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# Designing Teaching Materials to Meet the Students' Needs in Learning English for Specific Purposes in Batna University

## An Experimental study

**Thesis submitted to the Department of English in candidacy for the Degree of "Doctorate Science" in English Language and Didactics**

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## Dedication

I dedicate this work to all my family.

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## Abstract

This study is conducted to investigate the needs of science and technology students in the use of English for Specific Purposes at Batna University through three different stages. Stage one: a needs analysis is carried out by two groups: 1st year master Science and Technology students and their teachers of English using a questionnaire for the students and a structured interview for their teachers of English. Stage two: students' needs are matched with the course objectives, and lessons are proposed and implemented in a period of ten weeks. In the third stage an experiment is carried out on 2ndyear master Environment Protection and Ecology students. The findings reveal the necessity and urgent need of ESP course based on learners' needs.

## List of Abbreviations

EAP: English for Academic Purposes

EFL: English as a Foreign Language

EOP: English for occupational Purposes

ESP: English for Specific Purposes

GE: General English

LSP: Language for Specific Purposes

NA: Needs Analysis

SP.LT: Special Purposes for Language Teaching

TESP: Teaching English for Specific Purposes

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## General Introduction

### 1-Statement of the Problem

Nowadays, it is clear that English is the international language of science and technology. A large body of scientific publications are written in English. Using the latest scientific and technological information requires a good command of English. Thus, English language is necessary for anyone who wants to update his academic research and develop his/her field of study.

However, the current situation of English for specific purposes language teaching at the University level for Science and Technology students does not lead to good results. There seems to be a discrepancy between the learners' needs and teachers' classroom practices. This gap is the result of the nonexistence of a course designed to these students, and the inadequacy of teaching materials as well as methods.

Therefore, a new course based on students' needs should be designed. It is essential to identify the academic needs before designing a language course (Munby.1978; Robinson, P. 1991;

West,R.1992; Waters, P. 1993; Harding, K.2007).Student's needs, requirements, and interests should be taken into consideration when designing teaching materials.

## 2- Hypothesis

Effective teaching /learning process is better achieved when it is based on learners' needs, and that learners' needs and preferences are determinant factors in course design and learner autonomy development.

## 3-Objectives of the Study

The five main objectives of the study are:

a- to identify students' language needs,

b- to determine students' weaknesses in English language skills ,

c- to determine the extent to which their opinions match those of their teachers,

d- to plan lessons based on the findings of needs analysis,

e- to measure students' progress through an experiment and determine their attitudes towards the new lessons.

## 4- Research questions

1. What are students' perceptions of their language needs?
2. How do students rate their own competence in particular skills?
3. What are the differences between student perceptions and teachers views toward the teaching learning process?
4. Does the emphasis on students' needs improve their language proficiency or not?
5. What are the students' attitudes towards the lessons and teaching method?

## 5-Methodology of the study

This study explores the needs of learning English for specific purposes (ESP) in an academic and scientific context. It targets the design of teaching materials to be implemented in English classes with university students. Thus Needs Analysis, ESP, and Materials Design are the major variables of the research. To deal

with these variables, we hypothesis that effective teaching /learning process is better achieved when it is based on learners' needs, and that learners' needs and preferences are determinant factors in course design and learner autonomy development. Questionnaires, interviews, tests, and materials implementation are the adequate research tools to carry out such a research project.

## 6. Limitation of the Study

First, the study was conducted with agronomy students. This definitely reduces the possibility of generalizability to other fields of study.

Second, it is recommended to conduct similar studies with wider population.

## 7. Structure of the Study

The dissertation will start with an abstract followed by six chapters and ending with appendixes. The Literature Review will be presented in three chapters the first chapter first define ESP

from different views. Second, we will try to highlight the difference between ESP and General English (GE), and finally, we will explain its origins as well as its branches.

In the second chapter, we will begin with a brief theoretical introduction about the concept of Needs Analysis and present two NA taxonomies that, if implemented, should provide English language teachers with a well-rounded idea about their learners' needs. Then, we will discuss NA importance as well as the pedagogical implications the third chapter will be devoted to the situation of ESP in Algerian Universities with special emphasis on the departments of science and technology at the University of Batna. Chapter 4 will give a description of the methodology used for research: the aim and objectives of the research as well as the hypotheses will be stated, the data collection methods will be discussed, the analysis technique used will be described and limitations that were encountered during the research will be stated. Chapter 5 will be solely for the presentation and

interpretation of the results. The last chapter concludes and recommendations for further research will be given.

# CHAPTER ONE: ENGLISH FOR SPECIFIC PURPOSES

# Chapter one: English for Specific Purposes

## Introduction

In this chapter, we will first define ESP from different views. Second, we will try to highlight the difference between ESP and General English (GE), and finally, we will explain its origins as well as its branches.

### I.1 Definition of ESP

E.S.P. is generally used to refer to the use of particular variety of English in a specific context with a specific speech community.

Hutchinson and Waters (1987) consider E.S.P as an approach to language learning based on learners' needs.

Dudley-Evans (1997) divided his definition into :

**Absolute Characteristics**

1. ESP is defined to meet specific needs of the learners

2. ESP makes use of underlying methodology and activities of the discipline it serves

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

**Variable Characteristics**

1. ESP may be related to or designed for specific disciplines

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

3. ESP is likely 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 generally designed for intermediate or advanced students.

5. Most ESP courses assume some basic knowledge of the language systems

From the definition, we can deduce as made by Hutchinson et al. (1987:19), "ESP is an approach to language teaching in which all decisions as to content and method are based on the learner's reason for learning".

## I.2 ESP versus General English (GE)

What distinguish ESP from GE is learners' needs. That is, ESP students are adults with at least a minimum competence in General English and are learning English for Specific Purposes in order to communicate efficiently in the target situation.

Therefore, needs analysis is a pre-requisite and the starting point for any ESP program.

EFL and ESP differ not only in the nature of the learner, but also in the aims of instruction. In EFL classes, either in middle or

secondary schools , for example all four language skills; listening, reading, speaking, and writing, are given equal importance, in ESP a needs analysis determines the skill needed by the students. Thus, ESP is a training that aims at developing a restricted competence in a specific field of study, whereas GE aims at educating learners to develop a general competence in every day English communication.

## I.3 ESP Branches

Johns (1991) provides the following model for instruction in English:

**English for Specific Purposes (ESP)**

| English for Occupational Purposes (EOP) | | English for Academic Purposes (EAP) | |
|---|---|---|---|
| English for Professional Purposes (EPP) | English for Vocational Purposes (EVP) | English for Academic Purposes (other than EST) | English for Science and Technology (EST) |

**Subcategories of English for Specific Purposes (ESP) (Johns (1991))**

English for Specific Purposes (ESP), therefore, encompasses two types of instruction:

English for Occupational Purposes (EOP) and English for Academic Purposes (EAP).

Courses in English for Occupational Purposes focus more on developing a specific competence in a specific job. For instance, hotel staff who needs English to communicate with tourists.

English for Academic Purposes, on the other hand, is taught at university level to help students use English language to develop their knowledge in their field of study.

## I.4 ESP Stages and Development

During the past years, ESP witnessed different approaches regarding language teaching. The three major approaches are: Register Analysis, Skills-centred Approach, and Learning-centred Approach.

