

**Designing an English for Specific Purposes Course for First  
Year Biology Students: Integrating Information  
Communication Technologies in the Classroom.**

تصميم درس في اللغة الإنجليزية لأهداف خاصة لطلاب البيولوجيا سنة أولى: دمج

تكنولوجيا المعلومات والاتصالات في قاعة الدراسة

\* Bouderberba Djamila<sup>1</sup>, Yahiaoui Habib<sup>2</sup>

بوضربة جميلة<sup>1</sup>، يحيياوي حبيب<sup>2</sup>

IPLFS Laboratory- University of Mascara, (Algeria)

جامعة معسكر - الجزائر

<sup>1</sup>djamila.bouderberba@univ-mascara.dz

<sup>2</sup>h.yahiaoui@univ-mascara.dz

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**Abstract:**

This study attempts to propose designing an English course for Specific Purposes for biology students in Algeria, highlighting the use of different Information Communication Technologies that might be of assistance to both teachers and learners in the classroom context. The course is designed to meet with the students' needs since several obstacles are claimed to be problematic for any English for Specific Purposes course as far as using Information Communication Technologies and equipment supply are concerned. For this reason, the researchers conducted a mixed-method approach to collect both qualitative and quantitative data where two research tools were implemented: the questionnaire with participants from the selected sample (first year biology bachelor's students at Mascara University) and classroom observations. The results partially confirmed the investigated hypothesis and disclosed that biology students need to develop their abilities in implementing different Information Communication Technologies.

\* BOUDERBA Djamila. [djamila.bouderberba@univ-mascara.dz](mailto:djamila.bouderberba@univ-mascara.dz)

**Keywords:** Biology Students, Course Design, English for Specific Purposes, English for Specific Purposes Practitioner, Information Communication Technologies.

## ملخص البحث

هذا البحث هو محاولة لاقتراح تصميم درس في اللغة الإنجليزية لأهداف خاصة لطلاب البيولوجيا في الجزائر، ويسلط الضوء على استخدام مختلف تكنولوجيا المعلومات والاتصال التي قد تكون مفيدة لكل من المدرسين والمتعلمين على مستوى الأقسام. تم تصميم هذا الدرس كمحاولة لتلبية متطلبات الطلاب، نظرا لوجود العديد من العراقيل التي تشكل عائقا لسيروية درس اللغة الإنجليزية لأهداف خاصة، من بينها استخدام تكنولوجيا المعلومات والاتصال بما في ذلك التجهيزات والأنظمة المعلوماتية. ومن أجل هذه الغاية استعمل الباحث اثنين من أدوات البحث الرئيسية: استبيان تم توجيهه إلى طلبة السنة أولى بيولوجيا نظام ليسانس - ماستر - دكتوراه في جامعة معسكر كعينة تم اختيارها عفويا، بالإضافة إلى تسجيل ملاحظات داخل الأقسام لجمع معطيات موثوقة. وقد أكدت النتائج المتحصل عليها جزئيا الفرضية المطروحة، حيث أن طلبة البيولوجيا هم في حاجة إلى تنمية كفاءاتهم من خلال ادراج مختلف تكنولوجيا المعلومات والاتصال.

**الكلمات المفتاحية:** الإنجليزية لأهداف خاصة، تصميم درس، تكنولوجيا المعلومات و الاتصال، طلبة البيولوجيا، ممارسي اللغة الإنجليزية لأهداف خاصة.



### 1. Introduction

The present article is an attempt to explore the effectiveness of using ICTs in teaching biology students at Mascara University. The reason behind choosing such topic is related to the researchers' experience as an ESP practitioners in the Biology department at the previously mentioned university. Accordingly, using ICTs in teaching Biology can be of great assistance to both ESP practitioners and Biology students.

The study consists of two parts. A theoretical part that describes ESP historically and disciplinary, provides information about the current situation of teaching ESP in general and in

Algeria more specifically and gives a general overview about integrating ICTs in ESP classes. The field work part involves conducting students' questionnaires with participants from the selected sample in addition to making classroom observations to gather authentic data and report the way in which ICTs are used in ESP classes, if used.

The results show that most ESP practitioners at the selected University do not integrate ICTs in their classes. Given the nature of teaching Biology classes, ICTs should be integrated to explain processes and illustrate phenomena. The students showed their enthusiasm about both acquiring ICTs skills and learning via the assistance of ICTs. To this end, and after the confirmation of both hypotheses, the researchers designed an ESP course to the selected sample where ICTs were used to gauge the effectiveness of their use to teach Biology students and if the same level of wash-back is achieved in comparison to the traditional teaching methods that are still used by ESP practitioners.

