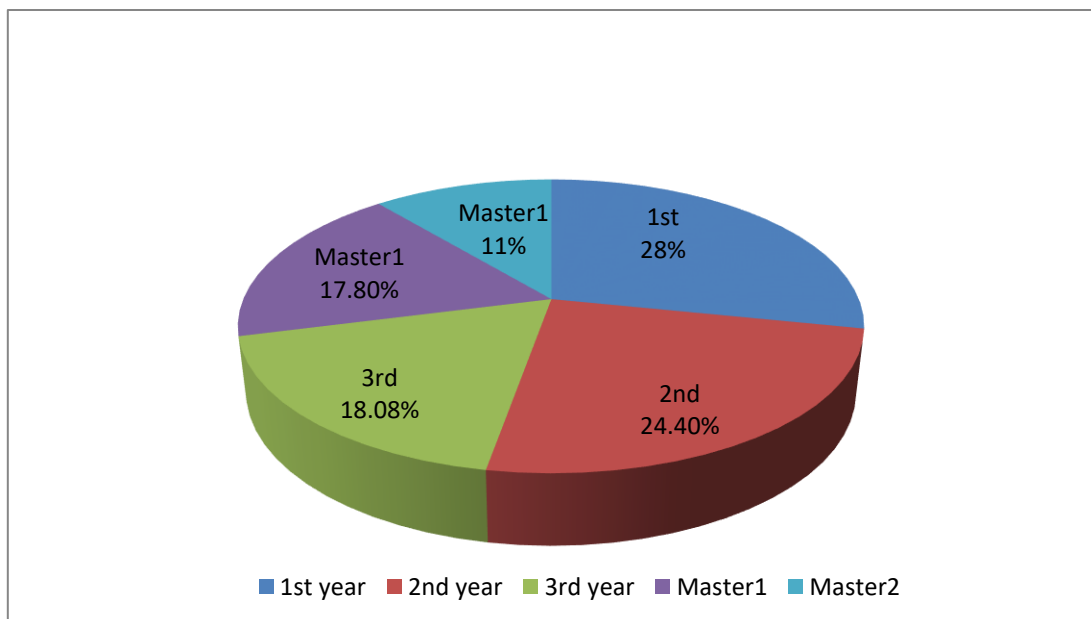


Figure 03: Students' Level of Education

Figure 03 above shows that the majority of respondents are first year students with 28% (140 students) followed by 24.40% from the second year (122 students). Third year students represent 18.08% of the total number of respondents (94 students), 89 Master I students represent 17.80%, and 11% of the total number of participants are Master II students (55 students). In order to make the sample highly representative of the whole population, about one-fifth was taken from each level of education to respond to the questionnaire. Furthermore, these educational levels have different experiences with the language of instruction at the Department of Biology, which would make students' attitudes towards the use of English in learning biology subjects different from one level to another.

Q.3. Your field of study is

Answers to this question show that each of the first and second year students study in a common core. In the third year, they choose the field they want specialise in. The tables below show third year, Master I and Master II specialities.

Specialities	Number of Students	%
Biochemistry	13	13.83%
Microbiology	13	13.83%
Molecular Biology	11	11.70%
Toxicology	22	23.40%
Food Technology & Food Control	06	06.38%
Ecology	04	04.26%
Biology & Plant Physiology	09	09.58%
Biology & Animal Physiology	16	17.02%
Total	94	100%

Table 13: Third Year Students' Fields of Study

Specialities	Number of Students	%
Ecology	05	05.62%
Environmental & Animal Physiology	15	16.85%
Biotechnology	08	08.99%
Applied Biochemistry	17	19.10%
Molecular Animated Biology	11	12.36%
Applied Microbiology	15	16.85%
Toxicology	07	07.87%
Pharmacology & Toxicology	07	07.87%
Food Safety & Quality Control	04	04.49%
Total	89	100%

Table 14: Master I Students' Fields of Study

Specialities	Number of Students	%
Ecology	03	05.45%
Environmental & Animal Physiology	07	12.73%
Plant Biotechnology	06	10.91%
Applied Biochemistry	09	16.36%
Molecular Animated Biology	08	14.55%
Applied Microbiology	10	18.18%
Toxicology	04	07.27%
Pharmacology & Toxicology	05	09.09%
Food Safety & Quality Guarantee	03	05.45%
Total	55	100%

Table 15: Master II Students' Fields of Study.

First and second year participants are studying in a common core, which is biology in general. When reaching the third year at the Department of Biology, students start to specialise in different fields. In Master I and Master II, students carry on studying in the fields of speciality chosen in the third year (Table 13) with slight changes in the fields as shown in Table 14 and Table 15. Biology students will be graduated from nine specialities (ecology, environmental and animal physiology, plant biotechnology, applied biochemistry, molecular animated biology, applied microbiology, toxicology, pharmacology and toxicology and finally, food safety and quality guarantee).

Q.4. Your level of proficiency in English is

To respond to this question, participants had to choose the option they think it represents their level of proficiency in English.

Options	1 st year		2 nd year		3 rd year		Master I		Master II		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Basic	16	11.43%	17	13.93%	23	24.47%	32	35.96%	31	56.36%	119	23.80%
Average	38	27.14%	30	24.59%	29	30.85%	41	46.07%	17	30.91%	155	31%
Good	57	40.71%	54	44.26%	35	37.23%	12	13.48%	06	10.91%	164	32.80%
Advanced	29	20.71%	21	17.21%	07	07.45%	04	04.49%	01	01.82%	62	12.40%
Total	140	28%	122	24.40%	94	18.80%	89	17.80%	55	11%	500	100%

Table 16: Students' Perception of their Level of Proficiency in English

Table 16 above shows that the majority of respondents, 164 respondents representing 32.80%, believe that they have a good proficiency level in English, and a considerable number of participants, 155 students representing 31%, say that they have an average level of proficiency in English. 119 respondents (23.80% of the total number of participants) claim that they have a basic level in English whereas the remaining 62 students representing 12.40% report that they have an advanced level in English. The results indicate also that the majority of first, second and third year participants claim that they have a good level in English.

Moreover, Master I participants think they have an average level, while most Master II participants believe that they have a basic level proficiency level.

Section II: The Language of Instruction at the Department of Biology

Q.5. Which language(s) is(are) used when teaching the biology modules at the Department of Biology?

In this question, respondents had to select the language used when teaching the biology modules. Arabic refers to both dialectal and standard.

Options	1 st year		2 nd year		3 rd year		Master I		Master II		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Arabic	03	02.14 %	05	04.29 %	00	00%	00	00%	00	00%	08	01.60 %
French	32	22.86 %	34	27.87 %	04	04.25%	61	68.54%	05	09.09%	136	27.20 %
English	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%
French + Arabic	94	67.14 %	76	62.30 %	88	93.62%	25	28.09%	13	23.64%	296	59.20 %
French + English	00	00%	00	00%	00	00%	00	00%	10	18.18%	10	02%
Arabic + English	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%
All of Them	11	07.86 %	07	05.74 %	02	02.13%	03	03.37%	27	49.09%	50	10%
Total	140	28%	122	24.40 %	94	18.80 %	89	17.80%	55	11%	500	100%

Table 17: Students' Perceptions of the Languages Used in Teaching Biology Modules

Concerning the language used in teaching biology modules, a large majority of 296 respondents representing 59.20% of the whole sample report that French and Arabic are used together when teaching biology modules. 136 respondents referring to 27.20% of the participants state that French is used solely, and 50 respondents, which refers to 10% of the total number of respondents, say that French, Arabic and English are used together in teaching biology subjects. 10 respondents (02% of the participants) report that the languages used are both French and English whereas the remaining 08 participants (01.60% of the respondents) state that Arabic is the only language used for instruction. Thus, it is noticed that the most used language is French alone or in combination with Arabic and English.

Q.6. How often is this(are these) language(s) used when teaching these modules?