### I.4.1 Stage 1: Register Analysis

The register analysis represents the first attempt towards ESP materials between the 1960s and 1970s. The aim was to analyse the target situation in terms of frequency of grammatical structures and lexical items to be used as the basis of the course. As West (1997: 36) stated: “to establish the statistical contours of

different registers". The aim was to elaborate an ESP course that develops learners' linguistic competence.

This approach has received many criticisms, among the most serious being mainly descriptive and based on memorisation of grammatical rules and lexis, and activities based on translation. The focus of instruction was at the sentence level. As a result, the learners were less exposed to the target language (scientific and technical).

As Coffey (1984) concluded:

> "In short, register cannot be used...because there is no significant way in which the language of science differs from any other kind of language."
>
> (Coffey 1984:4-5)

Despite its limitations, Register Analysis is still used in present day. As Gavioli (2006) pointed out, in English for specific purposes (ESP), "working out basic items to be dealt with is a key teaching problem" (P. 23).

Pérez-Paredes, (2003) claimed that:

> “A keyword analysis based on a corpus that contains the specific text or discourse type in question can help solve this problem and assist teachers in “focus[ing] their efforts in terms in terms of selection in language contents”
>
> (Pérez-Paredes, 2003, p. l).

Flowerdew (1993) also claimed that:

> “ESP teachers should give priority to teaching those words and expressions that their learners will need later on to be able to handle texts in their subject area”.
>
> (Flowerdew (1993))

He added, for instance,

> “Having access to a corpus of biology readings and lectures can enable teachers to successfully address this issue and make informed decisions about item and text selection for their course.”
>
> (Flowerdew (1993))

Therefore, the shifts and the changes that followed register analysis saw the need to go beyond the surface level of the sentence to the deep level of discourse.

### I.4.2 Stage 2 : Skills and Strategies

Skills-centred approach was a reaction to register analysis in the 1980s. It was based on the assumption made by Allwright and Allwright (1977): ‘learning how to learn’. That is developing in our learners the necessary skills and strategies that enable them to become independent learner. For Hutchinson & Waters, the skills-centred approach language instruction is meaningful and discourse-based rather than sentence-based:

> “Underlying all language use there are common reasoning and interpreting processes, which, regardless of the surface forms, enable us to extract meaning from discourse”.
>
> (Hutchinson & Waters, (1987))

### 1.4.3 Stage 3: Learning-Centred approach

Hutchinson and Waters (1987), with this approach, attempted to view ESP course as a negotiated and dynamic process. Arguing that:

> ESP is not a matter of teaching ‘specialised varieties’ of English. The fact that language is used for a specific purpose does not imply that it is a special form of the language, different in kind to other forms. Certainly, there are some features that can be identified as ‘typical’ of a particular context of use and which, therefore, the learner is more likely to meet in the target situation. But these differences should not be allowed to obscure the far larger area of common

> ground that underlies all English use, and indeed, all language use.
>
> (Hutchinson & Waters 1987:18)

They believe that:

> "In terms of teaching, the analysis of the target situation is of secondary importance to the general development of competence in the learner. This competence is not only the knowledge to perform but to isolate 'how someone acquires that competence"
>
> (Hutchinson & Waters 1987:73)

They add that previous approaches to ESP were 'based on descriptions of language use' (Hutchinson & Waters 1987:14).

They believe that 'how someone acquires that competence' (Hutchinson & Waters 1987:73) is the most important. In their view, developing language performance and competence in our learners are of secondary importance, what is important is to develop in our learners meta-cognitive strategies and critical

thinking that can help them think, organise, and plan their own learning.

### I.4.4 Stage 4: ESP Today

Given the preceding historical view, today there is an agreement of the use of eclectic approach. As put by Dudley-Evans and St John (1998:30) ‘there is now acceptance of many different approaches and a willingness to mix different types of material and methodologies’.

This integrated or balanced approach, where all the skills are taught together, is the result of positive aspects of previews approach to ESP. As stated in Oxford (2001):

> “If these four skills are separated from one another, a language is taught; however, if they are integrated with each other, authentic communication is taught”.
>
> (Oxford 2001, 2).

## Conclusion

In the previous chapter we have discussed views and development of ESP from different point of view. We will turn now to Needs analysis.

# CHAPTER TWO: NEEDS ANALYSIS

**Introduction**

**II.1 Needs Analysis (NA)**

**II.2 NA Divisions**

**II.3 Importance of NA**

**II.5 Data Gathering Tools in NA**

**II.6 Informants in NA**

**Conclusion**

# Chapter two: Needs Analysis

## Introduction

ESP begins with the learner and the situation, whereas general English begins with the language.(Hamp-Lyons,2001, p. 126).

In this chapter, we will begin with a brief theoretical introduction about the concept of Needs Analysis and present two NA taxonomies that, if implemented, should provide English language teachers with a well-rounded idea about their learners' needs. Then, we will discuss NA importance as well as the pedagogical implications.

## II.1 Needs Analysis (NA)

As ESP practitioners we need to know exactly what we are trying to find out and what we will do with the answers before we start. (Berwick,1989:62)

According to Maley (1983)

> “It is not practical to attempt to teach the whole of a foreign language, as this will require more time and effort than is practically possible for the majority of learners and teachers alike. Focusing on the reasons why learners need to learn the foreign language will better enable language teaching professionals to cater for their learners' specific needs and save a lot of wasted time and effort.”
>
> Maley (1983)

Hutchinson and Water (1987) stated that needs analysis started mainly in the field of ESP. Nevertheless, they argue that as far as needs analysis is concerned, there should not be any difference between ESP and General English (GE). They state that:

> "It is often argued that the needs of the general English learner, for example the schoolchild, are not specifiable. . . . In fact, this is the weakest of all arguments, because it is always possible to

> specify needs, even if it is only the need to pass the exam at the end of the school year. There is always an identifiable need of some sort. What distinguishes ESP from General English is not the existence of a need as such but rather an awareness of the need”
>
> (Hutchinson and Waters 1987, p. 53).

They added, "any language course should be based on needs analysis" (p.53).

Similarly, Richards (1990) believes that needs analysis procedures have become fundamental for language courses".

Nunan (1988, p. 13) focuses more on the information-gathering process; he states that "techniques and procedures for collecting information to be used in syllabus design are referred to as needs analysis".

John (1991) holds that the greatest contributions of English for Specific Purposes (ESP) to language teaching has been its

emphasis on careful and extensive needs analysis for course design.

Thus, a good starting point for designing an ESP course is an understanding of students' needs (Flowerdew and Peacock (2001)).

West (1994,p.1) defined needs analysis as :

> « Identifying what learners will entail to do with the foreign language in the target circumstances and how learners might best master the target language during the training period ».
>
> (West (1994, p.1))

Brown(1995) believes that needs analysis is:

> “systematic collection and analysis of all subjective and objective information necessary to define and validate defensible curriculum processes that satisfy the language learning requirements of students within the context of particular institutions that influence the learning and teaching situation”.
>
> (Brown, 1995, p.36 )

Dudley-Evans & St John (1998) state that "needs analysis is the process of establishing the what and how of a course" (p.121).

To sum up, needs analysis is the corner stone of ESP and leads to a more focused ESP course by setting the basis of the course in terms of what to teach and how to teach.

## II.2 Needs Analysis Divisions

Hutchinson and Water (1987), identify the following divisions:

1) Target Situation Analysis: They look at the target situation in terms of necessities, lacks and wants.

a) Necessities: i.e. what the learner has to know in order to function effectively in the target situation.

b) Lacks: what the learner knows already, as this helps us decide which of the necessities the learner lacks.

c) Wants: learners' wants and their views about the reasons why they need language and in what context language will be used.