## 2. ESP: an overview

English as a foreign language has become one of the most utilised languages in today's world of education. Actually, the paradigm shift from teacher centred approach to learner centred approach in addition to the revolution that occurred in linguistics have led to the birth of a new branch in English namely English for specific purposes (ESP, henceforth).

### 2.1 Development of ESP

ESP is a new approach that was developed since the 1960s providing learners with a specific English and specific terminology that fit in academic or occupational contexts. According to Kennedy and Bolitho, "ESP is based on an investigation of the purposes of the learner and the set of communicative needs arising from these purposes"<sup>1</sup>. In other words, the learners study English according to the need or the purpose of using it.

Nevertheless, there have been on-going debates about what ESP really constitutes<sup>2, 3, 4</sup>. Since ESP as a term is very complicated to define, no one could describe English for Specific Purposes in a couple of sentences as Stevrens points out, "it is not

easy to produce a definition of ESP which is simple and water weight”<sup>5</sup>.

English for Specific Purposes (ESP) has appeared as a term in the 1960s since General English (GE) did not meet the specific needs of learners. This new approach is specifically designed for people who are learning English to use it in specific practical situations such as for hotel services, medicine and engineering. According to Hutchinson and Waters, ESP has emerged as result of three reasons: “the demands of a brave new world, a revolution in linguistics and a new focus on the learner”<sup>6</sup>

Generally, ESP is considered as an umbrella term that includes a number of sub-divisions and is often divided into two main sub-branches: English for Academic Purposes (EAP) and English for Occupational Purposes (EOP). EAP includes using English to fulfil studies in a certain field of study. EOP, on the other hand, is related to learning English for occupational purposes.

## 2.2 ESP Course Design

Hutchinson and Waters define course design as “a matter of asking questions in order to provide a reasoned basis for the subsequent processes of syllabus design, materials writing, classroom teaching and evaluation”<sup>7</sup>. In other words, it is necessary to ask general, specific, theoretical and practical questions to design a course that should be useful and interesting for the target learners.

## 2.3 Approaches to ESP Course Design

To be able to design a course, researchers must be aware of the different approaches to course design. Hutchinson and Waters state that there are three main approaches to course design: Language –centred Course Design, Skills centred Course Design and Learning Centred Approach.<sup>8</sup>

### 2.3.1 Language centred Course Design

The aim of this approach is to put ESP learners in a real situation by being aware of their needs, lacks and wants, focusing on making interconnection between material and content of the ESP course and the analysis of the target situation.<sup>9</sup>

### 2.3.2 Skills centred Course Design

Unlike the first approach, which was criticised for the surface data, the purpose of Skills centred course design approach is to go deeply on the competence that supports the performance.<sup>10</sup>

### **2.3.3 Learner Centred Approach**

Learner centred approach focuses on learners and their motivation of using the language. In this approach, the course designer takes learners at all the stages of preparing and teaching the course; when analysing the learning situation then at writing the syllabus and finally at teaching the material and evaluating their achievements.

The fact that ESP is a learner centred approach makes Needs Analysis (henceforth, NA) a substantial element in any ESP course design. Dudley-Evans and St John define NA as “professional information about the learners: The tasks and activities learners are/will be using English for [...] target situation analysis and objective Needs”<sup>11</sup>. Needs Analysis is considered as the first step in course design, which allows the ESP practitioner to identify the needs of the target learners in the target field of study.

### **2.4 Teaching ESP in Algeria**

Algeria is no different from other nations that were influenced by the globalization of English as a foreign language in all sectors especially the educational one. The Algerian government always endeavours to promote the status of English in the learning and teaching process. Though ESP is a recently appearing field in the academic world, the Algerian Ministry of higher education and scientific research introduced English as a compulsory module (curriculum) in different departments nationwide. ESP courses are taught in Scientific and Social Sciences departments such as Biology, Psychology and Economics, to cite but a few.

### **2.5 Limitations of Teaching ESP in the Biology department at Mascara University**

For the sake of narrowing down the scope of our topic, we will focus mainly on English for Biology, which derives from a sub-division of ESP: EST (English for Science and Technology).

