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The Difficulties That Face The Scientific Students While Learning Their Curriculum In English

Case Study 1st Year Mathematics and Computer Science Students at SALHI AHMAD University Center at Naama

Dissertation submitted to the department of foreign languages as a partial fulfillment for the degree of master in linguistics

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DEDICATION

We dedicate this humble work to the woman who taught us to never give up (mom) and to the man who has always been our pride to belong to (dad).

To our beloved brothers Mohamed and Hamza and to all our family

Narimane Maameri

Ismahane Maameri

ABSTRACT

Teaching English for specific purposes (ESP) is about defining certain goals and particular objectives to meet the specific needs of the learners. Within the same line of thought, the present study tends to explore 1st year Mathematics and Computer Science students' needs, and to identify the difficulties that prevent them from reaching a successful learning since their studies are based on English.

For these objectives, the researchers have conducted a need analysis made up of a classroom observation, a questionnaire to 30 Mathematics and Computer Science 1st year Students, alongside interview with the English teacher.

A qualitative and quantitative analyses of data exposed the need of amelioration of the vocabulary package. Furthermore, developing the speaking skills through discussion sessions. Therefore, the researchers could design an ESP course that fulfills the students' needs.

TABLE OF CONTENCT

Acknowledgement……..……IV
Dedication ……... IV
Abstract……..... III
Table of content ……..…... IV
List of Abbreviations ……..…… IV
List of Figures……..… VII
List of Tables ……. VIII
List of Pie-charts and Bar-Graphs ……..…. IX
GENERAL INTRODUCTION……..……..01
CHAPTER ONE: LITERATURE REVIEW ……..
1.1 Introduction……03
1.2 ESP Definition……03
1.3 Characteristics of ESP……04
1.4 Branches of ESP……05
1.4.1 English for Academic Purposes…… 06
1.4.2 English for Occupational Purposes……. 06
1.5 English for Science and Technology …….. 07
1.6 ESP Situation in Algeria…… 07
1.7 The Case of SALHI AHMAD University Center…… 08
1.8 ESP courses in the Department of Mathematics and Computer Science Students.08
1.9 Needs Analyses …… 09
1.9.1 EST Learners' Need……10
1.9.2 EST Learners Motivation ……..11
1.10 Conclusion……11
CHAPTER TWO / DATA COLLECTION ANA ANALYSES…….
2.1 Introduction…….....12
2.2 The Aim of the Study ……12
2.3 Research Design and Methods……..12
2.3.1 The Case Study ……12
2.4 Sample Population……12
2.5 Data Collection and Analysis…… 13
2.5 .1 The Classroom Observation……..13
2.5 .2 The Students Questionnaire……14
2.5. 3 The teachers Interview……..19
2.6 General Findings……..…21
2.7 Suggestions and Recommendations …… 22
2.7.1 Course Design …… 22
2.7.2 ESP Course Elements ……23
2.7.3 The course Process …… 23

2.7.4 Activities …… 24
2.8 Conclusion …… 25
GENERAL CONCLUSION ……..…26
Bibliography……...…28
Appendix ……..
Appendix A ……30
Appendix B ……32
Appendix C ……33
Appendix E ……34

List of Abbreviations

CDCM: Curriculum development Center of Malaysia

EAP: English for Academic Purposes

EBE: English for Business and Economics

EEP; English for Educational Purposes

ELT: English Language Teaching

EOP: English for Occupational Purpose

EPP: English for Professional Purposes

ESP: English for Specific Purposes

ESS: English for Social Science

EST: English for Science and Technology

EVP: English for Vocational Purposes

GE: General English

LMD: License. Master. Doctorate (University learning system)

NA: Needs Analysis

PHD: Doctor of Philosophy (Doctorate degree)

VESL: Vocational English for Second Language

List of Figures

Figure 1.1: The Tree of ELT Hutchinson and Waters …… ……05

Figure1.2: The specialties of Mathematics and Computer Science found in SALHI AHMAD University Center at Naama in the Academic Year 202/2021…….09

Figure1.3: Hutchinson and Waters Needs Analysis Model……..….10

Figure3.1**:** The Expression vs. Equation……...23

Figure 3.2: Laptop Parts……24

List of Tables

Table2.1: Age and Gender ……..15

Table2.2: Students' English Level……15

Table2.3: The Importance of English for Mathematics and Computer Science Students……..16

Table2.4: The Difficulties Found with English Scientific Terms……16

Table2.5: Students' Attendance to The English Course……..17

LISTS OF BAR-GRAPHS AND PIE-CHARTS

List of Bar-Graphs

Bar-Graph2.1: The Difficulties Encounter in English……18

Bar-graphe2.2: the Domains of English Use……..18

List of Pie-Charts

Pie-chart 2.1: Students Background of ESP……16

Pie-chart 2.2: Time Allocation of English Course……17

Pie-chart2.3: The Nature of the English Courses Needed…….19

Pie-chart2.4: Students opinion about the English course presented…….19

GENERAL INTRODUCTION

General Introduction

English is the universal form of communication in science. Although many countries still publish journals in their native tongue, English is currently the best way to share one's research findings with scientists in other parts of the world. Therefore, English is the lingua franca when it comes to documentation and programming languages themselves. With that in mind, English is critically important. Programmers from non-English speaking countries will usually have to learn English to be able to participate in software development. This leads us to look for the importance of ESP courses for those who are dealing with such sciences. Moreover, Teaching English for Specific Purposes is about setting clear goals and objectives to meet the specific needs of learners.

For that reason, the current study aims to investigate about the impediments and barriers that face the students of Mathematics and Computer Science in general and those who study in SALHI AHMED University Center of Naama in specific since their studies are based on English language .In order to identify the students' needs to reach a successful learning. Sort out the most important elements in designing an appropriate ESP course for them. So that to improve the teaching of ESP in general and at the department of Mathematics and Computer Science in particular.

Research Question:

Basing on these objectives the research question is formulated as following: what are the difficulties that face the Mathematics and Computer Science students while learning their curriculum?

From this main question, the following sub questions are derived:

- What are the teaching / learning impediment that obstruct a successful teaching and learning?
- What are the element that should be taken into consideration when making English lessons that serve the Mathematics and Computer Science students needs?

Research Hypothesis: Furthermore, the above questions lead to the following hypothesis:

- The learners' attitude towards the English course, the teacher Capabilities, The designed syllabus and the nature of the presented courses are the most important element that can prevent a good teaching/ learning process.

- The learners level, and the goal from the English course are the element to be taken into consideration in order to have appropriate English lessons that serve the Mathematics and Computer Science student's needs.

Framing this work, the first chapter deals with the notion of ESP, its characteristics and branches. It also tackles the situation of ESP in Algeria. Especially the case of ESP courses at SALHI AHMAD University Center at Naama. The barriers that prevent them from being motivated and their needs and.

The second chapter tackles with the targets of this study. In which dealing with the sample. Further to describing the instruments that have been utilized by the researchers to acquire the analyzed data construct upon the consequences from the case study.

After the analyses, the researchers offered an ESP course in the suggestions and Recommendations. This last, is designed to fits their needs and for the aim of solving the difficulties they face.

CHAPTER ONE: LITERATURE REVIEW

Table of contents

1.1 Introduction ……03
1.2 ESP Definition…….03
1.3 Characteristics of ESP …….. 04
1.4 Branches of ESP……..…05
1.4.1 English for Academic Purposes ……..…06
1.4.2 English for Occupational Purposes……..…06
1.5 English for Science and Technology ……..…07
1.6 ESP Situation in Algeria ……..…..….07
1.7 The Case of SALHI AHMAD University Center……...08
1.8 ESP courses in the Department of Mathematics and Computer Science Students.08
1.9 Needs Analyses (NA) ……..09
1.9.1 EST Learners' Need……10
1.9.2 EST Learners Motivation……11
1.10 Conclusion…….……11

1.1 Introduction

Since 1960s, English for Specific Purposes (ESP) has witnessed a slow growth and has ultimately come to play a prime element in English Language Teaching (ELT). This is without a doubt reflected in educational and academic settings in which a few universities began out to provide ESP courses. In short, this chapter is involved with a literature review where key perception about needs analysis is emphasized.

1.2 ESP Definition

Generally talking ESP "English for Specific Purposes" is an approach to language teaching whose primary goal is to offer learners with the information of the English they need in their area of study such as : science, technology, medicine and so on or for professional career.