2) Learning Situation Needs: Learning needs is the gap between the starting point (lacks) and the destination (necessities).

West (1994) proposed the following delineation:

1) Target situation analysis: it identifies the necessities, i.e. what the learners need to know in order to function effectively in the target situation.

2) Deficiency analysis: it is the gap between the present situation analysis and target situation analysis, i.e. what the learners already know (strengths and weaknesses in language, skills, and learning experiences) and need to know to function effectively in the target situation.

3) Means analysis: it is mainly concerned with the logistics, practicalities, and constraints of needs-based language courses.

For Holliday and Cooke, (1982:133) "means analysis is suggested as an adjunct to needs analysis to establish a workable course design".

Thus, needs analysis is explained in terms of three main situations shown in the following figure 2:

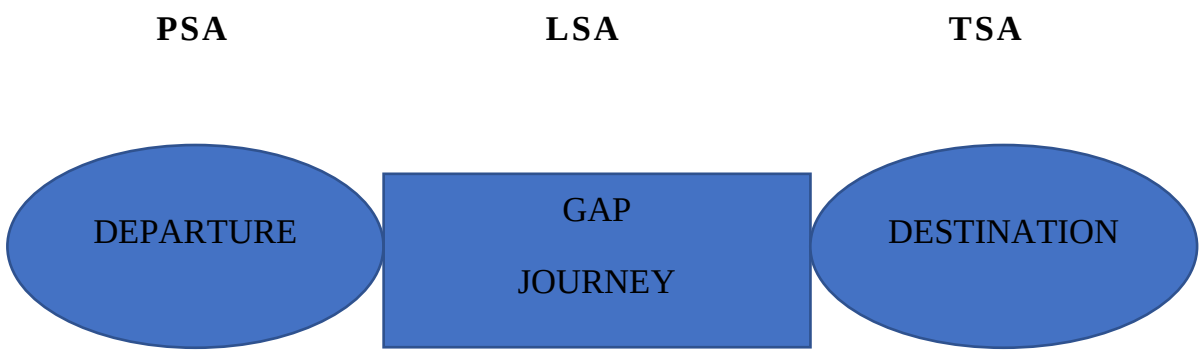


**Figure 2 : Needs Analysis Taxonomy**

**Target Situation Analysis (destination)**: seeks to find what learners need to know in order to function effectively in the target situation, using observation of the real life English and analysis of authentic written documents.

**Present Situation Analysis (starting point)**: seeks to assess learners' level at the beginning of the course, using questionnaires, interviews, and tests (IELTS, TOEFL, ETC...).

**Learning Situation Analysis (journey)**: it is the gap between TSA and PSA that seeks to set the content of the course and a teaching method to bring our learners as close as possible to the target situation

## II.3 Importance of NA

Robinson (1991) believes that needs analysts should be cautious in collecting information from various sources due to the multiplicity and diversity of the views on prerequisites for an ESP course.

Richterich and Chancerel (1987) distinguished three sources of pre-course needs indicators:

- students (their needs and proficiencies),

- students' employers,

- academic organisation.

West (1992: 12) maintains that 'Needs as interpreted by the sponsors may indeed conflict with the needs felt by the learner."

Hutchinson and Waters (1993) suggests that

> “Learners’ perceived wants and wishes should be considered carefully, and due to objective and subjective reality of needs, each learning situation should be considered uniquely and systematically.”
>
> Hutchinson and Waters (1993)

Richards (1990) holds that:

> “The data to be collected from learners, teachers, administrators, and employers in the planning process will help to identify general and specific language needs and content of a language programme. Besides, it will provide data to review and evaluate the existing program.”
>
> Richards (1990)

The research to date emphasises the significance of a needs analysis for devising a course, writing textbooks or course books, and the kind of teaching and learning that takes place (Robinson, 1991; Jordan, 1997)).

The importance of Needs Analysis cannot be denied of its credibility in identifying the content of ESP course. Therefore, needs analysis is a prerequisite for any course in teaching and learning English for specific purposes. It is also the starting point of ESP course design that describes the gap between what exists and what is needed, and gives us a clear picture of :

1- the current situation

2- Gap ( pedagogical and methodological means)

3- the target situation

## II.4 Sources and Tools in NA

Several researchers have pointed out the importance of triangulation of data gathering tools as well as informants to yield reliable information.

According to Davis (1992):

> "Persistent observation and triangulation are procedures used by researchers working within the qualitative research or naturalistic research traditions to help them validate their data and to increase the credibility of their interpretation".
>
> ( Davis 1992, cited in Long .M.H 2005, p.131)

West (1991) and Brown (1995) mentioned that "In order to get a complete and accurate picture of learners' needs, multiple sources or triangulation should be used in a needs analysis."

Long (2005) also suggested "multiple sources and methods in a needs analysis to cover all dimensions of language used at workplace".

Most of scholars agree on the advantages of triangulating the sources, and data gathering instruments. Thus, including wide range of tools and informants in needs analysis increase the validity of findings and data analysis.

## Conclusion

So far, we have presented various definitions and classifications of NA, its importance as well as the data gathering tools. Next chapter will be devoted to the situation of ESP teaching at the departments of science and technology.

# Chapter three: The Situation of ESP at the Faculty of Science and Technology

## Introduction

### III.1 The LMD system in Algeria :

### III.2 The educational purposes of learning foreign languages

### III.3The Status of English

### III.4The Training EFL Teachersin Algeria

### III.5Methodology in ESP Classes

## Conclusion

# Chapter three: The Situation of ESP at the Faculty of Science and Technology

## Introduction

In this chapter, we will discuss the situation of ESP in Algerian Universities with special emphasis on the departments of science and technology at the University of Batna.

## III.1 The LMD System in Algeria :

According to Rezig (2015), the LMD system was introduced in Algerian higher education in the 2004/2005 academic year; issued in the Executive Decree 04-371 of November, 21st 2004.

It aims at students' mobility and recognition of the degree in every part of the country and even abroad.

**The LMD designed three main grades:**

- The license, granted after three years of study.
- Master's degree conferred after two years of study.
- The doctorate after the completion of three years research and defending a thesis.

## III.2The educational purposes of learning foreign languages

According to (DES/WO 1990/3) the purposes are:

- To develop the ability to use language effectively for purposes of practical communication: To form a sound base of the skills, language and attitudes required for further study.
- To offer insights into the culture and civilisation of the countries where the target language is spoken;
- To develop an awareness of the nature of language and learning;
- To provide enjoyment and intellectual stipulations;
- To encourage positive attitudes to foreign language learning and to speakers of foreign languages and a sympathetic approach to other cultures and civilisations;
- To promote learning of skills of more general application (e.g. analysis, memorising, drawing of inferences).

## III.3TheStatus of English

The Algerian government taught English as the secondary foreign language for students beginning in the first year in the middle schools

Arabic and French language are used as a medium of instruction in higher educational institutions. The status of English is that of a foreign language. The demand for English has exploded in recent years due to its role as the global language.

## III.4TheTrainingEFLTeachersin Algeria

There are many higher educational institutions that train EFL teachers in Algeria, and which award degrees in EFL Teaching after three years of study. EFL curricula, however, do not cover the methodology of ESP teaching at university level. Thus, a typical ESP teacher is a General English teacher who is employed to teach an ESP course. The university students become teachers of English language in middle schools after completing three years study (Licence degree) or secondary school teachers after

completing five years study (Master degree). Alternatively, these graduates can also apply for eventual position as a part-time teacher in the department of English or other faculties such as Agronomy, Economics, and so forth.