This question concerns the participant students' frequency of using the previously mentioned language in instruction.

Options	Never		Rarely		Sometimes		Often		Always		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
1st year												
Arabic	32	22.86%	06	04.28%	28	20%	71	50.71%	03	02.14%	140	100%
French	03	02.14%	00	00%	21	15%	84	60%	32	22.86%	140	100%
English	129	92.14%	02	01.43%	05	03.57%	04	02.86%	00	00%	140	100%
2nd year												
Arabic	34	27.87%	08	06.56%	21	17.21%	54	44.26%	05	04.10%	122	100%
French	05	04.09%	09	07.38%	13	10.66%	59	48.36%	36	29.51%	122	100%
English	115	94.26%	04	03.28%	00	00%	03	02.46%	00	00%	122	100%
3rd year												
Arabic	04	04.26%	03	03.19%	16	17.02%	71	75.53%	00	00%	94	100%
French	00	00%	04	04.26%	07	07.44%	79	84.04%	04	04.26%	94	100%
English	92	97.87%	01	01.06%	01	01.06%	00	00%	00	00%	94	100%
Master II												
Arabic	61	68.54%	03	03.37%	08	08.99%	17	19.10%	00	00%	89	100%
French	00	00%	00	00%	04	04.49%	23	25.84%	62	69.66%	89	100%
English	85	95.50%	01	01.12%	03	03.37%	00	00%	00	00%	89	100%
Master II												
Arabic	06	10.91%	09	16.36%	17	30.91%	23	41.82%	00	00%	55	100%
French	00	00%	00	00%	07	12.73%	36	65.45%	12	21.82%	55	100%
English	02	03.64%	30	54.54%	16	29.09%	07	12.73%	00	00%	55	100%

Table 18: Frequency of Using each Language in Teaching Biology Subjects

Table 20 shows that participants' responses concerning the frequency of using Arabic vary. 03 forming 02.14% of first year participants report that Arabic is always used, 71 referring to 50.71% of the total number of first year participants say that it is often used, 28 participant representing 20% say that Arabic is sometimes used, 06 referring to 04.28% state that it is rarely used, whereas 32 participants (22.86%) report that Arabic is never used. As for second year participants, 05 respondents representing 04.10% say that Arabic is always used, 54 participants (44.26%) report that it is often used, 21 respondents forming 17.21% claim

that it is sometimes used, 08 referring to 06.50% state that Arabic is rarely used, and the remaining 34 participants (27.87%) report that it is never used. Concerning third year respondents, no participant states that Arabic is always used, 71 referring to 75.53% report that it is often used, 16 respondents (17.02%) state that it is sometimes used, 03 representing 03.19% say that it is rarely used, whereas the remaining 04 forming 04.26% report that Arabic is never used. As for Master I participants, no respondent says that Arabic is always used, 17 representing 19.10% report that it is often used, 08 participants (08.99%) state that it is sometimes used, 03 forming 03.37% report that it is rarely used, and 61 respondents referring to 68.54% say that Arabic is never used. Finally, no Master II respondents says that Arabic is always used, 23 participants (41.82%) report that it is often used, 17 representing 30.91% state that it is sometimes used, 09 forming 16.36% report that it is rarely used, and the remaining 06 participants (10.91%) claim that Arabic is never used.

Responses concerning the frequency of using French also vary. 32 participants representing 22.86% of first year participants report that French is always used, 84 respondents referring to 60% of the total number of first year participants say that it is often used, 21 participants representing 15% say that French is sometimes used, and the remaining 03 respondents (02.14%) state that it is never used. As for second year participants, 36 participants referring to 29.51% report that French is always used, and 59 respondents forming 48.36% state it is often used. In addition, 13 respondents representing 10.66% report that it is sometimes used while 09 participants forming 07.38% say it is rarely used. The remaining 05 referring to 04.09% say that it is never used it. Concerning third year participants, 04 forming 04.26% of third year respondents state French is always used while 79 representing 84.04% say it is often used. Moreover, 07 referring to 07.44% report that French is sometimes used, and 04 representing 04.26% claim that it is rarely used. Furthermore, no participant says that French is never used. The majority of Master I

participants, 62 forming 69.66% report that French is always used whereas 23 representing 25.84% say that it is often used. 04 referring to 04.49% explain that French is sometimes used when teaching biology modules. No respondents states that it is rarely or never used. Finally, 12 Master II respondents representing 21.82% state that French is always used, 36 forming 65.45% report that it is often used, and the remaining 07 participants representing 12.73% state that it is used sometimes. No respondent reports that French is rarely or never used.

Participants report that English is not used as often as French and Arabic. No respondent of first year participants states that English is always used, 04 respondents forming 02.86% report that it is often used, 05 representing 03.57% say that it is sometimes used, 02 respondents (01.43%) say that it is rarely used, whereas the vast majority containing 129 participants (92.14%) report that English is never used. As for second year respondents, no respondent states that English is always used, 03 participants representing 02.46% say that it is often used, no participant says that it is sometimes used, 4 respondents referring to 03.28% claim that it is rarely used, whereas 115 participants forming 94.26% report that English is never used. Concerning third year participants, no respondent says that English is always or often used, one respondent claim that it is sometimes used, another respondent states that it is rarely used, whereas 92 respondents referring to 97.87% say that it is never used. No Master I respondent says that English is always or often used, 03 representing 03.37% state that it is sometimes used, one participant claims that it is rarely used, whereas 85 forming 95.50% report that English is never used. Eventually, no Master II participant reports that English is always used, 07 referring to 12.73% state that it is often used, 16 respondents forming 29.09% claim that it is sometimes used, 30 respondents (54.54%) say that it is rarely used, and 02 respondents report that it is never used.

Those results indicates that French in combination with other languages or alone is the language most often used in comparison to Arabic and English since 29.20% of the total

number of participants say that French is always used and 56.20% report that it is often used.

Figure 04 below presents the frequency of using each language in teaching biology subjects according to the respondents.

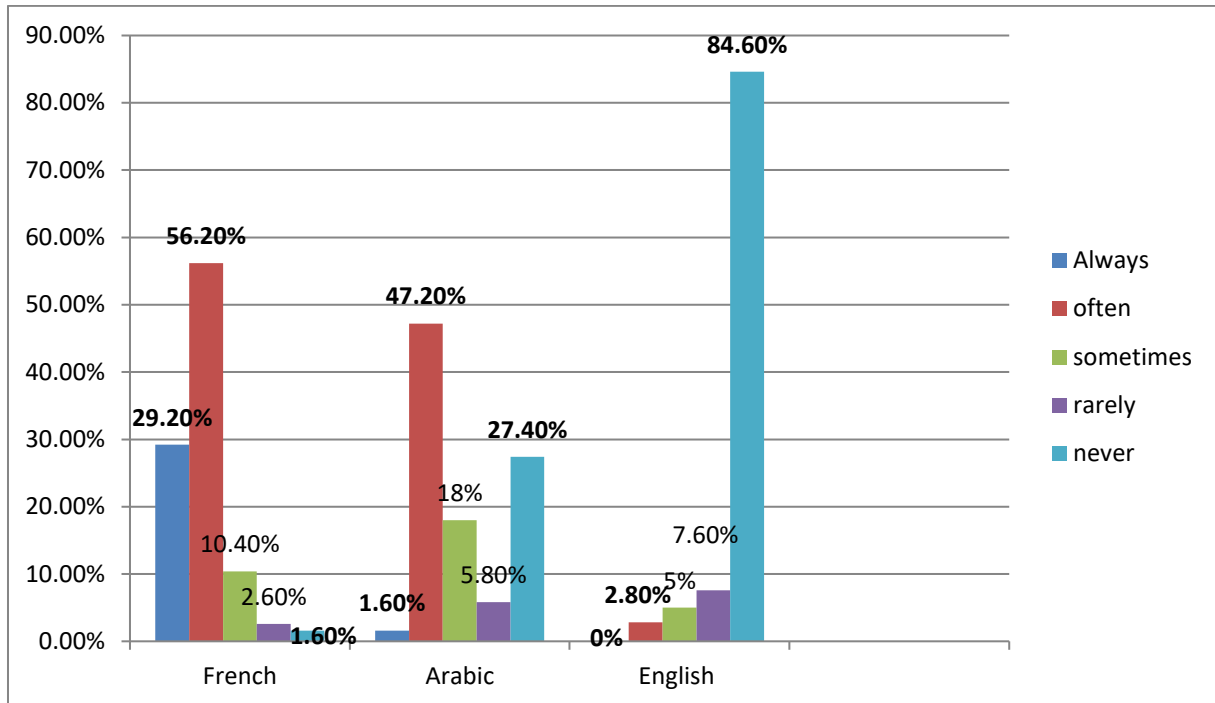


Figure 04: Frequency of Using each Language in Teaching Biology Modules

Figure 04 clearly shows that French is the most often used language in teaching biology subjects. It also demonstrates that Arabic is widely used in comparison to English.