Many linguists have put numerous definitions of ESP, for instance Hutchinson and waters (1987:19) recommended a broader definition of ESP as **"an approach to language teaching in which all the decisions as to content and method are based on the learner reason for learning".** According to Hutchinson and waters (1987) ESP is language gaining knowledge of, they emphasize that ESP does not encompass specific content material or technique however the learners' purpose for gaining knowledge of which may be either for study purposes or for work purposes

Mackey and Mountford (1987:2) write: **"ESP is generally used to refer the teaching of English for a clearly utilitarian purposes",** in the same vein Robinson (1991:2) states: **"Student study English not because they are interested in the English language or English culture as such but because they need English for study or work purposes".** Robinson (1987) labeled ESP as a particular course, in which learners have scientific, occupational and educational specific desires and purposes.

That is to say, for Robinson students study English not because they need to study it, however in reality because they need it either in their studies or for professional advancement (Robinson, 1991:2).

This means that the primary attention of ESP is to assist students deal with the different language functions needed of their specific disciplines. Robinson (1980) offers a rather comparable definition of ESP via way of means of saying: **"...an ESP course is purposeful and is aimed at the successful performance of occupational or academic roles."**

However, in their criticism of Strevens (1988) work Dudley-Evans and St John, determined some confusion and correct it, suggesting that all ESP teaching should reflect the methodology of the field and profession it serves (Dudley-Evans and St

John 1998: 4-5). Their definition then, gathers and clarifies all the preceding definitions principles, giving a prolonged definition of ESP in phrases of absolute and variable characteristics.

1.3 Characteristics of ESP

Dudley-Evans (1997) classified the meaning of ESP, giving an extended definition of ESP in terms of four (4) 'absolute' and two (2) 'variable' characteristics.

Absolute Characteristics

1. ESP is described to fulfill particular desires of the learners.

2. ESP uses underlying methodology and activities of the field it serves.

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

Variable Characteristics

1. ESP may be associated with or designed for specific disciplines.

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

3. ESP is probably to be designed for adult learners, either at a tertiary level institution or in a professional work situation. It could however be for learners at secondary school level.

4. ESP is usually designed for intermediate or advanced students.

5. Most ESP courses assume some fundamental information of the language systems.

To answer the question of what ESP is, Hutchinson and Waters (1987) set up a context in shape of a tree in which they name the exact status of ESP and its satellite settlements in relation to the world of ELT (Hutchinson and Waters, 1987: 16). The figure under illustrates certainly the characteristics of ESP that serve the learners needs through its major branches: English for academic study (EAP: English for Academic Purposes) or for work (EOP/EVP/VESL: English for Occupational purposes/ English for Vocational purposes/ Vocational English as a Second Language).

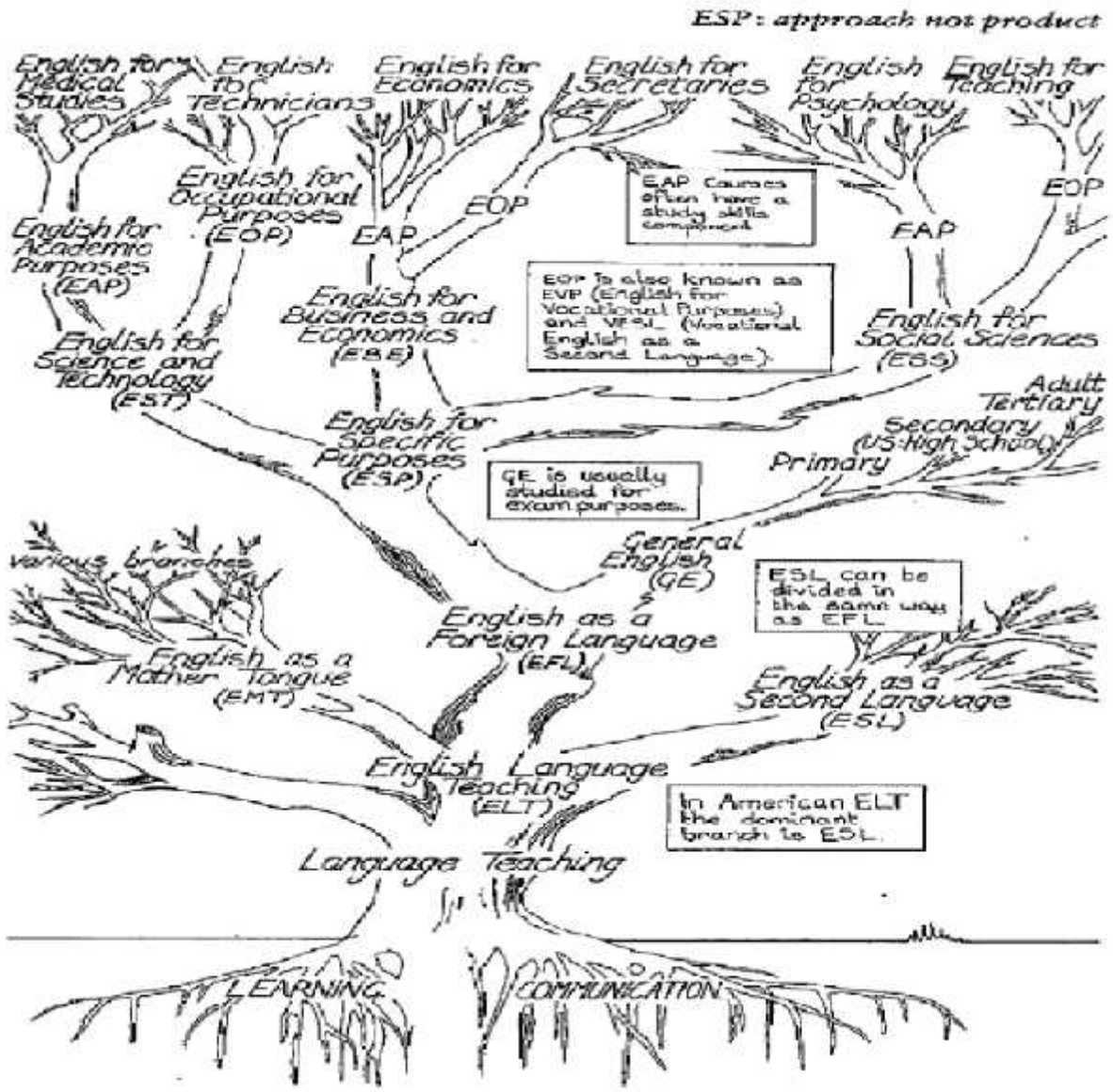


Figure 1.1: The Tree of ELT Hutchinson and Waters (1987: 17)

The above figure divides ESP into three principal types EST EBE ESS is acknowledged to be the area which helped in the improvement of the ESP discipline because of the scientists and technologists around the world who were willing to alternate their experiments and enlarge their area of inventions.

1.4 Branches of ESP

Due to the developments of ESP, it has been divided into different types to suit distinct teaching situations. In the tree of ELT (Hutchinson and Waters, 1987:17), ESP is broken into three branches:

- English for Science and Technology (EST),
- English for Business and Economics (EBE).
- English for Social Sciences (ESS).

Each of these subject areas is splitted into two (2) types (Dudley-Evan and St John 1998:5-6):

- English for Academic (Educational) Purposes (EAP/EEP)
- English for occupational (Vocational) purposes (EOP/EVP)

1.4.1 English for Academic Purposes

EAP - English for Academic Purposes - refers back to the language and related practices that people need so that it will adopt study or work in English medium higher education. The goal of an EAP course, then, is to assist those people examine a number of the linguistic and cultural – mainly institutional and disciplinary - practices concerned in studying or working via the medium of English. Robinson (1980) posits "**English for academic purposes or study skills, le. How to study through the medium of English regardless of subject matter or of the studies**" English in this context is used as medium of study and not as subject matter.

EAP is regularly taken into consideration to be a branch of English Language Teaching (ELT), despite the fact that now no longer all EAP teachers have come though the ELT route. It is a sort of ESP (English for Specific Purposes) - together with English for Professional Purposes (EPP) and English for Occupational Purposes (EOP) - in that the teaching content is explicitly matched to the language, practices and study needs of the learners. It is also taken into consideration to be ESP if we take Robinsons (1991:2-5) features which are usually thought of as being typical defining characteristics of ESP courses.

1.4.2 English for Occupational Purposes

English for Occupational Purposes is a branch of ESP (English for Specific Purposes) and covers situations in which learners are studying English for work related reasons. The courses are based on an analysis of their specific communicative needs in their work as supported by Kennedy and Bolitho (1984) **"EOP is taught in a situation in which learners need to use English as part of their work or profession".** Thus, EOP applies more too every day needs of working people.