The status of English as a module in this department is of less importance in comparison to the other more “scientific” modules with high coefficients. The time allocated to ESP courses, in the context of our research, is ninety minutes per week. Additionally, the majority of teachers that are associated with teaching ESP are general English teachers, most of whom hold Licence or Master degrees and work as part-time teacher.

### 2.6 Integrating ICTs in ESP classes

For many years, traditional teaching methods have been leading the ESP classroom. The integration of ICTs (information communication technologies) in ESP classrooms is needed in order to cope with the new teaching technologies and materials. As Friedman (2005, cited in<sup>12</sup>) points out: “the classrooms of today should look nothing like the classrooms of the past”. In the learning and teaching processes, using ICTs is considered as a pivotal method that encourage ESP students to learn in active way, in addition to the improvement of students’ learning generally and the development their English specifically . In this regard, ESP teachers try to use ICTs in an effective way for the sake of meeting with students’ impoverishment and to reach the lesson objectives.

According to Haddad and Draxler, Technology may enable us to support these goals through a combination of preauthoring (i.e., design) tools, classroom work, portfolio-organization systems, publication systems, and collaboration tools<sup>13</sup>. In this respect, ICTs as a new method of teaching have many advantages to offer to both teachers and students.

Current ESP classrooms are undergoing a rapid transformation into the new digital teaching learning environment. According to Clemmons (2013, cited in<sup>14</sup>), access to the internet for the development of ESP students’ research/reference skills, use of interactive whiteboards and digital projectors for texts analysis, and implementation of lecture capture systems for recording class sessions (especially for the improvement of note-taking skills) are making a change in ESP classrooms. The new generation learners grew up in the digital age and now expect interactive, learner-centred instruction.

ESP teachers and administrations in Algeria might take into account many initiatives to have better teaching methods. They may try to integrate some technological devices in ESP classrooms such as computers, internet, interactive whiteboards, digital projector, display monitor, and audio-visuals such as time-lapse photography. In this vein, “Teachers play a crucial professional role in ensuring that the integration of ICT into pedagogies is educationally sound. They evaluate the appropriateness and effectiveness of available technologies, deciding when and how to use them with their students” (Mceetya 2005, p. 4. Quoted in<sup>15</sup>). In other terms, ESP teachers can choose the suitable tool and try to adjust these ‘techs’ with the ESP programme for the sake of increasing motivation and maintaining students’ interest. This might be a daunting task because it depends on ESP learners’ needs and convenience. Each one of the afore-mentioned devices is elaborated as follows:

**Computers:** they are considered as one of the pillars in the digital educational world which help learners and teachers process, exchange and acquire information. They are used in storing, preparing, and assembling digital data. Haddad and Draxler believe that “Computers became a new catchword, and input-output technology graduated from punch cards to magnetic tape, faster printers, and more languages for programming”.<sup>16</sup>

**Internet:** “A matrix of networks connecting millions of computers around the world that all work together to share information”<sup>17</sup>. The Net offers abundance facilities for ESP teachers such as finding materials, sharing ideas and playing multiple roles.

**Videos:** they are among the audio-visuals. They include hearing the sounds of people, animals, insects, and objects without leaving the classroom.

**Interactive Whiteboards (IWB):** they include displaying images from a computer through a digital projector onto a large board. They are called interactive because users can interact with the content on the board using fingers or a stylus.<sup>18</sup>

**Lecture capture systems (LCSs):** it includes recording class sessions — including audio, video and screen activity —

using a digital or a web camera, a microphone and lecture capture software. Students can benefit from such systems as they will be able to revise the class session, to improve their note-taking skills and develop their understanding of various linguistic features.<sup>19</sup>

**Digital projectors:** they enable teachers to expose information via wirelessly connecting this device to a computer or a notebook. They can facilitate in-class learning and improve ICTs skills.<sup>20</sup>

**Time-lapse photography:** A new filming technique involves combining a group of pictures into a video that usually describes a process. This cinematography technique usually displays the video at a much faster or slower motion, which helps the ESP teacher to explain the process and simplify the information to the learners.

Alongside with enhancing the teaching and learning process, these tools help ESP students to interact with the content. Significantly, they will be able to implement what they have learnt in their English classes in their main field of specialty.