After finishing three years post-graduate studies after Master degree, they are awarded doctorate degree, and therefore, can be recruited at the university as a full-time teacher.

### III.5Methodology in ESP Classes

ESP in the Departments of science and technology is considered as a secondary course. This is proven by the non-existence of course designed to this category of students.

The teacher is free to teach whatever he/she judges relevant. Most of classroom activities are based on grammatical structures and lexis to improving students' grammatical competence.

The conclusion is that grammar-translation is used in ESP classes.

## Conclusion

In the previous chapter we have discussed the situation of ESP in Algerian Universities in general with special emphasis on the departments of science and technology at the University of Batna, we will validate now our hypothesis through field work.

## Chapter Four Research Methodology

## ( Data Collection for Phase One)

**Introduction**

**IV.1 Choice of the Method**

**IV.2 Population**

**IV.3 Data Gathering Tools**

**IV.4 Procedure**

## Data Collection in Phase Three

**IV.5 Research Instruments**

**IV.6 Pilot Study**

# Chapter Four Research Methodology

## ( Data Collection for Phase One)

### Introduction

This chapter is concerned with the methodology employed to carry out the study. A detailed account of the subject and setting is provided and the design of the instruments, procedures of data collection including the methods of data analysis are also provided. A theoretical consideration of field work methodology is also addressed wherever appropriate.

It is presented in three parts corresponding to three steps.

Step I : needs analysis of science and technology students.

Step 2 : once needs are identified , it should be stated in terms of objectives, which in turn serve as the basis for selecting materials and teaching activities

Step 3: involves an experiment and an attitude questionnaire to students.

## IV.1 Choice of the Method

As far as the research method is concerned, in the present work we have used a triangulation method.

We believe that descriptive approach would be more adequate for our research. We think that knowing the actual and immediate state of the students' needs would be more fruitful than registering their past needs and hence the historical approach doesn't fit our present research. Moreover, the experimental design was not used in the beginning of our work because we are dealing with psychological factors that require introspection and observation of the subjects, rather than an experimental work. We used this research design in the second part of our work because we wanted to test the efficiency of the teaching material on our students. The use of the experiment was restricted to students in the department of environment protection and ecology because access to students is much easier compared to other departments.

## IV.2 Population

According to Borg & Gall (1994,p. 212)

> "One of our main goals in educational research is to obtain valid knowledge about some aspect of education and to apply that knowledge to a defined population. We almost never collect data from all individuals who make up our population, however. Instead, we select a sample of subjects from that population for study. The procedures we use in selecting our sample are very important because they determine the extent to which we can apply our findings to the population from which our sample was drawn."
>
> (Borg & Gall 1994)

The usual purpose of educational research is to learn something about a large group of people by studying a much smaller group of people. The larger group we wish to learn about is called a population, whereas the smaller group we actually study is called a sample.

Borg & Gall (1994) maintain that the method of selecting a sample is critical to the whole research process. If research

findings are not generalizable to some degree beyond the sample used in the study, then the research cannot provide us with new knowledge, cannot advance education as a science, and is largely a waste of time.

The sample should be selected by some process that permits us to assume that the sample is representative of the population from which it has been drawn on those variables that are relevant to the research we are planning to conduct.

Thus, to obtain information regarding the situation of ESP course at the Departments of science and technology, University of Batna, we dealt with two samples chosen from the following population:

a) The teachers of English at the departments of science and technology( 08 teachers).

b) The 1st year master students of the departments of science and technology (total number 554 students) as shown in the following table:

| Faculty of Science | | Faculty of Engineering | |
|---|---|---|---|
| Department | Number of Students | Department | Number of Students |
| Microbiology & Biochemistry | 34 | Mechanical Engineering | 21 |
| Biology | 36 | Electrical Engineering | 15 |
| Veterinary studies | 120 | Architecture Engineering | 70 |
| Microbiology&Biochemistry | 34 | Civil Engineering | 88 |
| Soil science | 28 | Hydraulic Engineering | 32 |
| Plant science | 18 | | |
| Food technology | 16 | | |
| Forestry | 18 | | |
| Environment Protection and Ecology | 32 | | |
| Total | 336 | Total | 218 |

As it is difficult to work on the whole population (about 554 students), both census and random sampling were used as a strategy to choose the sample.

First, we have opted for the entire population or census because of the small number of students, as shown in the table above, in the departments of: biology, microbiology & biochemistry, mechanics, electronics, plant science, soil science, food technology, environment and ecology and hydraulics. However, with rest of department namely civil engineering, architecture and veterinary, simple random sampling was used as a strategy because, according to Brown (2001:72) “each individual in the population must have an equal chance of being selected”, which reduce the effect of bias and enhance the objectivity. Thus, the total number of the sample: 374.

## IV.3 Data Gathering Tools

To answer the research questions, quantitative data from students' questionnaire as well as teachers' structured interview will be collected.

### a- The questionnaire

The questionnaire was designed for the purpose of gaining further insights into the situation in the departments of science and technology.

A questionnaire might be the only instrument that can serve as a means of collecting a considerable amount of data with a minimum of time and effort. It is not only easy to administer, but it also provides a general view of the investigated problem which is difficult to obtain by other means of investigation.

Questionnaires, as pointed out by Anderson (1990, p.207), allow the gathering of reliable and valid data, relatively, in a short time.

It is also “the most common and the most efficient method of needs analysis compared to other procedures” as stated by Brown (1992) and West (1994).

**b- The structured interview**

A structured interview is one in which the interviewer has a list of questions prepared for the interview.

It has several advantages. First, it is administered individually to members of the sample and the information is completed by the researcher himself, thus ensuring that all questions be answered by all informants. Second, the interview allows for personal explanations of questions, in case any point(s) need(s) to be clarified. For all the above reasons, as Anderson (1990) pointed out, the structured interview may be regarded as more reliable instrument, especially when dealing with a small sample. Gall, Borg, & Gall, (1996) also hold that “an interview permits open-ended explorations of topics and elicits responses that are couched in the unique words of the respondents”.

## IV.4 Procedure

A questionnaire was administered to students and a structured interview to their teachers of English.

The questionnaire was mainly concerned with the identification of students' problems in learning ESP. The students were asked first about the importance of English language in their studies, their weaknesses and strenghtheses in the four skills, their attitudes towards the ESP course and their teachers of English. They were also asked to make suggestions for a more successful course relevant to their needs.

Both open questions as well as closed ones were included.

The structured interview was designed to provide general information about the teachers, their training, the time allocated to English course and if there is a course designed to their students, and the methods they use. And finally, they were requested to give their own suggestions to enhance the teaching of ESP/EST courses in that department.

## Data Collection of Phase Three

### IV.5 Research Instruments

In order to measure the achievement of students before and after the study in the subject of English for specific purposes, a Pretest, Posttest, and attitude scale were developed for the study.

a- **Achievement test**

A test can be broadly defined as any instrument for assessing individual differences along one or more given dimensions of behaviour. (Water. B and Meredith.D.G, 2010). In our research we opted for achievement test because as stated by Water. B and Meredith. D.G,(2010):

> "Some kinds of performance, such as achievement, a measure that tells what the subject knows in absolute terms is often more useful than one that describes his or her performance in relative terms. For example , it is sometimes more useful to know that a student can read sample articles from a typical newspaper and be able to explain 90 percent of what has been read than to know that the student reads

> better than 62 percent of a sample of other fifth grade pupils."
>
> (Water.b and Meredith.D.G, 2010, p. 246).