Q.7. Which language do you face most problems with when used to teach you biology modules?

This question is asked to know the language(s) which participant teachers face problems with.

Options	Arabic (dialectal and standard)		French		English		None of them		Total	
	N	%	N	%	N	%	N	%	N	%
1st year	29	20.71%	97	69.29%	05	03.57%	09	06.43%	140	100%
2nd year	27	22.13%	83	68.03%	08	06.56%	04	03.28%	122	100%
3rd year	37	39.36%	52	55.32%	04	04.26%	01	01.06%	94	100%
Master I	19	21.35%	57	64.04%	13	14.61%	00	00%	89	100%
Master II	13	23.64%	41	74.54%	01	01.82%	00	00%	55	100%
Total	125	25%	330	66%	31	06.20%	14	02.80%	500	100%

Table 19: The Languages Students face most Problems with

Table 19 shows that a majority of 330 participants (66% of the total number of respondents) encounter problems with French, with 69.29% of first year respondents, 68.03% of second year respondents, 55.32% of third year respondents, 64.04% of Master I, and 74.54% of Master II participants. Concerning Arabic, 125 respondents corresponding to 25% of the total number of respondents report that they face problems when being taught in Arabic, including 20.71% of first year respondents, 22.13% of second year participants, 39.36% of third year, 21.35% of Master I respondents, and 23.64% of Master II respondents. With regard to English, 31 participants representing 06.20% of the whole sample state that they face problems with the use of this language, consisting of 03.57% of first year respondents, 06.56% of second year participants, 04.26% of third year participants, 14.61% of Master I and 01.82% of Master II respondents. However, the remaining 14 respondents (02.80%) report that they do not encounter problems with any language. Among them, 06.43% of first year respondents, 03.38% of second year and 01.06% of third year participants.

Q.8. Please, name these problems

After translating respondents' answers about the problems they encounter when being taught using Arabic, French and English we paraphrased, grouped and presented them.

Concerning the problems students encounter when being taught in Arabic, French and English, respondents who face problems with the use of Arabic report that one of the problems is the insufficiency of scientific references in Arabic. Participants, again, tend to translate information from foreign references. The thing that takes much time and effort. Another problem related to the use of Arabic reported by respondents is the ineffectiveness of Arabic to serve scientific fields. Finally, respondents say that it is hard to find exact equivalence to foreign scientific terms that have, especially, Latin origins.

For the problems faced with French as a language of instruction, respondents report that one of the problems is the insufficiency of references in this language. Respondents explain that whenever they want to conduct research they suffer from the shortage of books and/or published research in French which obstructs their learning considerably. Moreover, students use references translated from other languages, which consumes more time and effort. Another problem facing students related to the use of French when teaching biology subjects is their low level of proficiency in French, which makes many classroom activities difficult to be accomplished. Participants add that French is not a scientific language since it is difficult to find the appropriate scientific terms in this language. Other respondents having problems with the use of French in instruction claim that they encounter problems with French because they do not like it for either religious or historical purposes.

As far as English is concerned, respondents report that one of the problems they encounter when being taught in this language is their low level of proficiency in English. They add that they face problems when they want to speak or write in English. Other respondents state that they are unable to understand some scientific English terms, which leads to misunderstanding the whole course. Others state that teachers' low level of proficiency in English creates many communication problems and makes the learning more difficult.

Q.9. How do you deal with these problems?

After translating respondents' answers about the way they handle the problems they encounter when being taught each language, their answers have been paraphrased, grouped and presented as follows:

With regard to the problems faced when taught in Arabic, participants report that they use translated foreign language references. Moreover, respondents state that they use word-for-word translations of scientific terms when they fail to find exact terms in Arabic. Furthermore, some participants say that they use French instead of Arabic when the latter does not correspond to the situation.

Respondents who face problems with the use of French report that they use references from other languages after translating the needed pieces of information. They add that when they fail to find appropriate equivalence of scientific terms in French, they use them in their original language (Latin). Besides, respondents state that they sometimes ask for help from French teachers concerning some problems related to conducting research. In addition, some of them are trying to improve their level of proficiency in French through language courses.

Concerning the problems related to the use of English, respondents report that they are trying to improve their level of proficiency through language courses. They add that they often ask English teachers and friends to help them with certain problems. In addition, some participants say that they use Arabic or French instead of English to gain time and effort.

Q.10. Do you have modules that you study using English? If yes, name them please.

Responding to this question, participant students had to say if they have English modules and asked to name them if existed.

Options	1 st year		2 nd year		3 rd year		Master I		Master II		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Yes	140	100%	122	100%	51	54.26%	44	49.44%	29	52.73%	386	77.20%
No	00	00%	00	00%	43	45.74%	45	50.56%	26	47.27%	114	22.80%
Total	140	100%	122	100%	94	100%	89	100%	55	100%	500	100%

Table 20: English in Teaching Modules at the Department of Biology

Table 20 shows that 386 respondents forming 77.20% assert that they have modules taught in English, including 100% of both first year and second year respondents, 54.26% of third year respondents, 49.44% of Master I and, finally, 52.73% of Master II participants.

In this sense, first and second year participants state that they study modules such as English communication techniques and physics in English, in addition to the module of English for Specific Purposes. Third year respondents say that they study Analysis of Scientific Articles in English. Concerning Master I and Master II, respondents state that they study English for Specific Purposes. However, these modules seem to be not content subjects but just secondary modules.

On the other hand, 114 referring to 22.80% state that they do not study any module in English. This number includes 45.74% of third year respondents, 50.56% of Master I and 47.27% of Master II respondents. It is worth mentioning that respondents who report that they do not study modules in English belong to different specialisations from those who claim that they study certain modules in English.

Section III: Attitudes towards using English as a Medium of Instruction (EMI)

Q.11. When you look for references for the biology modules, you find more documents in

Participants, in this question, are asked to choose the option correspondent to their attitude. Arabic refers to both dialectal and standard.

	1 st year		2 nd year		3 rd year		Master I		Master II		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Arabic	26	18.57%	17	13.93%	21	22.34%	20	22.47%	11	20%	95	19%
French	42	30%	39	31.97%	28	29.79%	14	15.73%	15	27.27%	138	27.60%
English	72	51.43%	66	54.10%	45	47.87%	55	61.80%	29	52.73%	267	53.40%
Total	140	100%	122	100%	94	100%	89	100%	55	100%	500	100%

Table 21: The Language of most Biology References according to Student Respondents

Table 21 shows participants' responses concerning the language which most biology references are available in. 267 respondents forming 53.40% report that most biology references are available in English. This number includes 51.43% of first year participants, 54.10% of second year respondents, 47.87% of third year respondents, 61.80% of Master I and 52.73% of Master II participants.