## 2.7 ICTs and English language

In the current globalized world, EFL learners are obliged to master the English language. By stepping out of their routine in learning English through traditional tools, they tend to by experiencing other different digital tools to enhance their English inside and outside the classroom. English language is termed by many linguists as an international language<sup>21</sup>, world English<sup>22</sup>, and global language.<sup>23</sup>

According to Crawford and Kirby, ICTs offer many potential ways to foster global awareness in classrooms.<sup>24</sup> Through infusion of both global education and technology in teaching and learning, teachers can foster students' understandings of the interrelationships of peoples worldwide, thereby preparing students to participate meaningfully as global citizens. The term of science globalization is reinforced by using one language as the language of global education and technology. This language has been English since the emergence of ESP in the 1960s.



Not surprisingly, today's non-native English speakers outnumber native ones and this is due to incredible spread of English. Thereby, we need to start thinking of enhancing English language teaching in education in Algeria. This improvement will be difficult without the assistance of ICTs. No one would argue against the fact that ICTs are among the great inventions in human life. They play a vital role in English language learning in general, and in ELT in particular.

ESP teachers should receive specific training in ICTs since the current teaching learning trend obliges them to use ICTs in all the stages during the session including presentation, demonstration, interaction, illustration, collaboration and even instruction.

Students as individuals have different ways of learning. Some of them rely primarily on the visual mode. Others use the auditory route, and yet, some would learn better if their senses like touch, olfaction or taste are involved.<sup>25</sup>

## **2.8 English and Scientific Literature**

It is commonplace that English language has a great link with globalization. The position of English as a foreign language takes the precedence scientifically, economically, educationally, and chiefly in international communication academically or professionally. That is why, it has a strong status in the scientific floor compared to the French language. English language is recognised as the language of science instead of French language in Algeria theoretically. Yet, the reality reveals the opposite.

Despite the wide use of English as foreign language in the scientific acquisition, algerian students of all the scientific branches at tertiary level encounter many difficulties to build a solid background knowledge in English given their primary, middle, secondary education in science was in Arabic language, and most of the scientific terminologies that they tackle with are in French. Consequently, they have poor or no specific terminologies and register in English language. In addition, they learn English as an additional module in which only General English is taught. On the other hand, scientific students at tertiary level find themselves facing many hurdles when they conduct

scientific research. One of these hindrances is their poor linguistic luggage in English language. Therefore, they cannot understand or process the scientific data that is available in English language literature, especially when they need to collect scientific information. Whilst, the amount of available scientific information in English language is extremely increasing on an unprecedented scale and the spread of English scientific data in the scientific educational world is unstoppable, educationalists in Algeria still use French as the language of scientific instruction and teaching in higher education. In other words, the vast majority of the available scientific documentations, scientific books and scientific articles are written in English language. Conversely, French is still dominant as the language of science in Algeria. To this end, the problem of language, science and technology is amongst the problems that need special attention in the Algerian educational policies. English as a scientific language has been successfully promoted and globally adopted in education by most of the world's countries. Crystal inserts that English has become the language most widely taught as a foreign language in over 100 countries such as China, Russia, Germany, Spain, Egypt and Brazil<sup>26</sup>. It is emerging as the predominant language of science to be encountered in schools.

### **2.9 Teaching Science in Algeria (French)**

English as a global language and ICTs are now considered as the panacea to leapfrog all the obstacles that students and teachers face in learning and teaching science. Despite the fact that the demand for the use of English language in teaching sciences is highly recommended, English language is neglected in teaching sciences in most of the scientific departments in Algerian universities. The French language is still the dominant language in teaching science until this date.

Teaching science is continuously changing according to the digitalization and the globalization of the world. In this regard, the Algerian education system is non-acclimatized yet with the reality that English is highly needed in teaching and learning processes especially in teaching sciences. In fact, teaching science in Algeria is still holding the same position for

decades ignoring the changes that today's education world is witnessing.

The impact of the French colonialism on the Algerian educational system is obvious in the domination of French as the foreign language in the learning and teaching processes. However, after the independence of Algeria in 1962, a political linguistic struggle was raised about the status of French as the language of colonialism in the Algerian educational system. Consequently, the status of French and English as foreign languages have tremendously changed in the presidential era of president BENBELLA from dominant languages to second foreign languages that were taught only as sessions in the Algerian educational programme. The situation remained unchangeable until the upcoming presidential era in 1999, which witnessed the strongest return of foreign languages in general and the French language specifically to the educational floor. Subsequently, new educational policies were born in Algeria. Accordingly, the government asserted that foreign languages are the key of science and new technology. Thus, it authorized the re-foundation of all the French colleges and private schools that closed many years ago. This shift was the result of the demand of the richest people who were highly influenced by the French language and its values at that time.<sup>27</sup>