EOP courses will therefore have often titles like English for Nursing, English for Shop floor Staff, and English for Accountants. Where communicative needs become more complex, the courses may become more specific, not aiming to deal with the full range of needs involved in the job, but just with one area. This is particularly true in Business English, which may focus on e.g.: English for Sales Presentation, English for Business Report, and Negotiation Skills in English.

The only difference that exists between EAP and EOP is the nature of the learner, i.e., the learner in EAP context is a student while in an EOP context is an employee.

1.5 English for Science and Technology

Hutchinson and Waters (1987:9) state**:" one area of activity has been particularly important in the development of ESP: this is the area usually known as EST"**

English for Science and Technology (EST) emerged within ESP, Kennedy and Bolitho (1990, as cited in Joné & Audron, 2001) states**:**

> **"Much of the demand for ESP has come from scientists and technologists who need to learn English for a number of purposes connected with their specializations. It is natural; therefore, that English for Science and Technology (EST) should be an important aspect of ESP programs".**

English for science and technology (EST), sometimes called English for science and engineering generally refers to English used in scientific publications, papers, textbooks, technical reports and academic lectures, etc. It deals with scientific topics it grew out of the demand of scientist and technologists who were and still are in need of learning English for number of purposes all of them are related to their field of specialism. It is used to describe the physical and natural phenomena, their processes, properties, characteristics, laws and application in productive activities.

1.6 ESP Situation in Algeria

English for specific purposes has become a prominent area of teaching/learning in Algeria during the few last decades. ESP education has also become a central educational and pedagogical concern. If we want to provide a general picture of the situation of ESP teaching in Algeria, we can say that in the Algerian educational context, the teaching of English, in general, and ESP in particular, has become a primary demand and need for all types of communication.

The Algerian educational institutions provide now GE and ESP courses in different fields of study at different levels. As Basturkmen (2006) pointed out **"language is learnt not for its own sake or for the sake of gaining a general education, but to smooth the path to entry or greater linguistic efficiency in academic, professional or workplace environments"** (p. 18). Put it differently, ESP courses aim to make students specialists in their professional fields through the English medium. The aim behind that is to develop university students' English for specific purposes skills and competencies.

As all the Algerian universities, Salhi Ahmad University Center of Naama offers ESP courses in different department in order to respond to learners evolving needs and enable them to undertake research and investigation for license, master and even PHD level(s). The present research is targeting ESP teaching situation more precisely that of first year students of Mathematics and Computer Science

1.7 The Case of SALHI AHMAD University Center

SALHI AHMAD University Center officially opened in 2010; there were only two departments: the department of Law and Political Sciences, the department of Arabic Literature and Foreign Languages. Further, the rest of the current available department and specialties have been added with time which are: the Nature and Life Sciences department, the Science and Technology department and Mathematics and Computer Science department.

1.8 ESP courses in the Department of Mathematics and Computer Science Students

The LMD system in the department of Mathematics and Computer Science at SALHI AHMAD University Center at Naama is divided as follows:

- 1st year: common core Mathematics and Computer Science
- 2nd year: - Computer Science Systems.
  - Mathematics.
- 3rd Year: Continue in the same specialty.

- Master Degree: Information System.
- Master Degree: Functional analysis and partial differential equations.
- Master Degree: Probability, Statistics and Application.

- PHD: Probability and Statistics.
- PHD: Applied Mathematics.

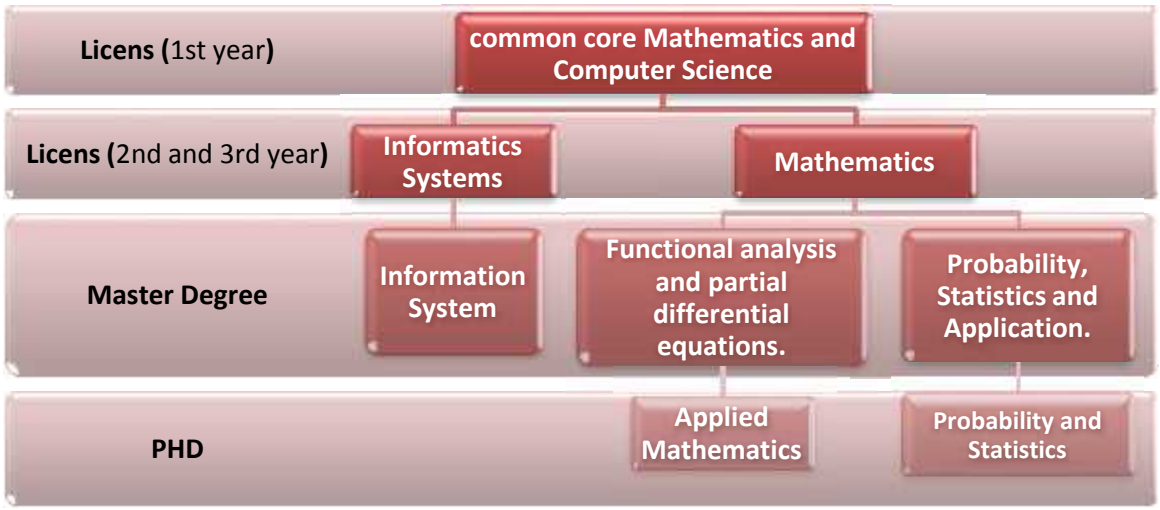


Figure 1.2: The Specialties of Mathematics and Computer Science found in SALHI AHMAD University Center at Naama in the Academic year 202/2021

Our research is concerned with the first year students of Mathematics and Computer Science along with the modules studied. Students receive an English course the fixed time allocated to it is one hour (1h) per week.

Despite the importance of English in this field it holds a low status comparing with the other subjects in the curriculum. Its coefficient is of one comparing with other that reaches up to five. Although it is compulsory, but it is regarded by the students as an additional subjects.

1.9 Needs Analyses (NA)

Many researchers have defined NA. According to Robinson (1991:7), **"needs analyses ids generally regarded as critical to ESP, although ESP is by no means only educational enterprise which makes use of it".** Moreover, Hutchinson and Waters (1987:53) suggested that every language course should follow it. Furthermore, Dudley-Evans and St.John (1998:122) give the explanation that **"needs analyses is the corner stone of ESP and leads to very focused language course"**. West (1998) clarify that NA provided the course designers with the insight to examine learners' purposes.

Hutchinson and Waters (1987) proposed a needs analysis model drawing an analogy of a journey (see Figure 1 below) which consists of two phases: the target situation needs and learning needs. Target needs are composed of necessities, lacks, and wants. Necessities are what permits students to act efficiently in the target situation (journey's destination). Lacks are the needed abilities to reach the end

purpose (the start of the journey). Wants are the learners 'desires which are subjective in the course design procedure. On the other side, Learning needs are the learners' approach to learning the language, i. e. how they get from the starting point to the destination. In addition, to their motivation and learning preferences which may deviate the terminal point of the journey to achieve better language proficiency.

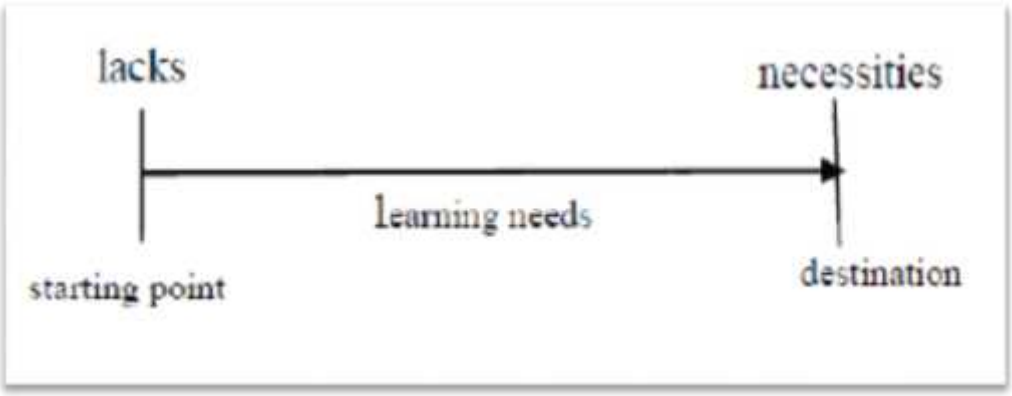


Figure1.3: Hutchinson and Waters Needs Analysis Model.