This means that the test produces a score that tells us how the individual's performance compares with other individuals.

The test we have developed consisted of writing a summary ( abstract) of the research article. The latter was based on the assumption that writing an abstract could be a reliable measure of reading comprehension.

According to Randy W. et al.(2007) using writing in conjunction with reading strengthens student comprehension. Wellman, and Sandmann (2002) state "Combining writing with reading enhances comprehension, because the two are reciprocal processes. Gammill (2006) also contends that writing is "an excellent tool for building reading comprehension" (p. 754).

Hence, summarization training may lead to significant improvements in students' comprehension because it requires them to pay more attention to the text.

Behrens and Rosen (1982) state that a summary demonstrates your comprehension of information and ideas. It usually briefly restates in your own words the content of a passage. It should focus on the central idea and indicate all the main points in the passage that support the central idea, as well as the relationship between the ideas, including their order and emphasis. Similarly, Martha, H et al. (1989) investigated the effect of topic interest, writing ability and summarisation training on students' ability to summarise text. These effects were then concomitant effect on the issue of using summaries to measure reading comprehension. Their results indicated that each of these factors had some degree of influence.

In his article, Yu (2003) states that a good summary can prove useful for assessment of reading comprehension since it contains the relevant important ideas, distinguished accurate

information from opinions, and reflects the structure of the text itself.

**b- Attitude Questionnaire**

Zoltan N,(2010) states that the most famous type of closed-ended items is undoubtedly the 'Likert scale' which consists of a characteristic statement and respondents are asked to indicate the extent to which they 'agree' or 'disagree' with it by marking (for example, circling) one of the responses ranging from 'strongly agree' to 'strongly disagree'.

As shown in the appendix, the questionnaire comprises two sections. Section A includes thirteen statements representing the students' attitudes towards Learning English. Section B includes twenty-four statements representing the students' attitudes towards the lesson and teaching activities. The participants were asked to pick one of the choices strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, and strongly agree.

## IV.6 Pilot Study

Even though the schedules were carefully planned, it could not be guaranteed that they would work well in practice. Because of the potential problems in the use of all elicitation instruments, Borg & Gall 1994; Louis Cohen 2005argue strongly that all research should have a piloting phase. Also point out" All data-gathering instruments should be piloted to test how long it takes recipients to complete them, to check that all questions and instructions are clear and to enable you to remove any items which do not yield usable data. "Thomas (1996:122) concludes that it is better to pilot with two or three colleagues than not to pilot at all.

For the purpose of this research, a pilot study was used to find out if the questions were yielding the kind of data required and to eliminate any questions which might be ambiguous or confusing to the respondents. This was expected to result in some amendments being made to the instruments actually used in the study.

All the questions in the instruments (questionnaire, test & interview) were piloted with a small sample of subjects before being used. As Allison et al (1996:95) state:" For this purpose you need people who are of ability and background similar to your target population and who are willing to think aloud while filling in … They are the ultimate judges of what is clear and what is not". In addition, all the instruments used in this study were examined by a panel partly consisted of three experienced English teachers. The drafts were then sent to my supervisor for assessment and suggestions for improvement.

The results of the pilot were; on the whole, satisfactory. Based on the feedback gathered from pilot, a number of minor amendments were made.

## Chapter Five: Data Analysis and Interpretation

### Section one: Phase one

**Introduction**

**V.1.1Teachers' Interview**

**V.1.2 Students' Questionnaire**

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**V.2.Process of Developing a New ESP Course**

**V.2.1 StepI: Needs Analysis**

**V.2.2Step II: From Needs to Objectives**

**V.2.3 Step III: Formulation of content**

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**V.2.5 Step V: Course Planning**

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**Data Analysis and Interpretation of the Experimental Study**

**Introduction**

**V.3.1 Choice of the Method**

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# Chapter Five: Data Analysis and Interpretation

## Section one: Phase one

### Introduction

This chapter presents the results of the field work we have carried out at the Departments of Science and Technology during the academic year 2008/2009. The aim was to seek information about students' needs in learning English for Specific purposes (ESP).

### V.1.1Teachers' Interview

**Q1 and Q2: Status and Qualifications:**

| | License | Master | Doctorate |
|---|---|---|---|
| **Full time** | | | **4** |
| **Part time** | **4** | | |

**Table V.1.1: status and qualifications.**

The table above shows that four respondents are Part time teachers hold a license degree, and four full time subject teachers hold a PHD. Consequently, they should not be able to tackle the ESP course with confidence.

**Q3: Did you have any previous ESP training courses?**

| | |
|---|---|
| Yes | 0 |
| No | 8 |

**Table V.1.2: teachers' previous ESP training**

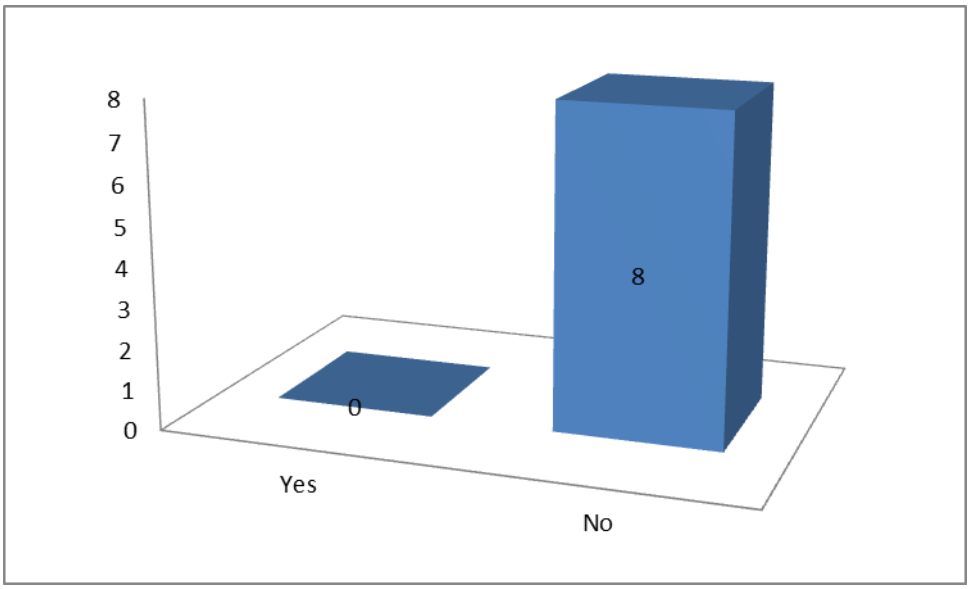



**Diagram V.1.1 :Teachers' previous ESP training**

The eight teachers we have interviewed said that they did not have any ESP training during their studies.

This is an evidence that English language teaching is not considered an important subject as the other subjects.

**Q3: English teaching experience:**

| | |
|---|---|
| years of teaching in middle schools | / |
| years of teaching in secondary schools | / |
| years of teaching at the University | 3 |

**Table V.1.3: English teaching experience**

None of the teachers has had teaching experience of English. Their teaching experience at the university level 3 years.