Nevertheless, 138 participants representing 27.60% report that most biology references are available in French, including 30% of first year respondents, 31.97% of second year respondents, 29.79% of third year participants, 15.73% of Master I and 27.27% of Master II respondents.

The remaining 95 referring to 95% state that most biology references are available in Arabic, including 18.57% of first year respondents, 13.93% of second year, 22.34% of third year, 22.47% of Master I and 20% of Master II respondents.

Q.12. What do you think of using English when learning scientific modules? Please explain your answer.

To answer this question, participants had to choose the option that corresponds to their attitude.

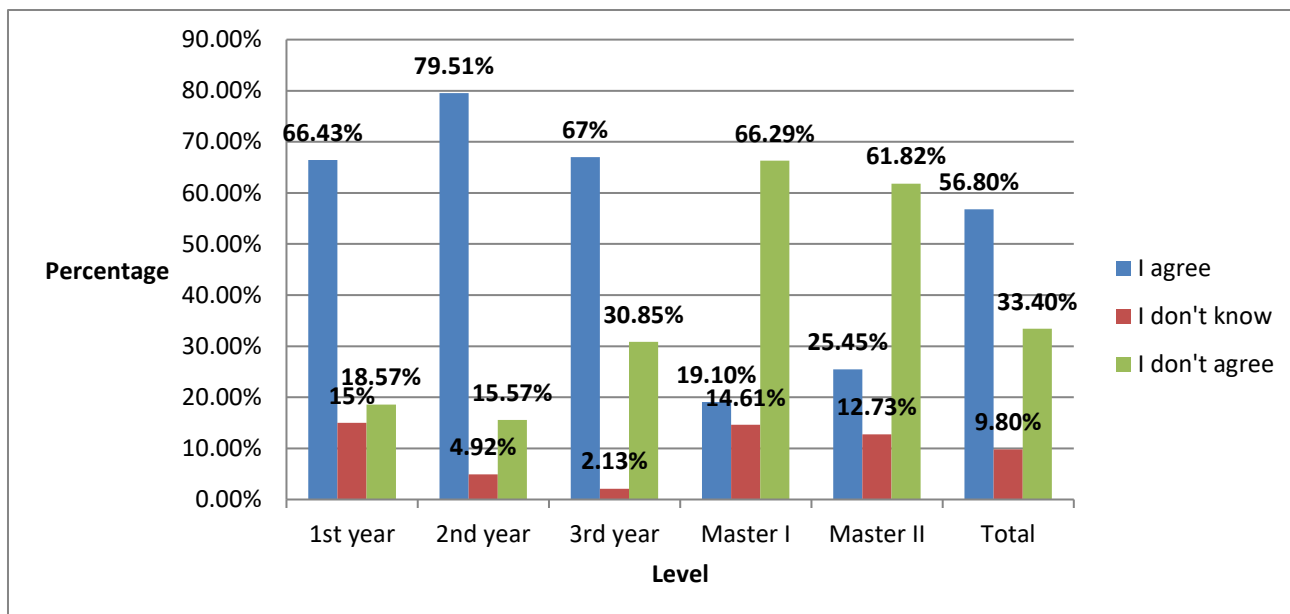


Figure 05: Participants' Attitudes about the Use of English when Learning Scientific Subjects

Figure 05 above presents respondents' attitudes towards the use of English in learning scientific subjects. 284 respondents representing 58.60% are favourable to the use of English stating that it is the language of modern sciences. It is worth mentioning that the majority of them are in the beginning of their higher education (first, second and third year participants) and, generally, they have a good level of proficiency in English. They further state that biology is a new scientific field of study that would be better studied in English in order to cope with the world's evolution. Other participants maintain that the use of English in learning scientific subjects would be of great benefit for students as it offers new job opportunities at national and international levels.

49 participants forming 9.80% prefer to remain neutral saying that they do not know whether the use of English to learn scientific subjects will be advantageous or not because it has never been tried. 167 representing 33.40% disagree with the use of English to learn scientific subjects arguing that not all students master it because of students' low level of proficiency in English will affect their academic achievements. They add that English was not

taught in the previous educational levels to the extent that may enable students to use it in learning scientific subjects.

Q.13. Do you think using English when teaching biology modules would help you understand better? Please, explain your answer.

Respondents, in this question, are asked to choose the option correspondent to their attitude.

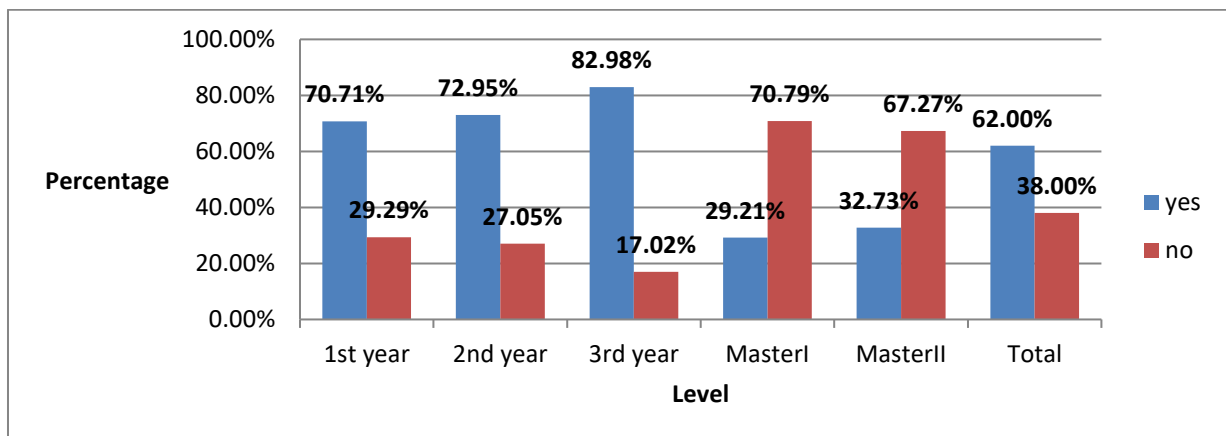


Figure 06: Participants' Attitudes towards the Influence of EMI on their Understanding

Figure 06 presents participants' attitudes towards the effect of using English when studying biology modules on their understanding. 310 respondents forming 62% report that the use of English for teaching biology modules would help them understand better. They argue that English is easy to be learnt in comparison to French and Arabic, which might serve the scientific fields –such as biology- more appropriately. They also explain that studying biology in English would enable them to benefit from international research published in English, which would make them follow research in developed countries and achieve well in their own country and abroad.

A hundred and ninety participants referring to 38% are not favourable to the idea that using English when teaching biology modules would help them understand better. Respondents explain that the use of English will make the situation more difficult because they used to study in French and Arabic and the shift to English will result in many problems

such as low academic achievements, lack of comprehension and also lack of teachers who are capable of teaching in this language.

Q.14. Do you think using English in the classroom to teach would help you participate more in class? Please, explain your answer.

Responding to this question, participants had to choose the option correspondent to their attitude.