To totalize all what have been said, Needs Analyses is the procedure of gathering data which highlights learners' needs in order to make decision about the objectives, goals and content of a curriculum which fulfill these needs. Needs Analyses is an ongoing process that take place before, during and after the course.

1.9.1 EST Learners' Need

Kennedy and Bolitho (1990) state that in general, EST as a subject in schools provides students with the language skills to access and understand materials on science and technology, and to expresses ideas and concepts in English. Robinson (1991:7) defined learning needs as **"what the learner need to do to actually acquire the language".**

In simple words, Learning needs explore and gathers information about the learners, their language skills, learning styles and strategies, the selection of teaching materials , the setting and the time needed.

In the resource book of EST (2006), Curriculum development Center of Malaysia (CDCM) writes, **"…EST aims to teach the different ways of accessing and using information to advance knowledge in various fields and it enables students to present information on science and technology at an appropriate level in both written and spoken form".**

Furthermore, CDCM listed the learning skills that students require in EST course as following:

- Acquiring terminology and expressions in science and identify information relevant facts.
- Comparing, contrasting, interpreting and analyzing information and drawing conclusion.
- Understanding stages in scientific methods.
- Reading different text types in science and technology from both print and electronic sources.
- Listening to spoken texts such as talks, lectures and viewing TV documentaries and multimedia resources.

1.9.2 EST Learners Motivation

Hutchison and Waters (1987:8) asserts that **"learners were seen to have different needs and interests which would have an important influence on their motivation to learn and therefore on the effectiveness of their learning".** That means, in ESP learners reveal a great interest to learning when they are conscious of their needs.

Numerous researchers believe that motivated students reach a higher level of skillfulness and better grades. Strevens (1988) an ESP specialist, offers four implications for higher motivation in ESP courses:

- Being focused on the learners' needs, they waste no time.
- They are relevant to learners.
- They are successful in imparting learning.
- They are more cost-effective than general English courses.

1.10 Conclusion

This chapter reviewed the literature in the area of ESP, and tried to provide a clear idea about it, its main definitions, Characteristics and branches. Additionally, needs analyses (NA) has been given a centered place to prepare the ground for this research. As any investigation, the review of literature is always supported by an account of the situation and population studied; this will be the task of the next chapter

CHAPTER TWO:

DATA COLLECTION AND ANALYSES

Table of contents

2.1 Introduction …… 12
2.2 The Aim of the Study ……..12
2.3 Research Design and Methods ……..……12
2.3.1 The Case Study ……..12
2.4 Sample Population ……..…… 12
2.5 Data Collection and Analysis ……13
2.5 .1 The Classroom Observation ……...… 13
2.5 .2 The Students' Questionnaire…… 14
2.5.3 The teachers' Interview…… 19
2.6 General Findings …… 21
2.7 Suggestions and Recommendations …… 22
2.7.1 Course Design …… 22
2.7.2 ESP Course Elements ……..23
2.7.3 The course Process …… 23
2.7.4 Activities …… 24
2.8 Conclusion …… 25

2.1 Introduction

This chapter represents the research methods followed to investigate about the research question. The data collections tools for this study were a classroom observation to examine the nature of the interactions between the students and the teacher during the ESP courses and the role of the ESP course presented in the student's studies. A questionnaire addressed to the students, and an interview addressed to the teacher to explore their familiarity with the students' needs and the ESP courses teaching. The results are discussed and interpreted.

2.2 The Aim of the Study

The Objectives from this research is to investigate and determine the obstacles that prevent both; the student of Mathematics and Computer Science and the English teachers from reaching a successful learning progress.

In addition, aiming to indentify and to shed lights on the factures that should be regarded while designing the English courses for the students of 1st year Mathematics and Computer Science that goes hand in hand with the their needs. So that to improve the teaching of ESP in SALHI AHMED University center

2.3 Research Design and Methods

This step is an important step to organize any research work, which gives a perception on how the data were collected, through using a different research instruments. While investigating this topic, the researchers have used a mixed method approach from a case study to questionnaire, interview and observation.

2.3.1 The Case Study

According to Sturman (1997) **"case study is general term for the exploration of an individual, group or phenomenon"** (Sturman: 61). The case study research strategy and it is a process or record of research into the development of a particular person, group, or situation over a period of time.

2.4 Sample Population

As Dornyei (2003:70-71) defines sample as a group of people whom actually examine and the population is the people whom the survey is about. In other words a population is the entire group that you want to draw conclusions about. A sample is the specific group that you will collect data from.

The present study is done during a special circumstance which is the Covide 19 pandemic, so the teaching system was going under a protocol that states on the social

distancing, the non-obligation of the students' presence and the reduction of the timing of the courses from one hour and half to one hour…

This work is concerned with the first year Mathematics and Computer Science student at SALHI AHMAD University Center at Naama. Student are divided into two sections, but share the same English courses .So the work will be done with the first section. The sample group is a group from the first section; of up to thirty-student (30) who were attending the English Course. Aged between 17 and 42 years old, (18) eighteen of them are females and (12) are males.

These students share the same educational background, Arabic is their mother tong; French is their first foreign language and the language of instruction at university, while English is their second foreign language. They learnt English during four years in middle school, and three years in the secondary school, which make the sum of eight years of learning English.

2.5 Data Collection and Analysis

To accomplish this work, three different research tools have been used. Which are a classroom observation, the students' questionnaire and the teachers' interview.

This stage is considered an important one in the research process, it is the procedure of transforming and modeling data to highlight the useful information and suggestions that help in concluding answers for the research question.

There are two types of data to be collected, qualitative and quantitative data. Quantitative data is measure by numerical scale and analysed using statistical methods. Whilst, the qualitative data is measurement expressed by verbal accounts in a natural language description. In the current study, the investigators used both approaches.

2.5 .1 The Classroom Observation

Yin (1994:22) claims that: **"Observation is another important source of information in case study. This is a especially true in case studies involving classrooms or school, because the interaction if individuals cannot be understood without observation"**

In the present study, the sample population will be observed during the English course. Due to the covide19 protocol, there were only 5 weeks of study and the session consists of one hour instead of 1h and half. So they will be observed for four sessions starting from their first session (Introductory session) in their first semester.

The researchers try to observe how the course goes on without any kind of interference and aims to collect information about the natural of the session and how

the teacher manage the lesson and the learners respond and interact . Moreover, seek to reach the answers for the following questions:

1. How is the attendance of the students for the English course?
2. How does the teacher begin the lecture?
3. Does she state the objectives of the lesson?
4. What is the amount of talking time of both the teacher and the students?
5. Which skills the teacher tends to develop?
6. Does the lectures content go with the student's interest?
7. Are the students active and motivated in the lecture?

The classroom observation was very lucrative tool to collect data about the teaching-learning situation between the chosen sample.

Based on the collected data during the classroom observation, it is noticeable that almost the same students attended the English course regularly. From time to time there where new faces but they seemed not interested to the course.

The teacher relies on a specific pattern as follows: she started the lesson by a quick revision for the previous lesson as a warm-up, and then she starts in the new lesson. She use the teacher-centered approach, when the teacher is the information provider.

The teacher explains the lesson in English and she assists with French only when the students found difficulties. She tries to allow them to express themselves in order to enhance their speaking skills.

It is noteworthy that the students became motivated whenever the teacher tackle the subject that goes with their field of study but they face problems in expressing their ideas in English.

2.5 .2 The Students Questionnaire

Questionnaire is one of the most common methods of data collection that can be obtained and analysed in a shorter period of time. It provides a relatively cheap, quick and efficient way of obtaining large amounts of information from a large sample of people.

In this investigation, the questionnaire will be handed out to the students in their fourth session of the first semester. It consists of closed, open and mixed questions. (See appendix A).

***Closed Questions:** This type of questions consist a set of quick possible answers, and the respondents have to choose best one that fits their opinion.

* **Open Questions:** In such type, the respondents are free to express their own ideas, and give their opinions in detail.

* **Mixed Questions:** This type I a combination of both open and closed questions, the respondents are asked to choose one of the possibilities and to justify their answer by giving their point of view.

The questionnaire was handed out to thirty (30) Mathematics and Computer Science first year students, in their first semester of the academic year 2020/2021. The gathered data gave a clear image to the researchers to determine the students' difficulties, and needs in English.

The questionnaire consists of two parts, the first one contains two questions and the second part includes10 question mixed between open and closed questions.

Part One: Informant Background.