**Q4: What is the approximate average size of each class?**

| Size | Responses |
|---|---|
| 20-30 | / |
| 30-40 | 1 |
| 40-50 | / |
| 50-60 | 7 |
| Total responses | 8 |

**Table V.1.4: Class size**

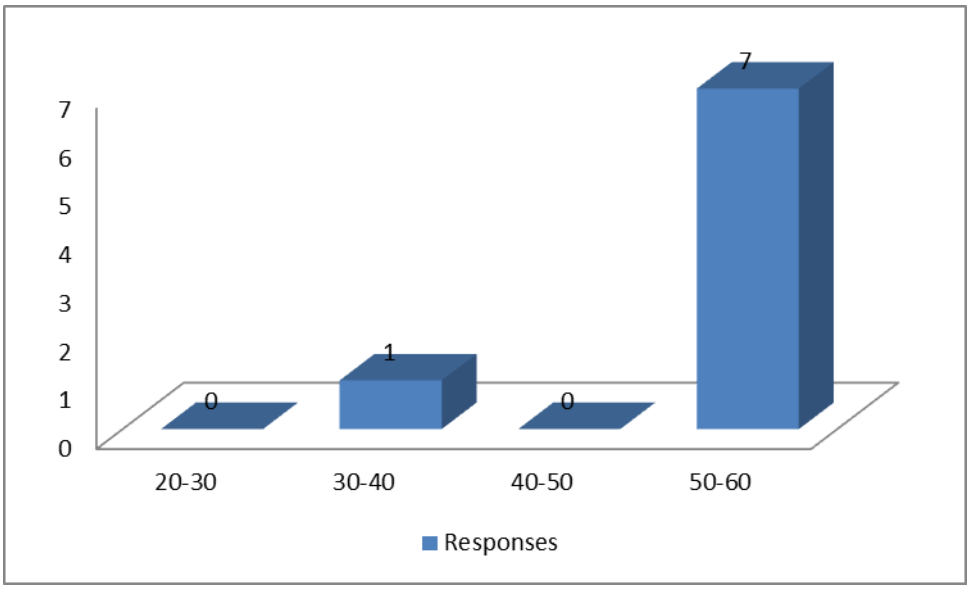



**Diagram V.1.2: Class size**

The responses from the questionnaire showed that the majority of the classrooms between 50-60 students.

**Q5: Do you have any special course designed for your students?**

| Yes | No | Total |
|---|---|---|
| / | 8 | 8 |

**Table V.1.5: course designed for students**

All the respondents said no. These results verify the hypothesis stating that the teaching conditions and practices are not adequate.

**Q6: Do the English teaching materials you are using cover the needs of the entire course?**

| Yes | No | Total |
|---|---|---|
| / | 8 | 8 |

**Table V.1.6: Evaluation of teaching materials**

Eight out of eight said no (8out of 8 said no). This implies that the course designed by these teachers do not satisfy the needs of the course.

**Q7: Order of the importance of English language teaching activities 1 = most to 6 = least**

| | 1 | 2 | 3 | 4 | 5 | 6 | Total |
|---|---|---|---|---|---|---|---|
| Listening comprehension | 0 | 0 | 0 | 4 | 0 | 4 | 8 |
| Reading comprehension | 8 | 0 | 0 | 0 | 0 | 0 | 8 |
| vocabulary | 0 | 0 | 0 | 4 | 4 | 0 | 8 |
| Scientific and technical English | 8 | 0 | 0 | 0 | 0 | 0 | 8 |
| Grammar | 0 | 0 | 0 | 5 | 0 | 3 | 8 |
| Writing | 4 | 0 | 4 | 0 | 0 | 0 | 8 |

**Table V.1.7: Importance of language skills**

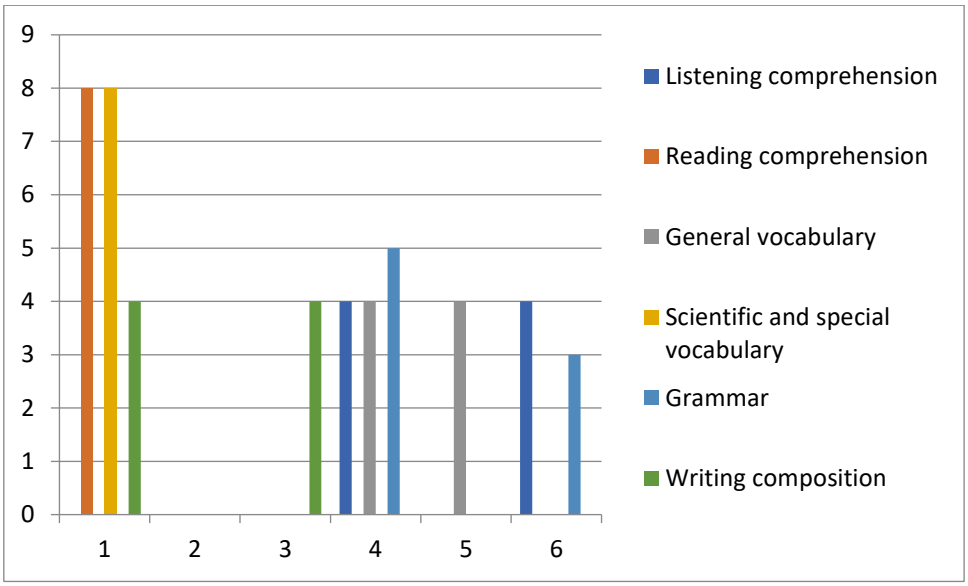



**Diagram V.1.4: Importance of language skills**

Reading and reading comprehension: According to the table the respondents have ranked this teaching activity as n° 1, they are aware that this skill is very important to student needs. The conclusion is that course should revolve more around this teaching activity, in order to meet the student requirements in this field of study.

**Q8: Classification of skills in terms of importance.**

| | Very important | Important | Not important | Total |
|---|---|---|---|---|
| Listening | / | / | 8 | 8 |
| Speaking | / | / | 8 | 8 |
| Reading | 8 | / | / | 8 |
| Writing | 4 | 4 | / | 8 |

**Table V.1.8: classification of skills**

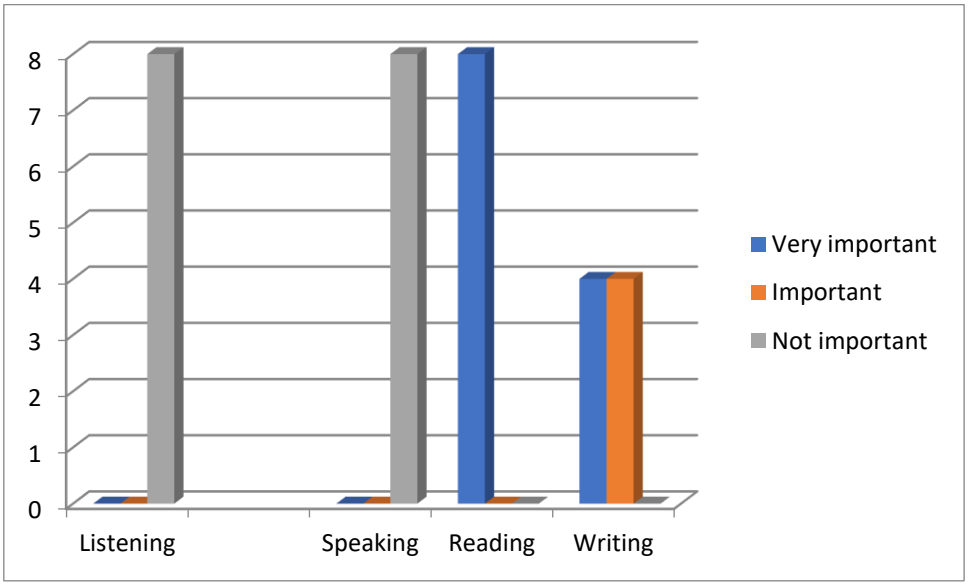


**Diagram V.5: Classification of skills**

This question deals mainly with the relative importance of each English teaching skill.