The status of the French language in Algeria witnessed many disputes. The Algerian constitution classified the French language as the first foreign language, but in reality, it plays the role of an official language in the tertiary level because the majority of the scientific branches in higher education use French as the language of instructions in all the academic and official aspects. Professor Dominique Caubet, University of North African (Maghribi) Arabic at INALCO (Institute of National Arab Languages and Orientals civilisations), clarified this paradox situation by stating that since the French language is the language of colonialism, it has a very ambiguous status. On the one side, it is considered as a foreign language that is similar to the English language officially and as the synonymous of the social success and access to culture and modernism on the other side.<sup>28</sup>

### 3. Methodology and Data Collection

This study aims at integrating ICTs in ESP classrooms. Despite the wide use of ICTs in the teaching learning process, they are rarely used in Biology classes, in which teachers rely on traditional teaching methods to explain processes. In addition, one of the key targets of this study is to discover the extent to which using ICTs is effective in ESP classrooms. To this extent, the researchers implemented a set of parameters that aim to answer the research questions upon which this study is based.

#### 3.1 Research Questions

This study attempts to answer two chief questions:

1. What are the real needs of first year LMD biology students at Mascara University?
2. To which extent are ICTs being integrated in the teaching/learning process by ESP practitioners and are they effective if integrated?

The above-mentioned question led to formulate the following hypotheses:

- Biology students not only need English for acquiring the target terminology but also require a certain flexibility in using ICTs.
- ICTs are effective in the ESP classroom but they are rarely used by ESP practitioners.

#### 3.2 Research Methodology

The researchers used the mixed method approach to collect both quantitative and qualitative data in this article. The questionnaire was administered to First Year LMD students in the department of Biology at Mascara University. Additionally, the researchers used classroom observation as another tool that paved the way for them to observe both the ESP teachers and biology students in an authentic environment.

#### 3.3 Participants

Participants in this study are first year licence students, they are randomly selected as a sample population for the present case study. The total number of the students is (891) students divided into four different sections: A (222), B (225), C (224), D (220). They are enrolled in academic programmes during the

second semester of the academic year 2017-2018. In this study, the researchers have chosen the C and D sections because they are gathered in one classroom for the English session from 14.30 to 16:00.

### 3.4 Data Collection

As a first data collection tool, thirty one (31) questionnaires were given to the selected participants. For instance, a question deals with students' point of view about the way they prefer to learn in the classroom. This question uses a cross-check question offering two choices: ("with ICTs," "without ICTs"). The questionnaire was designed in English language and translated into French for the sake of intelligibility. As expected, the participants answered only the French version of the questionnaire. After fifteen minutes, most of the participants finished answering the questionnaire and gave it back to the researchers.

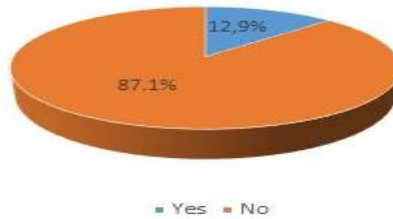
For the sake of strengthening the validity of this research, the researchers conducted eight (8) classroom observations. Classroom observations were implemented in this research to see whether Biology teachers integrate ICTs in the ESP classroom or not and to gauge the effectiveness of integrating ICTs in the classroom; the way in which they are being used by ESP practitioners and the reaction of the students towards their use.

## 4. Results and discussion

### 4.1 Questionnaire results

Based on the analysis of the data collected via students' questionnaires, the researchers could draw the real needs of first year LMD biology students at Mascara University.

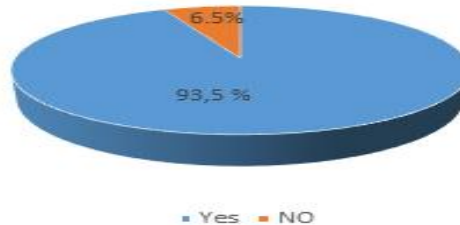
One of the aims of conducting students' questionnaire is to track the integration of ICTs in the teaching/learning process by ESP practitioners. The results show that only four (4) out of thirty-one (31) of the total number of the participants answered with yes to the question "Do your teacher of English integrate ICTs (data show, videos, audio data...) while explaining the lesson? The results are explained in the following pie chart:



**Pie chart 1:** Participants' Responses about the Integration of ICTs in Course Explanation by their Teachers.

According to the pie chart 1, only 12.90% of the students reported that their ESP teachers explain the course using ICTs in their classrooms. This phenomenon could be related to the lack of equipment at the department or other related resources.