Question one and two : Students' age and gender

Age is variable; it tells us the generation that the researcher worked with. Moreover, gender helps set the percentages of male and female in the sample.

Gender	Male	Female
Number	12	18
Percentage	40 %	60 %
Age	18-42	17-23

Table2.1: Age and Gender

The 30 students are divided into 12 male(40 %) and 18 female(60 %).males are aged between 18 and 42 years old, and females aged between 17 and 23 years old.

Part Two: Informant attitude toward ESP course.

Question 1: how do you evaluate your abilities in English?

This question checks on the student English level.

Frequency	Low	Intermediate	Good	Perfect
Number	4	13	13	1
Percentage	13.33%	43.33%	43.33%	3.33%

Table2.2: Students' English Level

As it is shown in the table, only one student (3.33%) that believe that he has a perfect English level. Whilst 13 students (43.33%) think that they are good at it, and other 13(43.33%) admit that they have an intermediate level. While four students (13.33%) think they are in a low level.

Question 2: Do you think that English is important in your studies as a science and computer science student?

This question demonstrates the student's point of view toward the importance of the ESP course.

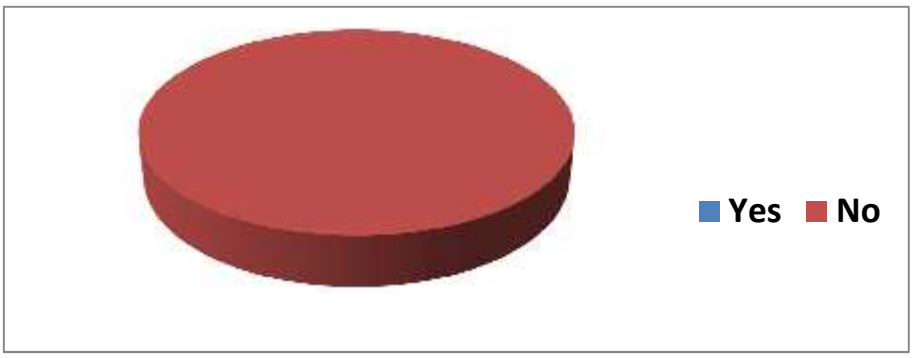
Frequency	Not important	Important	Very important
Number	0	11	19
Percentage	00.00%	36.33%	63.33%

Table2.3: The Importance of English for Mathematics and Computer Science students

The majority by 63.33% of the students admitted that English is very important in their studies. While only 11students value it as important.non of them went with not important.

Question 3: Have you ever received an English specific lesson to your field of study?

This question is about the familiarity of the students with the nature of the ESP course.



Pie-chart 2.1: Students Background of ESP

All the 30 students (100%) agreed that they did not receive any ESP courses before. None of them (00.00%) answered yes.

Question 4: Do you find any difficulties in understanding and using English scientific terms "words"?

This question shed light on the amount of English scientific terms vocabulary that the students have.

Frequency	Never	Rarely	Sometimes	Often	Always
Number	3	4	18	0	5
Percentages	10%	13.33%	60%	00.00%	16.66%

Table2.4: The Difficulties Found with English Scientific Terms.

High percentage (60%) of students declared that they sometimes face difficulties, whilst the rest are divided between never (10%), rarely (13.33%) and always (16.66%).

Question 5: How often do you attend the English course?

This question measures the students' motivation for the English course attendance.

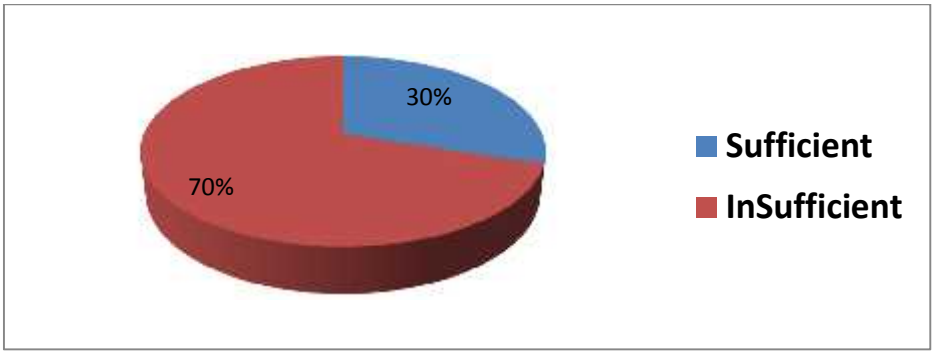
Frequency	Never	Rarely	Sometimes	Often	Always
Number	3	3	13	2	9
Percentages	10%	10%	43.33%	6.66 %	30%

Table2.5: Students' Attendance to The English course.

Almost the majority of the sample answered sometimes (43.33%) and always (26.66%).while the others answered with close proportions, never (3%), rarely (3%) and often (2%)

Question 6: Do you think that one session (1-hour) English session per week is sufficient?

The informant is questioned to give their opinion about the hourly volume whether it is sufficient or not, and he/she suggests the needed time for his/her needs.

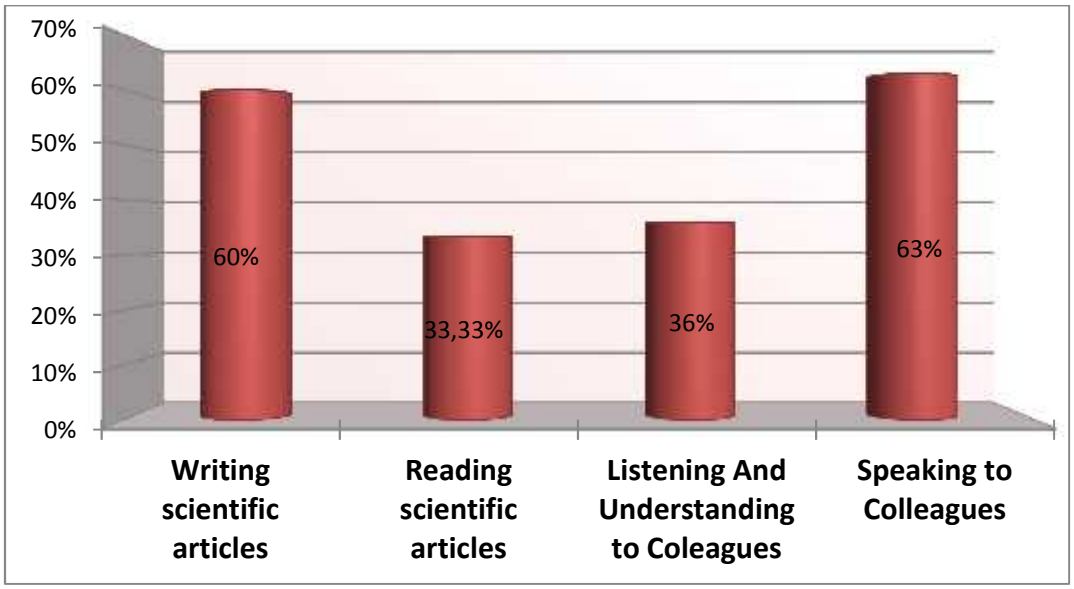


Pie-chart 2.2: Time Allocation OF English Course.

High percentage of the students (70%), were not satisfied with the devoted timing for the English course. And suggest around 2-3 hours per week. Whereas,(30%) said that is sufficient.

Question 7: What are the difficulties you encounter in English?

The informant is asked to choose from the given possibilities the difficulties that he/she faces in using English.

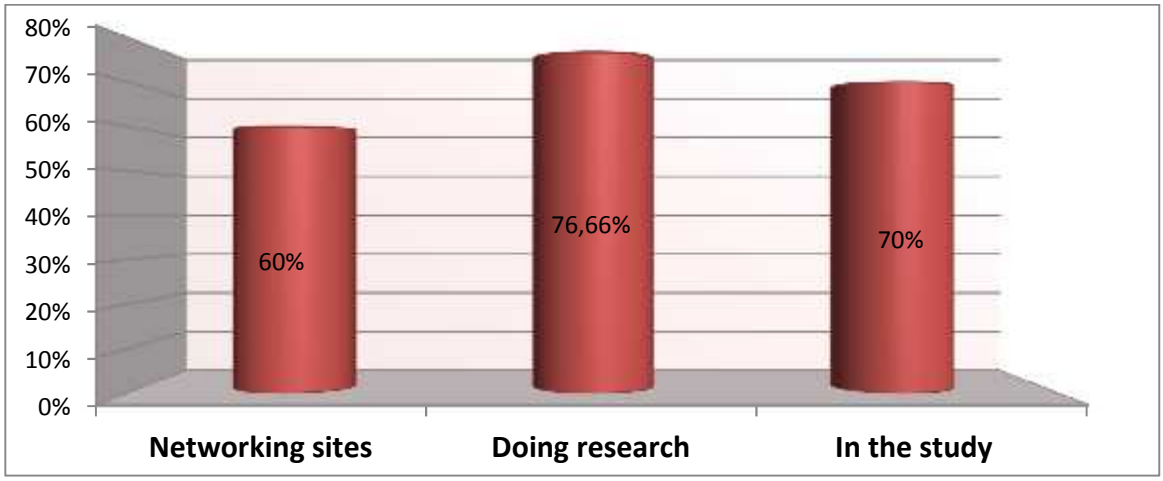


Bar-Graph2.1: The Difficulties Encounter in English.