It is clear from the table above that all the respondents agreed that Reading is very important, as far as their students' needs are concerned. Discussion with the teachers showed that the students need only to scan research articles for specific information in their field of study..

**Q9: Students areas of weakness:**

| | |
|---|---|
| Vocabulary | 8 |
| Sentence structure | / |
| Reading comprehension | 8 |
| Grammar | 8 |
| Writing and composition | 8 |
| Speaking and conversation skills | / |
| Scientific and technical English | / |

**Table V.1.9: Areas of students' weaknesses**

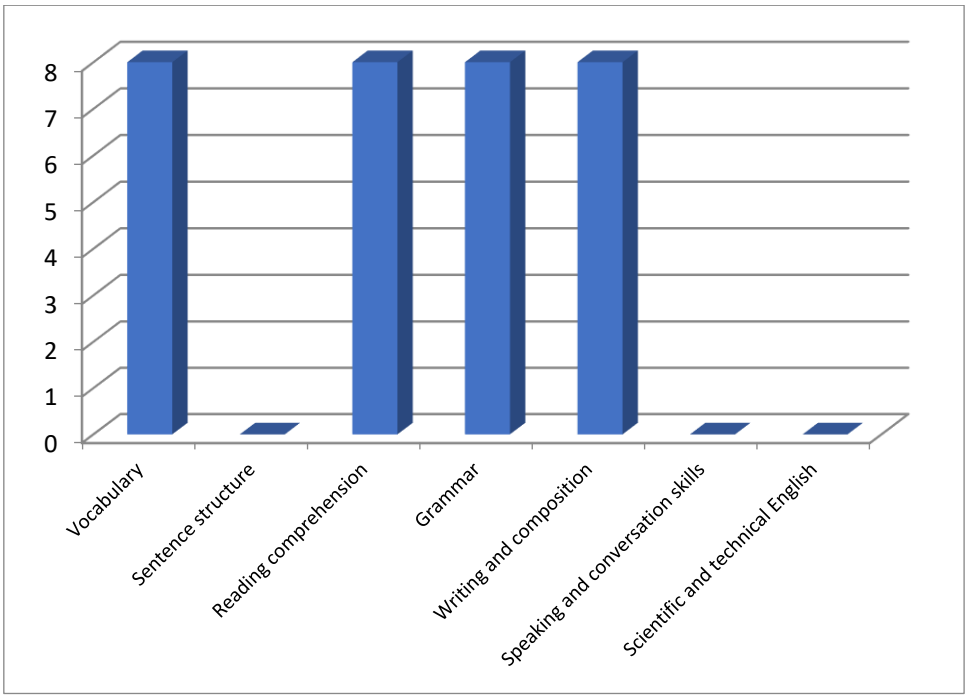



**Diagram V.1.6: Areas of students' weaknesses**

The area of students' weakness is vocabulary (8 teachers out of 8), reading comprehension (8 teachers out of 8) and grammar. This reflects the general lack of interest and motivation.

**Q10: Do the following objectives describe the teaching English language teaching in your Departments?**

| Objectives | Yes | No | Total |
|---|---|---|---|
| Attending lectures and courses taught in English | / | 8 | 8 |
| Studying English as part of the students' curricula | 8 | / | 8 |
| Training to use scientific & technical English | 8 | / | 8 |

**Table V.1.10: Objectives of teaching English**

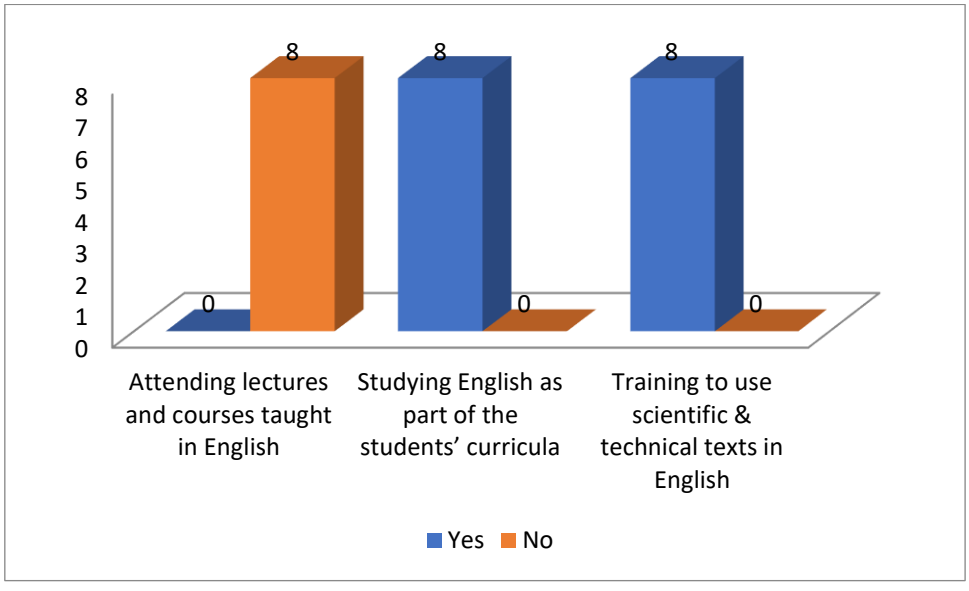



**Diagram V.6: Objectives of teaching English**

The table shows that the third objective is described by all respondents, i.e. using English in Scientific and technical texts related to their special field of interest.

**Q11: Students' needs in English language teaching in terms of teaching activities: rank of communicative skills;**

**1 = most to 4 = least**

| | 1 | 2 | 3 | 4 | Total |
|---|---|---|---|---|---|
| Understand lectures in their field of study in English | 8 | / | / | / | 8 |
| Take part in oral discussion in English | / | / | 8 | / | 8 |
| Read textbooks in their field of study | 8 | / | / | / | 8 |
| Write answers to examination questions | 8 | / | / | / | 8 |