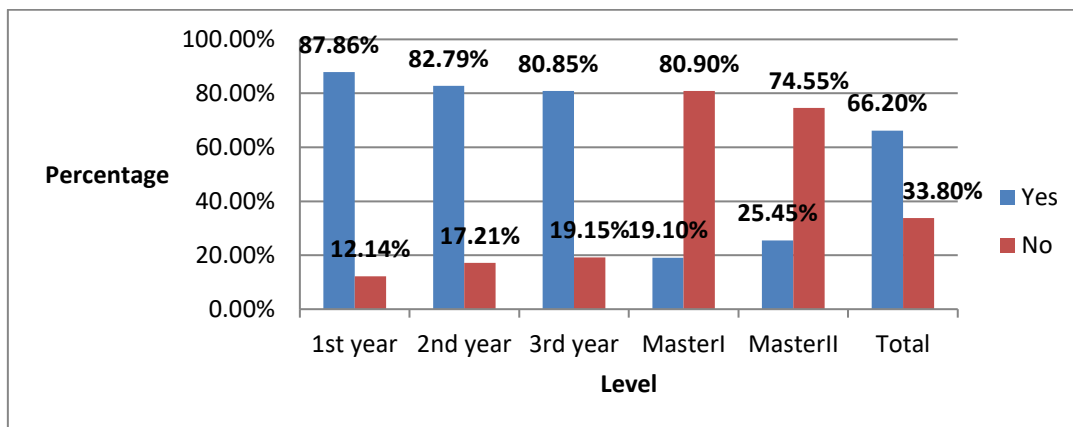


Figure 07: Respondents' Attitudes towards the Influence of EMI on their Participation in Class

Concerning the respondents' participation in class when using English for teaching, 331 participants forming 66.20% report that they agree with the idea that the use of English would increase their rate of participation in class. Respondents explain that English is a dynamic language that makes students more attracted to participate, ask questions and engage in discussions during the lesson. They further assert that the use of English will enable them to benefit from the large amount of references available in English without wasting time and effort in translating them.

A hundred and sixty-nine respondents representing 33.80% are not favourable to this idea as they argue that it will be new for them after they got used to study in French or Arabic. They add that neither students nor teachers will be able to cope with this change because of

their low level of proficiency in English since English is a foreign language in Algeria and no considerable importance is given to it.

Section IV: Further Suggestions

Q.15. Do you have any further suggestions or comments?

The participants who stand for the use of English as a medium of instruction suggest gradually adopting English as the main medium of instruction at the Department of Biology. They propose making English the first language of instruction in the Algerian education by giving it more importance in earlier educational levels (primary, middle and secondary education). Besides, other participants advise designing and including language courses in the curriculum with the aim of improving students' level of proficiency in foreign languages.

However, the participants who are not favourable for the use of English as a medium of instruction suggest focusing more on the use of Arabic along with French. They add that it is important to improve students' level of proficiency in French by organising language courses from the first year at university. They argue that the language used in teaching has a considerable influence on students' academic achievements. Thus, more attention should be given to the language of instruction to improve the quality of education. Other respondents propose to use only Arabic because it is their first language and most of them master it.

II.5. Discussion of the Results

The results of students' questionnaire are going also to be discussed in the light of previous literature concerning students' attitudes towards the use of English as a medium of instruction. The results also will be discussed in relation to research questions.

There are four areas that the current study has focused on; the currently used medium of instruction at the Department of Biology, the problems that students' encounter when using that language as a medium of instruction, the strategies used to overcome those problems and, mainly, students' attitudes towards the use of EMI.

Based on the first research question, which investigates the currently used language of instruction at the Department of Biology, data from the students' questionnaire (Table 17) reveal that French, Arabic and English are used for instruction. Data also indicate that French and Arabic are used either separately, together, or in combination with English. Besides, the results reveal that French is the most often used language of instruction at the Biology Department (Table 18). However, regarding the second research question related to the problems associated with the current medium of instruction, it is important to highlight the fact that French is the language that biology students face most problems with. These results confirm the first hypothesis. In this sense, it seems confusing that biology students still use French as the main language of instruction despite all the accompanying problems.

As for the third research question that addresses biology students' attitudes towards the use of EMI in biology modules, the data show that a significant number of participants (53.40%, Table 19) find that most biology references are in English. On the basis of this fact and other background variables, such as students' level of education (Figure 03) and their level of proficiency in English (Table 16), a considerable number of respondents have positive attitudes towards the use of EMI-based programmes (56.80%, Figure 05; 62%, Figure 06; 66.20%, Figure 07). The thing that confirms the second hypothesis. These results are similar to those of Abdullah al Mamun et al. (2012) in their study of life science students' attitudes towards the use of EMI in Bangladesh which reported that participants showed positive attitudes, as well as to the results reported by Murtaza (2016) in her research in which students in Bangladesh showed positive attitudes towards the use of EMI-based programmes.

Furthermore, it is worth mentioning that most participants who have positive attitudes towards EMI are first, second and third year students. Also, most of these participants report to have a good level in English. In addition, it is noticeable that the participants who want to be taught using EMI-based programmes are generally at the beginning of their higher

education and they are also competent in English. Moreover, those participants show a considerable interest in the status and importance of English in the world as well as in scientific fields. These results are similar to those found by Melliti (2012) in his study about Tunisian students' attitudes about the use of English in higher education which showed that they are aware about the importance of using English in education due to its status in the world.

Results show also that there are respondents who do not agree with the implementation of EMI-based programmes (33.40%, Figure 05; 38%, Figure 06; 33.80%, Figure 07). In this sense, the results indicate that these respondents' negative attitude towards EMI is influenced by their low level of proficiency in English and their level of education since most of them are in their final years of study (Master I or Master II). Besides, these participants have such an attitude towards EMI because they used to be taught in French and they believe that the sudden shift to English will decrease their outcomes.

In the light of the third research question that seeks to investigate the possible educational changes that could be implemented to overcome the problems students face, participants' responses concerning the possible academic changes that could solve the above mentioned problems differ according to their attitudes towards EMI.

The participants favourable for the use of EMI in biology have various suggestions such developing the educational policies of English teaching in the preceding levels of education (primary, middle and secondary), including language courses in the curriculum to improve students' level of proficiency in English, as gradually adopting English as the main medium of instruction at the Department of Biology, and making English the first language of instruction in the Algerian educational system. These results are similar to those found by Belhiah and Abdelatif (2016) which reported that the demands for using English instead of

French as a medium of instruction when learning scientific subjects are increasing among Moroccan students.

However, the respondents who have negative attitudes towards EMI advise the organisation of language courses to improve students' level of proficiency in French starting from the first year of higher education. Others suggest using only Arabic as a medium of instruction at the Department of Biology because it is the students' first language.

The present section was devoted for analysing the students' questionnaire. It contains detailed analysis and discussion of the results obtained and discussion of the main results in the light of previous research and research questions.

III. Section Three: Comparison of the Results, Limitation of the Study and Pedagogical Implications

This section is devoted comparing the results obtained through the teachers' questionnaire and the students' questionnaire and discussing the similarities and differences related to the participants' attitudes towards the implementation of EMI-based programmes. It also describes the limitations of this research and suggesting possible pedagogical implications that would facilitate the implementation of EMI-based programmes at the Department of Biology.

III.1. Comparison of the Results

It is valuable to investigate how teachers' attitudes towards EMI differ from or resemble students' because both of them are influenced by the medium of instruction in the same setting. Therefore, in an attempt to let students' and teachers' voices be heard concerning the medium of instruction at the Biology Department, this section compares their attitudes towards five factors related to EMI: (a)the problems encountered with the currently used medium of instruction, (b)the availability of references in the medium of instruction, (c)attitudes about the influence of EMI on students' understanding, (d)attitudes about the

influence of EMI on students' performance in the classroom, and (e) attitudes towards the use of EMI in scientific fields. These factors have been chosen because they reflect teachers' and students' attitudes towards several sides of the EMI programme.

Starting with the first factor concerning the problems encountered with the currently used medium of instruction at the Biology Department, it is noticeable that the percentages obtained from students' reports are very close to those obtained from teachers'. 64% of the participant teachers and 66% of the responding students face problems with French, 20% of participant teachers and 25% of responding students face problems with Arabic, 12% of participant teachers and 06.20% of responding students face problems with English and, finally, 04% of participant teachers and 02.80% of responding students do not face problems with any language. Accordingly, both biology teachers and students are aware of the problems they encounter with the currently used medium of instruction. It is further noticed—that teachers and students face the same problems concerning the three languages with the same degrees.