As it is shown in the bar-graph, speaking (60%) followed with writing (63%) are considered to be the most faced barriers. Whereas, listening (36.33%) is less difficulty and reading (33.33%) regarded to be the least difficult.

Question 8: What are the domains in which you use English more?

The informant is asked to choose from the given possibilities the domains in which he/she uses English for.

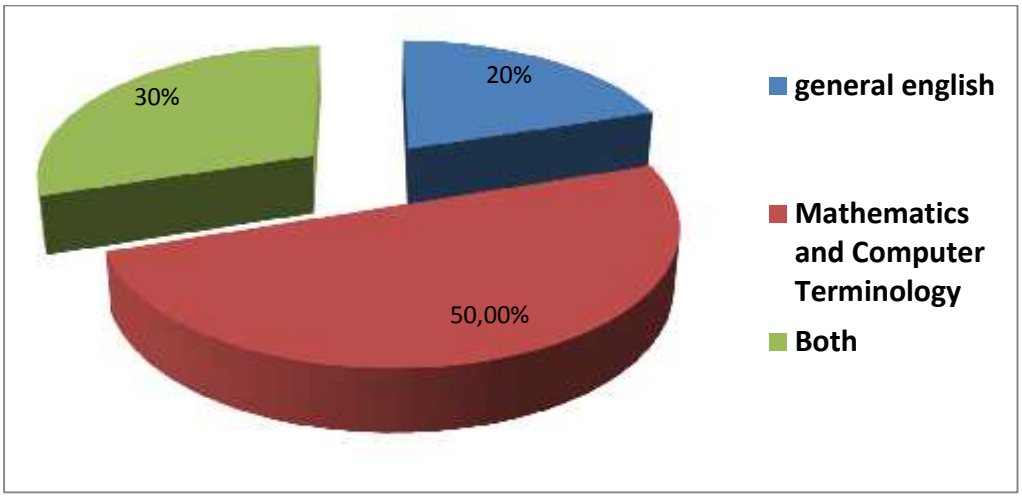


Bar-graphe2.2: the Domains of English Use.

From the previous bar graph, it is noticeable that English is mostly used by the students in research (76.66%) and study domain (70%), more than in networking sites (60%).

Question 9: Which type of English do you want to learn?

This question intends to figure out the nature of the needed English course

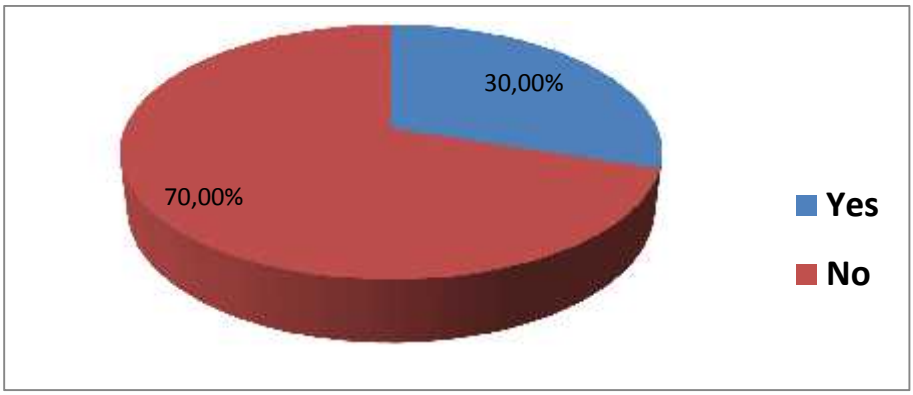


Pie-chart2.3: The Nature of the English Courses Needed.

The pie chart gives a clear image about the students needs from English course. The majority of them (50%) choose to study Mathematics and Computer Science terminology. A low percentage (20%) needs generals English. While (30%) want a mixture between both of them.

Question 10: Do you find the lessons presented in the English course are beneficial in your study?

This questions indicate whether the English serves the students needs or not , and identifies the flaws founded in it.



Pie-chart2.4: Students opinion about the English course presented

A great percentage (70%) finds that the presented lessons do not serve their needs, and only (30%) consider them useful.

2.5.3 The teachers Interview

Duff (2008:134) stated, “Interviews are one of the richest resources of data in a case study and usually the most important type of data to be collected”.

Many researchers such as Bogdan and Biklen stat that there are three types of interviews. Structured, semi-structured and unstructured interview.

In this study, the investigators adopted a type of semi-structured interview. The interview is designed to collect information about the teaching strategies, and the nature of the lessons planning and the curriculum imposed in the department of Mathematics and Computer Science. (See Appendix B)

The analysis of the teachers' interview provided very useful results which are presented as follows:

Question 1: How do you evaluate your student's English Level?
This question determines whether the teacher is aware of his student's English level.
From the teachers' point of view, the majority of the students have an intermediate level and few with a good level.

Question 2: Are they motivated during their English course?
Deals with the student's motivation in classroom.

The teachers answered that his students are motivated and justified her answer that they are interested in to English module (the language).

Question 3: Did you conduct a need analysis before deciding about the content of your courses?
Question 4: Is there any syllabus provided by the department?
Question 5: Is there any materials provided by the department?

These Three questions intend to expose whether the teacher is responsible about the course contents and the role of the department in providing the syllabus and a suitable conditions for the teaching.

The teacher responded that she did not do any need analysis justifying that by that the department impose a specific syllabus that she should follows. And concerning the materials she answered that the departments provide all the needed equipments, but she did not ask for any.

Question 6: How do you plan your course?
Seeks to know how the lesson planning goes, and the points that the teacher take into consideration while designing the course.
The teacher answered that she follows the syllabus imposed by the department, and design her course depending on the objectives mentioned in it.

Question 7: Do you think that the content presented in your courses is relevant to their needs?
Identifies how suitable the courses are to the students needs.

The answer was positive. Moreover, she stated that although she thinks that the content is relevant but it needs to be ameliorated to be more suitable to the students' needs.

Question 8: Among the following activities, which are the most appropriate for the English courses for Mathematics and informatics students?

The teacher is asked to choose from the given options to tell which activities are more appropriate and serve the students needs.

The teacher classified chosen activities as follows: firstly writing, second reading and last grammar and added "if it is integrated". Which is inconsistent with the students' needs.

Question 9: Do you think that one session (1-hour) English session per week is sufficient?

The teacher clarifies his satisfaction about the devoted time for the English course, and how much time it supposes to be devoted.

The teacher considered a session (1hour) per week is insufficient and suggest 3 to 4 hours.

Question 10: What is your Remarque concerning the design of the syllabus?

Invite the teacher to give remarks and suggestions on the design of course.

Here the teacher declared her dissatisfaction about the syllabus imposed by the department, because it focuses only on grammar.

Question 11: Do you think yourself able to teach ESP course for math and Computer Science students?

Does the teacher consider himself fulfills the necessary conditions to teach ESP.

The teachers answered that she is able to teach only what is related to terminology. In addition, that she thinks English teachers should be formatted to teach ESP.

2.6 General Findings

In order to check from the hypothesis validation, the researchers have used three different research instruments. A classroom observation, it was done to determine the nature of the English course, and to notice the students' attitude and motivation. A Questionnaire designed for 1st year Mathematics and Computer Science students at SALHI AHMAD University at Naama; In the seek of inspecting about the student opinion and attitude toward English. An interview with the teacher, to investigate the role of the teacher in providing a appropriate lesson content.

After analyzing the collected data, it was clearly noticed that the first barrier that prevent students from reaching a successful learning results is their English level. At this point the research obtained a several common results from the three instruments,

all of them indicate that the students' first difficulties is speaking and expressing their thought in English. This problem is due to the lack of time provided for the English course (1 hour per week) where the students can practice their English speaking skills freely under the teacher' guidness.