The second main question in students' questionnaire enquired about the attitude of the respondents towards studying ICTs as a module and the use of ICTs in the teaching/learning process. The results show that most of the learners were stimulated to the use of ICTs in learning. The results are translated in the following pie chart:



**Pie chart 2:** Respondents' Approval towards Learning ICTs as a Module or Towards Learning through ICTs.

As noticed in the pie chart, 93.5% of the participants showed their approval to learning ICTs as a module or learning through ICTs or with the help of ICTs.

The general results of the questionnaire show that the participants were enthusiastic to the idea of integrating ICTS in lesson explanations by their teachers who, according to the questionnaire results, rarely use ICTS in the classroom.

#### 4.2 Classroom Observation Analysis

As stated above, the researchers assisted eight (8) classroom observation sessions. The general results that were observed led to the following conclusions:

- Most of half students did not attend the ESP class in the eight (8) sessions.
- ESP practitioners did not use any kind of ICTs in their classrooms but rather implemented the traditional teaching method of “Chalk and Talk”.
- The level of motivation was lower in comparison to other classes.

The prominent absence of the students and the low motivation are two interlinked factors with the low status of the module of English if compared to the other modules. In addition, conducting the observation allowed the researchers to confirm the hypothesis which states that ESP teacher at the Biology department do not integrate ICTs in the teaching process. Evidently, along the eight (8) classroom observations, the ESP teacher did not implement any type of ICTs in the lesson explanation process.

#### **5. Sample Course**

By the end of this study the researchers have proposed this course as a sample of an ESP course that can fit the first year LMD Biology students' needs.

**Lesson** Read and Write / Comprehension Strategies

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

1. Skim the text in order to grasp the general idea.
2. Listen to the video and list characteristics of the desert plants and animals and describe how they can survive in a harsh environment.
3. Scan by reading the scientific text and answer the questions.
4. Learn some new scientific terminologies such as stomata, xerophytes...etc.
5. Speak and raise a discussion with the teacher.
6. Write a presentation concerning the topic in which they explain the fact that there is life in the deserts and learn how plants are able to survive without receiving a lot of water. In addition, they propose how these plants can benefit their environment.

### **Materials**

- Picture about the desert on the monitor.
- Worksheet including pictures of different desert plants and animals.
- Data show in which it presents a video about the adaptation of the desert plants and animals in the desert environment.
- Hand-out including text about life in the deserts.

**Level** Intermediate

**Time** (90 minutes)

**Procedures (Lesson steps).**

### **Warming up**

The teacher asks the students to look to the picture on the monitor and try to answer the following questions:

- 1- Could you tell me what you see on the poster?
- 2- What do we call this environment?
- 3- How do you think the life is there?
- 4- Could you describe the desert climate?

### **Aim**

Teacher and students can then review common characteristics of deserts:

- Deserts are generally very hot in the daytime (often more than 60 degrees Fahrenheit), but they can be cold at night (50 degrees Fahrenheit and colder).
- Deserts may receive only a few episodes of rainfall in a year.

### **Pre –reading**

### **Guided discussion**

- The teacher distributes a worksheet that includes pictures of various animals and plants then asks the students to work in pair and try to select the desert animals and plants in order to open a discussion with students to elicit and introduce the topic.
- The teacher asks students to give the scientific names of the desert plants and animals that they select from the worksheet in order to identify and know the main elements listed in the text.
- The teacher asks the students to watch and listen carefully to the video about the plants and animals that live in the desert and asks



students to take notes about how these plants and animals can adapt with the hard conditions in the desert environment.

- The teacher reviews animals and plants adaptations with his class. Then, he explains that for any animal and plants to survive within an ecosystem, it must be physically and behaviourally adapted to the conditions of its environment.

- First, concerning animals adaptation, the teacher makes sure that the students understand that physical adaptation refers to physical characteristics such as fur, eyes, and colour. In addition to this, they understand that behavioural adaptation refers to characteristics such as hunting strategies, breeding patterns that help animals to face the hard conditions where they live in and to cope with it.