Concerning the second factor related to the availability of references in each language, the results obtained from both teachers' and students' questionnaires (Table 11 & Table 21) seem to be similar. Therefore, 96% of responding teachers and 53.40% of participant students report that most biology references are available in English. 04% of responding teachers and 27.60% of participant students state that most of biology references are in French. None of responding teachers in comparison to 19% of participant students claim that the majority of biology references are published in Arabic. However, it is obvious that the majority of both teachers and students share the same idea that indicates most of biology references are published in English.

As for the third factor related to attitudes about the influence of EMI on students understanding, the results obtained from Table 09 and Figure 06 indicate that teachers and

students have close attitudes. In this sense, 56% of responding teachers and 62% of responding students report that EMI would help students understand better, while 40% of responding teachers and 38% of responding students state that EMI would not help students understand better. With regard to these results, it is clear that responding teachers and students have the same view about the effect of the EMI programme on students' comprehension of biology subjects.

The results related to attitudes about the influence of EMI on students' performance, presented in Table 10 and Figure 07 reveal that participant teachers and students opposed attitudes. In this context, the majority of participant teachers (56%) report that EMI does not improve students' participation in class whereas the majority of participant students (66.20%) say that the use of EMI would improve their participation in class. It is then noticed that students' attitudes about the effect of an EMI programme on their performance are positive while those of teachers are negative.

In the light of results obtained about the fifth factor based on teachers' and students' attitudes about the use of EMI for teaching scientific modules, Figure 02 and Figure 05 indicate that teachers' attitudes are different from students' since 76% of responding teachers and 56% of participant students are favourable for the implementation of EMI in teaching biology modules. Besides, 20% of responding teachers and 09.80% of participant students choose to remain neutral. Furthermore, 04% of responding teachers and 33.40% disagree with the idea of using EMI in teaching scientific modules. It is noticed then that teachers are more favourable for the implementation of an EMI programme. However, it is worth mentioning that both teachers and students are hesitant about the implementation of EMI because they expect many related challenges.

III.2. Limitations of the Study

The present study has been through some limitations that changed the course of the research. The followings are the main restrictions:

- Because of the political instability that affected the natural flow of the courses in most Algerian universities, we had to use a questionnaire instead of an interview to gather data from biology teachers because of the lack of time.
- With regard to the short time we had, we could not test neither teachers' nor students' level of proficiency in English.
- We had difficulties to access to theoretical background concerning EMI taking into account that it is a recent research topic.
- As for the large population of biology students, it was difficult to distribute the questionnaires to the sample that we consider representative.
- It was difficult to collect all teachers' e-mailed questionnaires, which led us to approach the rest personally, which is time and effort consuming.

III.3. Pedagogical Implications

In the light of the results obtained from this investigation, some pedagogical implications could be of use to facilitate the adoption of an EMI programme at the Department of Biology. These pedagogical implication concern mainly language planning policy, biology teachers and students.

To begin with, the problems related to the use of English in teaching biology subjects must be seriously resolved so as not to worsen the situation later. Thus, regarding the presence of English in nearly all the scientific fields, language planning in Algeria should adopt English as the first language of instruction to cope with the global development in scientific fields. Besides, more importance should be given to English language teaching/learning in earlier educational levels (primary, middle and secondary education) with the emphasis on the

fact that English should be taught starting from primary education so that students do not face problems when being taught using EMI-based programmes in higher education.

Concerning teachers, it is necessary to help teachers become more competent in English so that the use of EMI would be much easier. Accordingly, the Department of Biology should provide language e programmes in order to improve teachers' level of proficiency in English. In addition, because biology is a purely scientific field, teachers should be trained on scientific English to be able to deliver courses smoothly in English. In this sense, training days could be easily organised regularly by individual universities/faculties/departments) to ameliorate teachers capacities concerning the use of EMI-based programmes.

Furthermore, concerning the implications related to facilitating the learning process using EMI for biology students, the Department of Biology should initially introduce the EMI programme starting from the first year at university in order to avoid the sudden change of the medium of instruction that might negatively influence students' academic achievements. Additionally, the faculty should provide language courses to improve students' level of proficiency in English to be capable of following EMI-based courses. Moreover, there should be more teachers of English should be at the Department of Biology to provide courses in English for Specific Purposes (ESP), which are really important in acquiring the necessary scientific vocabulary in English. Besides, a course for analysing English scientific articles should be designed to teach students the way they can benefit from the large amount of references published in English and serve their field of study.

Eventually, in order to make the implementation of the EMI programme successful at the Department of Biology, teachers and students should firstly be aware of the importance of English in scientific fields. They should secondly think of the benefits of such a programme on their future careers.

Conclusion

All respondents admit that English is gaining considerable importance in scientific fields. In general, through the analysis of both the teachers' and students' questionnaires, we can deduce that the majority of biology teachers and students have positive attitudes towards the use of English as a medium of instruction in the Biology Department. This confirms our hypotheses. It is also worth mentioning that many background variables, such as participants' level of proficiency in English, their level of education, the problems they encounter with the currently used language(s) for instruction, and their hesitation regarding the sudden change of the medium of instruction, contribute to shaping their attitudes.

General Conclusion

In recent years, English as a medium of instruction has been a worldwide predominant policy in higher educational institutions due to the noticeable spread and status of English. Therefore, exploring the problems associated with the current medium of instruction, in the Department of Biology at Larbi Tébessi University, and mainly, investigating teachers' and students' attitudes towards the use of English as a medium of instruction have been the motives to carry out this research.

Thus, two hypotheses were presupposed; the first hypothesis states that teachers and students would have positive attitudes towards using English as a medium of instruction to teach biology modules considering the fact that English is the most used language in scientific fields worldwide, and that most research is published in this language. The second hypothesis suggests that biology teachers and students face certain problems with the currently used instructional language. In order to check the validity of these hypotheses and answer the research questions, a quantitative and qualitative descriptive survey, using two semi open-ended questionnaires, has been adopted. In this sense, data obtained from this survey were carefully analysed and interpreted.

This dissertation contains two chapters. The first chapter is devoted for the theoretical conception of the research variables. It comprises two sections, one to outline the phenomenon of EMI, and the other to highlight the concept of attitude and related aspects. The second chapter is devoted to the practical part. It outlines the research design, methodology, and tools of investigation. Besides, this chapter provides detailed analysis and discussion of the results.

The results of this study reveal that most of biology teachers and students face problems with the use of French as a medium of instruction. Besides, the majority of teachers and students hold positive attitudes towards the use of English as a medium of instruction in the

field of biology. Therefore, it is noticed that both teachers and students are aware of the benefits of the importance of English in scientific fields as well as using EMI-based programmes. These results confirm the research hypotheses. However, these attitudes are not without hesitations since they take into consideration the fact that the sudden change of the medium of instruction will not be out of challenges in regard to English language teaching in the previous educational phases.

In the light of the findings, some pedagogical implications were suggested to facilitate the adoption of the EMI programmes at the Department of Biology. These implications stress the necessity of modifying the Algerian language planning policy at the first place. Furthermore, the suggested implications highlight the need for training teachers in scientific English and improving their English proficiency. Moreover, the implications propose several procedures to insure the success of EMI adoption and improving students' level of proficiency in English.

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Appendices

Appendix A

The Teachers' Questionnaire

Dear teacher,

We are conducting a research on attitudes towards using English as a Medium for Instruction (EMI) while teaching content subjects at the department of Biology.

You are kindly requested to respond to the questions below by writing what you think most closely reflects what you think. You will also have to choose the option(s) that corresponds to your attitudes the most by making a tick (√) next to the suggested options.

The data collected will be used only for research. We assure you that your identity as well as your responses will remain totally anonymous.

We are immensely grateful for your help.

أننا نقوم بأجراء دراسة حول آراء الاساتذة والطلاب فيما يتعلق بتدريس المواد العلمية باللغة الانجليزية في كلية علوم الطبيعة والحياة. نطلب منكم المساعدة بالاجابة على الاسئلة ادناه بما يتوافق مع آرائكم. نرجو منكم كذلك اختيار الاجابة او الاجابات التي تعبر عن رأيكم من الاقتراحات المدرجة أسفله بوضع علامة (√) بجانب الاقتراح الامثل.