The data collected from the classroom observation and the teachers interview, clarifies that the syllabus imposed by the department does not neither fit the students needs nor the field of study. In addition, what the students confirmed from their answers in the questionnaire; when the majority of them stated that they do not consider the presented lessons beneficial for their study. What is considers as a major obstacle to the learning process, which leads to obstruct the students' motivation.

As another important remark, is that the nature of the lessons consist only grammar, while what the students need more for their studies is mathematics and computer science vocabulary. In order to read, understand and write scientific articles and reports.

Substantially, both the teacher and the department are the first responsible for providing an appropriate conditions to the students; for the purpose of reaching a successful teaching-learning.

2.7 Suggestions and Recommendations

In the present research, driving from the data analysis of the classroom observation, students' questionnaire and teachers' interview. A need analysis has been conclude. This allows the researchers to define the element that should be taken into consideration while designing an ESP course for mathematics and Computer Science students.

2.7.1 Course Design

Analyzing and understanding the specific needs of a particular group, plays an important role in any ESP course design. It assists the teacher to determine the aim and objectives to be reached from the ESP course.

In the curriculum imposed by the department (See appendix D), the general aim from the English course is that at the end of semester the students improve his/her linguistics competency moreover to acquire specialized vocabulary of scientific and technical English. However, the presented courses are more about general English (GE) than an ESP course. In which it does not neither fulfill the student's needs nor fit the curriculum imposed.

2.7.2. ESP Course Elements

The course chosen by the investigators is prepared for the first year mathematics and computer science students; it is designed to fit the students' needs originate from the data analysis. In order to reach the goals to be achieved in the ministerial curriculum. (See Appendix D)

- **General aims:** By the end of the course , the students has acquired a few mathematical and Computer Science vocabulary (Terminology and expression) that he/she can understand and use in his/her work and study life, and to write/ read scientific article.
- **Objectives:** The objectives are ordered according to the students needs derived from the questionnaire. Taking into consideration the aim mentioned in the curriculum imposed by the department.

  - **Speaking skills:** be able to answer the question, and to interact with the teacher through construction of correct sentences.
  - **Writing skills:** be able to use the vocabulary gained in their study reports.
  - **Listening and understanding:** be able to understand what is being said and read during the course.
  - **Reading skills:** be able to read the given handout and understand at 75 % of it.

2.7.3 The course Process

At first, a handout will be given to the students at the beginning of the lesson (See Appendix C). Five minutes are given to the students to look at it.

Then, the teacher (researcher) writes some calculations on the board, for example ($5x^2+7x-9=4x^2+x-18$, $5x^2+7-9-4x^2-x+18=0$….) and ask the students if they can read it in English out load, (some of them will try). The target here is to know how to enunciate the whole calculation not only the numbers and symbols.

After that, ask one of the students to read the given handout, and explain each point individually.

The next point, aims at helping the students to distinguish between a mathematical expression and an equation.

The following figure will be shown in by DataShow.

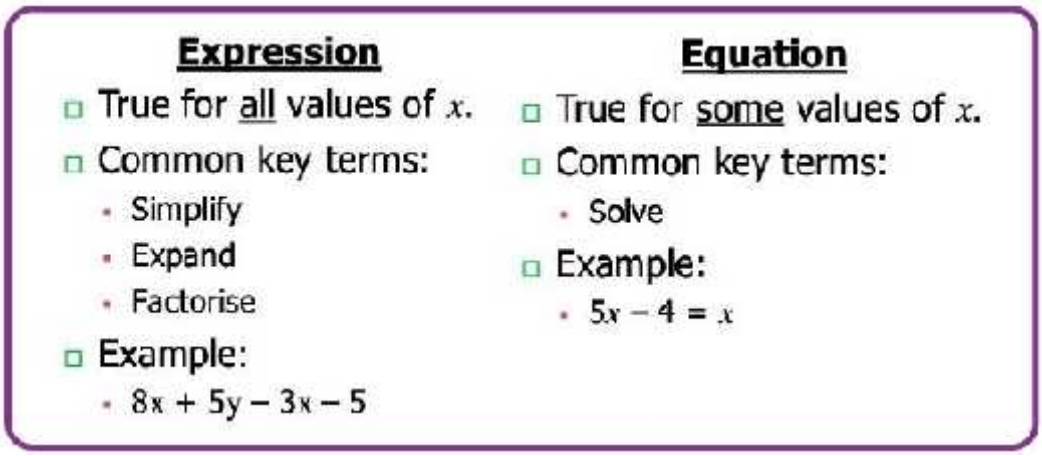


Figure3.1: The Expression vs. Equation.

2.7.4 Activities:

Task 1: back to the calculations that the teacher wrote at the beginning of the session and ask the students to articulate it orally in different ways, taking into consideration the pronunciation mistakes.

Other calculations will be shown by DataShow and the students are asked to articulate them

Task 2: The teacher chooses a subject that goes with their interest and studies (for example programming languages: Pascal, Delphi, C+…), and talk freely with them. Remarking and correcting their mispronunciations, sentence constructions … ect.

The first discussed topic was: Laptop Parts.

The next figure will be shown in DataShow, and discussed interchangeably between the students and the teachers.

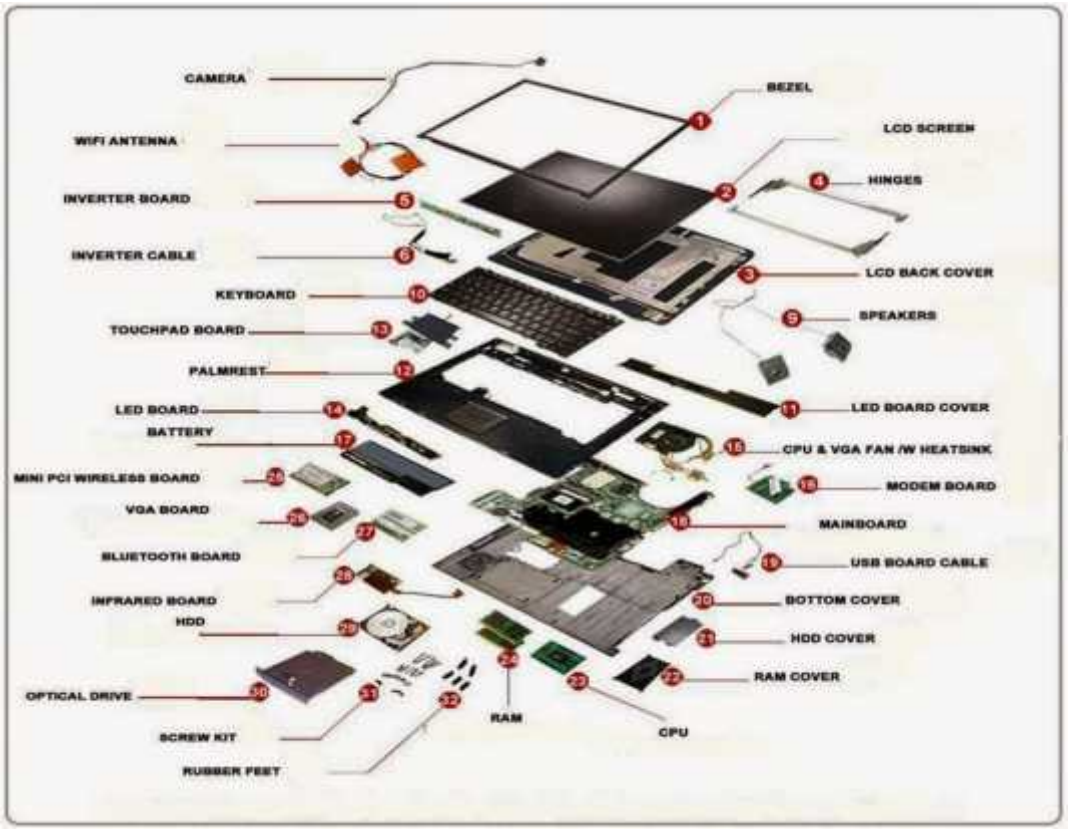


Figure 3.2: Laptop Parts.

The second discussed topic was: the most common instructions in language programming.

The teacher explains the used terms in those instructions for examples: begin, variable (var), true, false, if, else, string show, clear, integer …ect.