Moreover, concerning plants adaptation, the teacher makes sure that the students understand that the physical adaptation refers to physical characteristics such as the spines or small leaves, glossy and waxy leaves all reduce water loss, long and widespread roots to look for water.

-Teacher allows an adequate time and helps students to identify the main elements listed in the text.

#### **While reading**

-The teacher gives the students a text about life in the desert; they read it for a while.

**Text :**

Deserts are regions that receive an average of less than 10 centimeters of rain per year. Most are located at about 30° north and south latitude, where air depleted of moisture sinks. In these areas, the low humidity allows much sunlight to reach the soil surface, so the ground heats fast during the day. Low humidity also causes the ground to cool fast at night. Deserts are typically nutrient poor and somewhat salty. Despite these forbidding conditions, some plants and animals survive, especially in areas where moisture is available in more than one season. Many desert plants have adaptations to reduce water loss. Light-colored spines or hairs can help keep humidity around the stomata high and also reflect sunlight. Alternative carbon fixing pathways also help desert plants conserve water. Cactuses and agaves are CAM plants and open their stomata only at night. Many annuals that live in deserts are C4 plants. Woody desert shrubs such as mesquite and creosote have extensive, efficient root systems that take up the little water that is available. Mesquite roots have been found as deep as 60 meters beneath the soil surface. Animals also have adaptations that allow them to conserve water. The desert kangaroo rat is a resident of the Sonoran Desert. The driest of all deserts may be Chile's cool Atacama Desert, which lies in a rain shadow behind the Andes. Parts of this area are so dry that they were thought to be entirely lifeless. However, scientists recently found bacteria deep in the soil.<sup>29</sup>

-Important terminologies will be translated into Arabic or French in order to make sure that the students grasp the meaning of each terminology. Furthermore, the teacher provides the students with new terminologies related to the topic such as “xerophytic plants”, “succulents”

- The teacher introduces a list of words and definitions. Students will guess or match the words with their definitions.

-The teacher presents some statements and asks the students to say if they are true or false according to the text.

- The teacher provides students with 4 or 6 questions and asks them to answer from the text.

- He /she gives them questions in order to explore the text such as:

- Could you name famous deserts around the world from the text (such as the Sonoran in North America)?
- What do you know about CAM plants?
- What is the function of stomata?

- The teacher allows an adequate time for students to answer the questions.

#### **Post reading (writing)**

-The teacher splits students into small groups and provides them with some cues.

-The teacher asks the students to write a short presentation about:

**a.** How do you explain the fact that there is life in desert? (Give arguments)

**b.** List other plants and animals that can support the torrid weather in the desert.

**c.** Say if there are other plants and animals able to adapt to desert temperatures and conditions.

**d-** Say how these plants and animals can benefit their environment

- The teacher allows an adequate time to students to reflect and prepare short production about.

-The teacher asks the students to presents their production in order to have a comparison.

#### **6. Conclusion**

The present research consisted of an exploratory study, which investigated the effectiveness of integrating ICTs in teaching Biology students at Mascara University. The key reason behind the study stems from the researchers' experience as an ESP teachers at the department of Biology, who conducted a Needs Analysis to First Year LMD students and concluded that integrating ICTs in explaining processes and Biological phenomena will be of major assistance to the learners in grasping the lesson.

The data was collected via both qualitative and quantitative approaches. A students' questionnaire was administered to the selected sample in addition to an eight-session classroom observation process. The results revealed that ESP

teachers counted on the traditional methods of teaching instead of integrating ICTs in their classes. Furthermore, the respondents showed their eagerness towards learning via ICTs.

Identical to any other academic inquiry, this research was subject to a set of limitations that hindered the data collection process. Instances of these limitations include the absence of a definite ESP programme for First Year Biology students at the selected University, which produced some difficulties for the researchers as far as investigating the use of ICTs in the teaching/learning process is concerned. While collecting data, most of the respondents' answers are mainly focused on close ended questions and neglected the open ended ones, which ask for sharing ideas in English. This may be due to their incapability to answer questions in English .

This research has thrown up many questions in need of further investigation by future researchers such as how to bridge the existing gap between biology students and learning English language. Would it possible to plan for a future ESP course with the integration of ICT as a key to cross this bridge for a better English language learning? What stakes and challenges would such an enterprise raise?

All in all, there is one conclusion that could be agreed on by every practitioner: there must be a training in how to use ICTs in our daily practice.

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