نؤكد لكم ان هوياتكم وكذا كافة إجاباتكم ستبقى مجهولة وأن المعلومات ستستخدم فقط بغاية اجراء هذه الدراسة.

شكرا لتعاونكم

Section I: Background Information

القسم الاول معلومات اساسية

1. How long have you been teaching?

عدد سنوات الخبرة (في التدريس عموما)

2. How long have you been teaching in the biology department?

عدد سنوات الخبرة (في قسم علوم الطبيعة والحياة)

3. What is (are) the subjects you teach there?

ماهي المادة او المواد التي تقوم بتدريسها حالياً؟

4. Which level (s) are you teaching?

ما المستوى (المستويات) التي تدرسها حالياً؟

- a) 1st Year (السنة الأولى)
- b) 2nd Year (السنة الثانية)
- c) 3rd Year (السنة الثالثة)
- d) Master 1 (ماستر 1)
- e) Master 2 (ماستر 2)

5. Your level in English is:

بما تقدر مستواك في اللغة الإنجليزية؟

- Basic (ضعيف)
- Average (متوسط)
- Good (جيد)
- Advanced (متقدم)

Section II: Teaching Scientific Subjects :

القسم الثاني: تدريس المواد العلمية

6. Which language do you use while teaching your subject(s)? (You can choose more than one answer)

ما اللغة التي تستخدمها أثناء تدريس مادتك ؟ (يمكنك اختيار أكثر من إجابة واحدة)

العربية (الفصحى أو العامية) Arabic (standard and dialectal)

- French (الفرنسية)
- English (الإنجليزية)
- **Please, indicate any combinations of these language:**

إذا كنت تستخدم أكثر من لغة يرجى تسميتها

7. How often do you use each of these languages?

كم من مرة تستخدم كل لغة من هذه اللغات؟

	Never أبدا	Rarely نادرا	Sometimes أحيانا	Often غالبا	Always دائما
Arabic العربية					
French الفرنسية					
English الإنجليزية					

8. Which language do you face most problems with while using to teach your subject?

ما هي اللغة التي تواجه فيها معظم المشكلات أثناء استخدامك لتدريس مادتك؟

- Arabic (standard and dialectal) (العربية) الفصحى او العامية
- French (الفرنسية)
- English (الإنجليزية)

9. Please, name these problems:

من فضلك, سم هذه المشاكل:

10. How do you deal with these problems?

كيف تتعامل مع مثل هذه المشاكل؟

Section III: Attitudes towards using English as Medium of Instruction:

القسم الثالث: الآراء تجاه استخدام اللغة الانجليزية كوسيلة للتدريس

11. Do you think that teaching using English helps students understand better?

هل تعتقد أن التدريس باستخدام اللغة الإنجليزية يساعد الطلاب على الفهم بطريقة أفضل؟

- Yes (نعم)
 - No (لا)
 - **Please, explain:**
 - من فضلك, اشرح:
-
-
-

12. Do you think that your students may feel more at ease when participating, asking questions, or presenting research in English?

هل برأيك ان الطلاب يجدون المشاركة، طرح الاسئلة وتقديم البحوث أسهل عند استخدام اللغة الانجليزية؟

- Yes (نعم)
 - No (لا)
 - **Please, explain:**
 - من فضلك, اشرح:
-
-
-

13. Do you think that students find more documents in English than in French when doing research or looking for references in your subject?

هل تعتقد أن الطلاب يجدون الكتب والمقالات باللغة الانجليزية أكثر من اللغات الأخرى عند اجراء البحوث او البحث عن مراجع؟

- Yes (نعم)
 - No (لا)
 - **Please, explain your answer:**
 - يرجى توضيح إجابتك:
-
-
-

14. What do you think of teaching using English in the scientific fields?

ما هو موقفك من التدريس باستخدام اللغة الإنجليزية في المجالات العلمية؟

- I totally agree (انا موافق تماما)
- I don't know (لا أعرف)
- I don't agree at all (لا أوافق على الإطلاق)
- **Please, explain your answer:**
- يرجى توضيح إجابتك:

Section IV: Further suggestions

القسم الرابع: اقتراحات اخرى

15. Do you have any further suggestions or comments?

هل لديك أي اقتراحات أو تعليقات أخرى؟

Thank you

شكرا لكم

Appendix B

The Students' Questionnaire

Dear student,

We would greatly appreciate if you could answer the present questionnaire designed as part of a study we are conducting to collect data on the attitudes of Biology students towards the use of English as a Medium of Instruction (EMI) when teaching biology modules.

To answer the questionnaire, you are requested to tick (√) the box(es) corresponding to option(s) you think most appropriately corresponds to your attitudes, beliefs and opinions. We assure you that the data collected will serve exclusively for research purposes, and that the participants and their answers will remain strictly anonymous.

We are immensely grateful for accepting to answer the questionnaire.

استبيان

زميلي الطالب:

إننا نقوم بأجراء دراسة حول آراء الطلاب قسم البيولوجيا فيما يتعلق بمواقفهم من تدريس مقاييس البيولوجيا باللغة الانجليزية. نرجو منك المساعدة بالإجابة على الأسئلة أدناه بما يتوافق مع آرائك من خلال وضع علامة (√) بجانب الإجابة (أو الإجابات) التي تعتبرها الأكثر تعبيراً عن رأيك من بين الإجابات المدرجة أسفله.

نؤكد لك أن هويتك وكذا كافة إجاباتك ستبقى سرية وأن المعلومات ستستخدم لغايات علمية بحتة.

شكراً لتعاونك

Chaima GHERAIBIA & Mohammed Riadh ZOUDA

Department of English

Faculty of Letters and Languages

University Larbi Tébessi, Tébessa

Section I: Background Information

القسم الأول: معلومات عامة

1. Your gender: (جنسك)

Male (ذكر) _____

Female (أنثى) _____

2. Your level of education is: (مستواك الدراسي)

First year (سنة أولى) Second year (سنة ثانية) Third year (سنة ثالثة)

Master I (1 ماستر)

Master II (2 ماستر)

3. Your field of speciality: تخصصك

4. Your level of proficiency in English: مستواك في اللغة الانجليزية

Basic (ضعيف) Average (متوسط) Good (جيد) Very good (جيد جدا)

Advanced (متقدم)

Section II: The Language of Instruction at the Department of Biology

القسم الثاني: لغة التدريس في قسم البيولوجيا

5. Which language(s) is(are) used when teaching the biology modules at the department of biology? (You can choose more than one option)

ما هي اللغة التي يتم استعمالها لتدريسك مقاييس البيولوجيا في قسمك؟ (بإمكانك أن تختار أكثر من إجابة)

Arabic (standard and/or dialectal) (العربية الفصحى و/أو العامية) _____

French (الفرنسية) _____

English (الانجليزية) _____

6. How often is this (are these) language(s) used when teaching these modules?

كم مرة يتكرر استعمال هذه اللغة (اللغات) عند تدريس هذه المقاييس؟

	Never أبدا	Rarely نادرا	Sometimes أحيانا	Often غالبا	Always دائما
Arabic (العربية)					
French (الفرنسية)					
English (الانجليزية)					

7. Which language do you face most problems with when used to teach you biology modules?

(You can choose more than one option)

مع أي لغة تستعمل في تدريس مقاييس البيولوجيا تواجه مشاكل أكثر؟ (بإمكانك أن تختار أكثر من إجابة)

Arabic (standard and/or dialectal) (العربية الفصحى و/أو العامية) _____

French (الفرنسية) _____

English (الانجليزية) _____

8. Please, name these problems: أذكر هذه المشاكل من فضلك

9. How do you deal with these problems? كيف تتعامل مع هذه المشاكل عادة؟

Section III: Attitudes towards using English as a Medium of Instruction (EMI)