2.8 Conclusion

This chapter dealt with the collection of data, that could help in gathering much information for the seek of answering the research questions and checking on the proposed hypothesis. As fact, that the data analyses drove the researchers to confirm all the research hypotheses. Moreover, it enables the researchers to design a suitable ESP course and decide the content that fit the students' needs which is presented in the suggestions and recommendations.

GENERAL CONCLUSION

General Conclusion

The English language overlaps computer science discipline, as it is the lingua franca for computing. Within the same line of thought, most computer science terminology is loaned from the English language. Correspondingly, the importance of English in all disciplines calls into play the need for teaching/learning the language. Following, English for Specific Purposes (ESP) was born to meet the requirements of English teaching for such disciplines.

Consequently, the researchers have conducted the present study at the level of Mathematics and Computer Science Department at SALHI AHMAD University Center of Naama, Algeria. Under the target of highlighting the difficulties and obstacles that face 1st year Mathematics and Computer Science students since their studies are based on English. In addition, to determine the primary elements that should be taken into consideration while designing ESP courses that goes hand in hand with the students needs.

The present study consists of two chapters. The first one deals with the ESP background and literature review. The second chapter tackles the situation under investigation. Furthermore, it deals with the research instruments that researchers depended on to investigate the research question and to checks on hypothesis validation .the research instrument used are; a questionnaire addressed to thirty 1st year Mathematics and Computer Science Students, An interview with the English teacher, and a classroom observation during the English course. Each tool is followed by its data analysis. Basing on the research results, a designed ESP course to the Mathematics and Computer Science students is presented in the suggestion and recommendation.

The results conclude from the analyses, has lead the researchers to confirm the hypothesis that tends on the learners attitude towards the English course, the teachers capabilities and the design of the syllabus and courses as the most important elements that can either prevents or achieve good teaching-learning process. The outcome of the need analyses showed that, although the lack of students' English proficiency level but they still motivated to learn English, that is because of the important role that English plays in their field of study. Such difficulty is due to lack of language practice and shortness of provided time for the English course. From the teachers' side, at first he/she should be formed to teach ESP lessons, second he/she should be aware of his/her students' requirement in order to decide the suitable content that fulfils their needs.

The second hypotheses relies that learners level, and the aim of the course are a necessary element to be taken into consideration to design the ESP course. After the

analysis of the students' needs and the curriculum imposed by the department; the researchers reached to identify the skills that the students found difficulties in, they are classified as follows speaking, writing, listening then reading. This classification is inconsistent with the one the English teacher sited, that is due to the non-awareness of the teacher of his students' needs. Moreover, the syllabus presented by the department relies on general English. These syllabuses consist of grammar lessons, which is not correspondent to the type of English needed in the field of mathematics and Computer Science. Such fields need more vocabulary lessons that deal with terminology and expression.

Subsequent to the analysis, the researchers define the elements that should be taken into consideration while deciding the contents of the designed ESP course.

However, the current study had some limitations because of the circumstances in which it was conducted. Due to the Covide 19 protocol, the informants number were limited, even the timing of the classes was reduced from a whole semester to only five 5 weeks of study consist of one English class (1 hour) per week. For this reason, the results of this investigation cannot be generalized. In addition, it requires further research.

Appenedix

Appendix A

Questionnaire :

The aim from this questionnaire is to highlight the problems that the students of "Mathematics and Computer Science" face while learning their curriculum in English. So we are kindly asking you to collaborate with us and answer this questionnaire.

Part one:

1) Gender: ☐ male ☐ female
2) Age: ……

Part two:

1 How do you evaluate your abilities in English?

Low ☐ Intermediate ☐ Good ☐ Perfect ☐

2 Do you think that English is important in your studies as a science and computer science student

Not so important ☐ Important ☐ Very important ☐

3 Have you ever received an English specific lesson to your field of study?

Yes ☐ No ☐

4 Do you find any difficulties in understanding and using English scientific terms "words"?

Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always ☐

5 How often do you attend the English course?

Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always ☐

6 Do you think that one session (1-hour) English session per week is sufficient?

Yes ☐ No ☐

If no, how many hours do you suggest? ……..

7 What are the difficulties you encounter in English?

To write a scientific articles ☐

The read scientific documents ☐

Listen and understand foreign colleagues speak about your field of study ☐

To speak to foreign colleagues ☐

Appendix A

8 What are the domains in which you use English more?

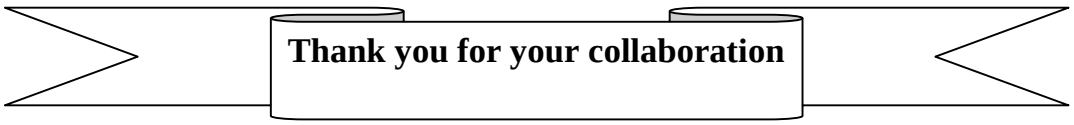
Networking sites ☐
Doing research ☐
In the study ☐

9 Which type of English do you want to learn?

General English ☐
Mathematics and Computer terminology ☐
Both ☐

10 Do you find the lessons presented in the English course are beneficial in your study?

Yes ☐ No ☐
Why?.....
.....
.....



Appendix B

Teacher's interview:

I am carrying out a research to highlight the problems that the students of "Mathematics and Informatics" face while learning their curriculum in English. I would be very grateful if you answer these questions.

Questions:

1 How do you evaluate your students English level

Low ☐ Intermediate ☐ Good ☐ Perfect ☐

2 Are they motivated during their English course?

Yes ☐ No ☐ Not so much ☐

What it is due to? …….

3 Did you conduct a need analysis before deciding about the content of your courses?

Yes ☐ No ☐

4 Is there any syllabus provided by the department? Yes ☐ No ☐

5 Is there any materials provided by the department? Yes ☐ No ☐

6 How do you plan your course?

7 Do you think that the content presented in your courses is relevant to their needs ?

8 Among the following activities , which are the most appropriate for the English courses for Mathematics and informatics students **:**

Listening comprehension ☐

Reading comprehension ☐

Speaking and topic discuss ☐

Writing ☐

Grammar lessons ☐

Teaching vocabulary and math/informatics terminology ☐

9 Do you think that 1-hour English session per week is sufficient?

Yes ☐ No ☐

If no, how many hours do you suggest? …….

10 What is your Remarque concerning the design of the syllabus

11 Do you think yourself able to teach ESP course for math and Computer Science students?

Thank You For Your Collaboration

Appendix C

CALCULATION TERMINILOGY :

Symbol	Operation
+	added by/plus/and
-	subtracted by/minus/take away
ò	multiplied by/times
÷	divided by/over
=	is equal to/equals/is
÷	is not equal to/does not equal
<	is less than/is smaller than
>	is greater than/is more than
á	is less than or equal to
ñ	is more/greater than or equal to
]	is approximately equal to

Examples :
ax + b = 0 is a linear equation.
ax2 + bx + c = 0 is a quadratic equation.
3x3 - 2x2 + 3 = 0 is a cubic equation.
$\frac{a+b}{2}$ □ is called AM-GM inequality.

Examples

- 2+3=5

Two → is added by →three → is equal to→ five
plus →equals
and →is

2 and 3 are called **addends** or **summands**, and 5 is called **sum**.

- 10-4=6

Ten → is subtracted by → four → is equal to → six
Minus → equals
Take away → is

10 is the **minuend**, 4 is the **subtrahend**, and 6 is the **difference**

- 7□8=56

Seven → is multiplied by→ eight → is equal to → fifty six
Times → equals
→ is

7 is the **multiplicator** 8 is the **multiplicand**, and 56 is the **product**.

- 45÷5=9

Forty five → is divided by → five → is equal to → nine
Over →is

45 is the **dividend**, 5 is the **divisor,** and 9 is the **quotient**.

Appendix D

Semester: 01
Teaching unit: Methodology
Subject: Foreign Language 1
Credits: 2
Coefficient : 1

Teaching objectives :
The aim of this subject is to enable students to improve their general language skills in terms of comprehension and expression, as well as the acquisition of the specialized vocabulary of scientific and technical English.

Recommended prior knowledge: Basic knowledge of English

Content of the subject:

1. Reminders of the essential bases of English grammar

- The times (present, past, future ....)
- Verbs: regular and irregular.
- The adjectives.
- The auxiliaries.
- Construct sentences in English: affirmative, negative and interrogative, Formation of sentences. Other structures of English grammar.

2. Vocabulary, expressions and construction of technical texts
Computing and internet: technical vocabulary.
Construction of technical texts in English.

Assessment method: Exam (100%)

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