القسم الثالث: المواقف اتجاه استعمال اللغة الانجليزية كوسيلة للتدريس

10. Do you have modules that you study using English?

هل لديك مقاييس تدرسها باللغة الانجليزية؟

Yes (نعم) _____

No (لا) _____

- If yes, name them please: إذا كان جوابك بنعم، أذكرها من فضلك

11. When you look for references for the biology modules, you find more documents in

عند البحث عن مراجع في مقاييس البيولوجيا تكون معظم الوثائق بـ :

Arabic (standard) (العربية الفصحى) _____

French (الفرنسية) _____

English (الانجليزية) _____

12. What do you think of using English when learning scientific modules?

ما رأيك في استعمال اللغة الانجليزية عند دراسة المقاييس العلمية؟

I agree (أوافق) _

I don't know (لا أعلم)

I don't agree (لا أوافق)

- Please, Explain you answer: من فضلك اشرح أكثر:

13. Do you think using English when teaching biology modules would help you understand better?

هل تعتقد أنه يمكن لاستعمال اللغة الانجليزية عند تدريس مقاييس البيولوجيا أن يساعدك في فهم الدروس بطريقة أفضل؟

Yes (نعم) _____

No (لا) _____

- Please, Explain you answer: من فضلك اشرح أكثر:

14. Do you think using English in the classroom to teach would help you participate more in class?

هل تعتقد أن التدريس باللغة الانجليزية بإمكانه أن يسهل عليك المشاركة أثناء الدرس؟

Yes (نعم) _____

No (لا) _____

- Please, Explain you answer: من فضلك اشرح أكثر:

Section IV: Further suggestions

القسم الرابع: اقتراحات أخرى

15. Do you have any further suggestions or comments?

هل لديك أي اقتراحات أو تعليقات أخرى؟

Thank you

شكرا

Appendix C

الجمهورية الجزائرية الديمقراطية والشعبية
وزارة التعليم العالي والبحث العلمي
جامعة العربي التبسي تبسة
كلية الآداب و اللغات
قسم الآداب و اللغة الإنجليزية



إلى السيد (ة): شكر نعم علوم الطبيعة
والعلاج

الموضوع : طلب إجراء تربص ميداني

بعد التحية و الإحترام ،

لغرض إستكمال البحوث الميدانية لطلية قسم اللغة الإنجليزية يرجى منكم السماح للطلبة الآتية أسمائهم :

- غريبيّة شيما
- زودة محمد رياضي
-

وذلك بغية التحضير لنيل شهادة شهادة الماستر

في الأخير تقبلوا منا فائق الاحترام و التقدير

تبسة في :

03-03-2019 تبسة في :

رأي المؤسسة المستقبلة



رئيس قسم الآداب و اللغة الانجليزية
مكلف ببرنامج البكالوريا و التمهيد بالطلبة

أ. عمران رشيد



الجمهورية الجزائرية الديمقراطية والشعبية
وزارة التعليم العالي والبحث العلمي
جامعة العربي التبسي تبسة
كلية الآداب و اللغات
قسم الآداب و اللغة الإنجليزية



كلية الآداب و اللغات قسم اللغة الانجليزية

إلى السيد (ة): رئيس قسم علوم الطبيعة والرياضة

إذن بالدخول

بعد التحية و الإحترام ،

لغرض إستكمال البحوث الميدانية لطلبة قسم اللغة الإنجليزية يرجى منكم السماح للطلبة الآتية أسمائهم
باجراء زيارات ميدانية بمؤسستكم :

الطالب : غرايبية شيماء

الطالب : زوردة محمد راضي

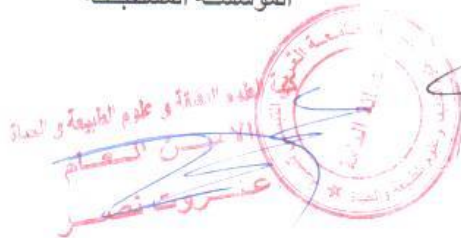
الطالب :

التخصص : لغة انجليزية (علوم اللغة)

في الأخير تقبلوا منا فائق التحية و الاحترام

في :

المؤسسة المستقبلة



الأستاذ المشرف

نائب رئيس قسم الآداب و اللغة الانجليزية
مكلف بالدراسات و المسائل المرتبطة بالطلبة

أ. عمران رشيد

Résumé

Apprendre des matières scientifiques avec une langue étrangère est devenu une forme d'enseignement courante dans les établissements d'enseignement supérieur. Par conséquent, cette étude explore les problèmes rencontrés par les enseignants et les étudiants de biologie à l'Université Larbi Tébessi avec la langue actuellement utilisée pour l'enseignement des modules de biologie. Cette recherche explore aussi les attitudes des enseignants et des étudiants par rapport à l'utilisation de l'anglais comme moyen d'instruction des modules de biologie. Pour cette raison, un échantillon de 25 enseignants et de 500 étudiants a répondu à des questionnaires sur l'utilisation de l'anglais pour enseigner les modules de biologie. Les résultats obtenus indiquent que la majorité des enseignants et des étudiants ont des attitudes positives concernant l'utilisation d'anglais pour l'enseignement au département de biologie. Cependant, un grand nombre de participants ont exprimé leur hésitation concernant l'emploi d'un programme basé sur l'utilisation de l'anglais comme outil d'enseignement, prenant en compte la politique de l'éducation actuelle et l'enseignement de l'anglais aux niveaux moyen et secondaire. En ce sens, cette étude suggère certaines implications pour traiter les problèmes de politique linguistique éducative rencontrés par les enseignants et les étudiants.

Mots-clés: langue d'enseignement, anglais comme langue d'enseignement, attitude, politique linguistique éducative, modules de biologie.

المخلص

أصبح تعلم المواد باستعمال لغة أجنبية شكلا مألوفا من أشكال التعليم بمؤسسات التعليم العالي. و عليه، تستكشف هذه الدراسة المشكلات التي يواجهها أساتذة وطلاب علوم الطبيعة و الحياة في جامعة العربي التبسي مع اللغة المستخدمة حالياً للتدريس. كذلك تهدف هذه الدراسة إلى استطلاع آراء أساتذة وطلاب علوم الطبيعة و الحياة حول استخدام اللغة الإنجليزية كوسيلة لتدريس المواد الأساسية. بناءا عليه، تم طرح فرضيتين. تقترح الأولى أن آراء أساتذة وطلاب علوم الطبيعة والحياة ستكون ايجابية. أما الثانية فتقترح أن الأساتذة وكذا الطلاب يعانون من مشاكل عديدة جراء استعمال اللغة الفرنسية في التدريس. ولهذا، استجابت عينة من 25 مدرسا و 500 طالب للاستبيانات المعتمدة لجمع آرائهم حول استخدام اللغة الإنجليزية لتدريس المواد الأساسية. تشير النتائج التي تم الحصول عليها إلى وجود آراء إيجابية عامة ضمن غالبية الأساتذة والطلاب الذين شملهم الاستطلاع تجاه استخدام اللغة الإنجليزية للتدريس في قسم علم الأحياء. ومع ذلك ، فقد أبدى عدد كبير من المشاركين تردداً حيال تنفيذ برنامج يعتمد على استعمال اللغة الانجليزية كوسيلة للتدريس اخذين بعين الاعتبار السياسة التعليمية الحالية وتعليم اللغة الإنجليزية في المرحلتين المتوسطة والثانوية. و في هذا السياق، تقترح هذه الدراسة مجموعة من التعديلات البيداغوجية التي يمكن من خلالها معالجة المشاكل المتعلقة باللغة المستخدمة للتدريس.

الكلمات المفتاحية: اللغة المستخدمة للتدريس، اللغة الإنجليزية كوسيلة للتدريس، الآراء، السياسة التعليمية، مواد علوم

الطبيعة والحياة