**Table V.1.11: Rank of communicative skills**

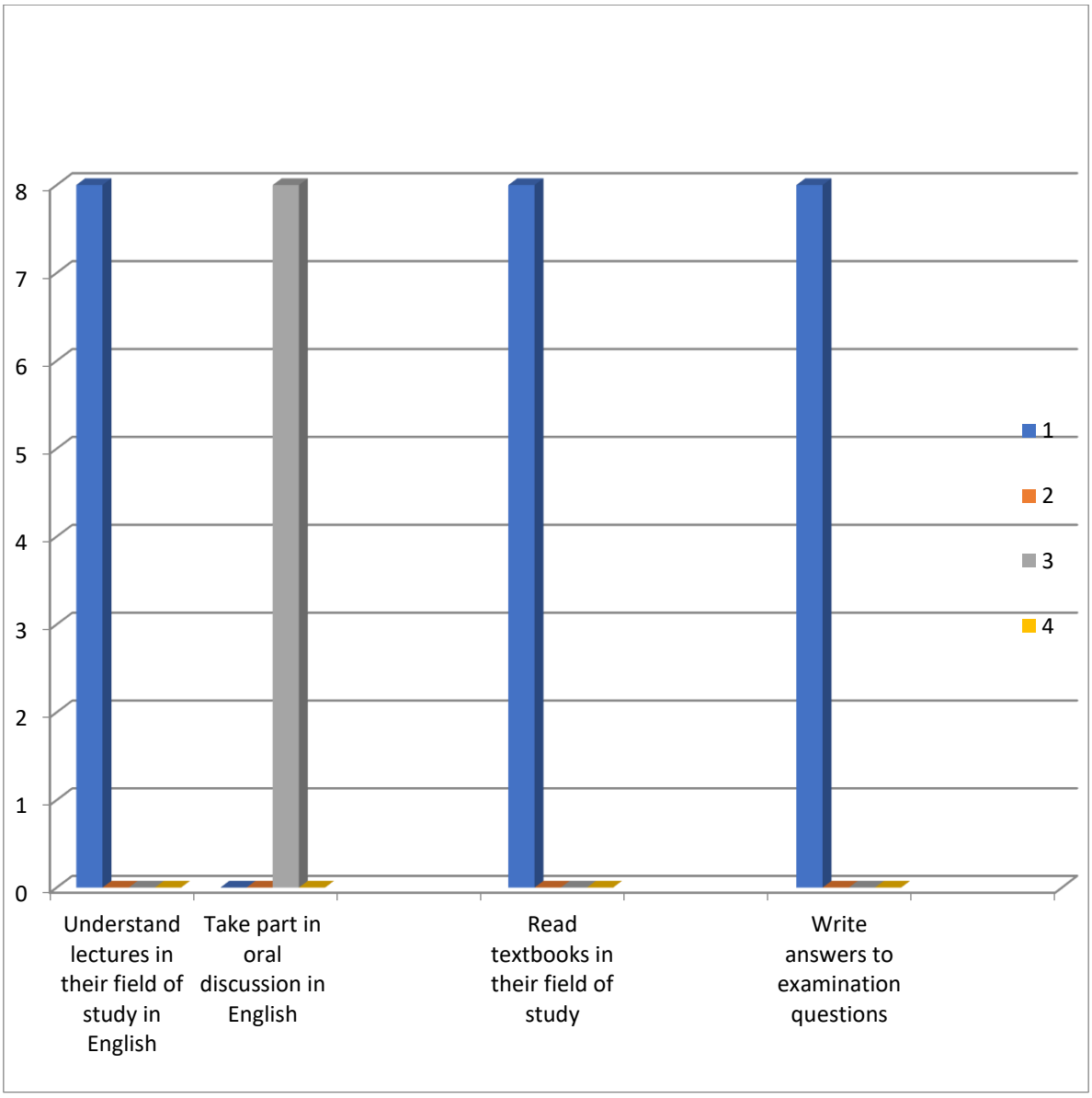



**Diagram V.1.7: Rank of communicative skills**

The table shows that item n° 3"read textbooks in their field of study" and writing skill were rated most highly..

**Q12: Do you work in collaboration with subject lecturers?**

| Yes | No | Total answers |
|---|---|---|
| / | 8 | 8 |

**Table V.1.12: Collaboration with subject lecturers**

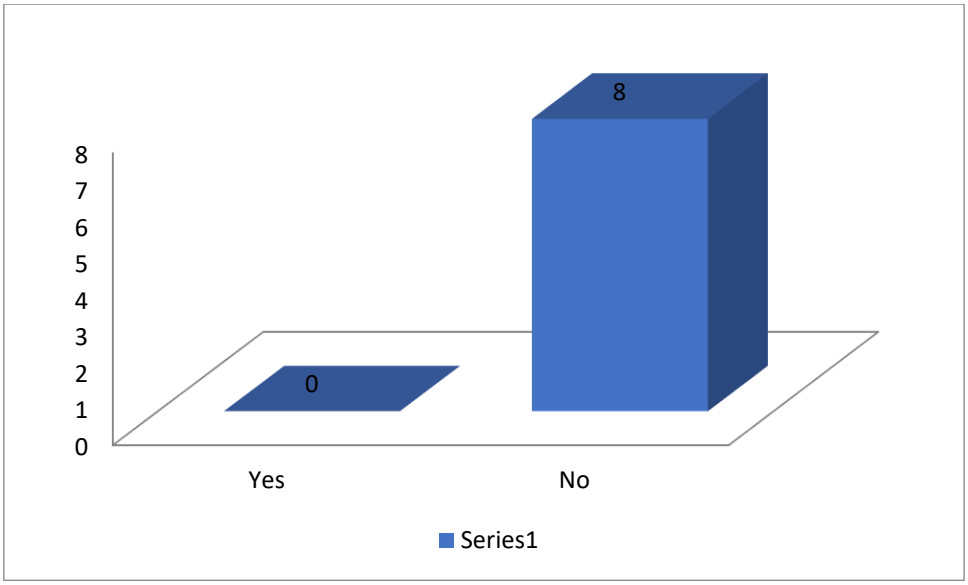



**Diagram V.1.12: Collaboration with subject lecturers**

The table shows that it does not happen (8 out of 8 said no).

**Q13: Use of translation into French/Arabic when teaching:**

**Table of results:**

| Always | Sometimes | Never | Total |
|---|---|---|---|
| 8 | / | / | 8 |

**Table V.1.13: Use of translation**

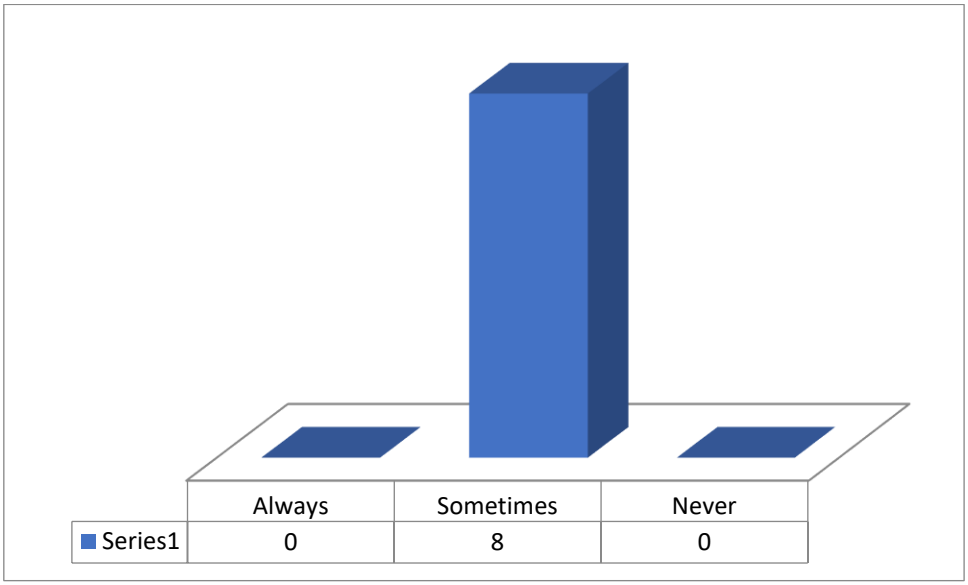



**Diagram V.1.10: Use of translation**

The majority of the respondents said ‘always’. Teachers believe that the use of translation in teaching EST facilities students’ understanding because of their low level in English.

**Q13: How do you evaluate your students?**

| Written | Oral | Both | Total |
|---|---|---|---|
| / | / | 8 | 8 |

**Table V.1.14: Type of evaluation**

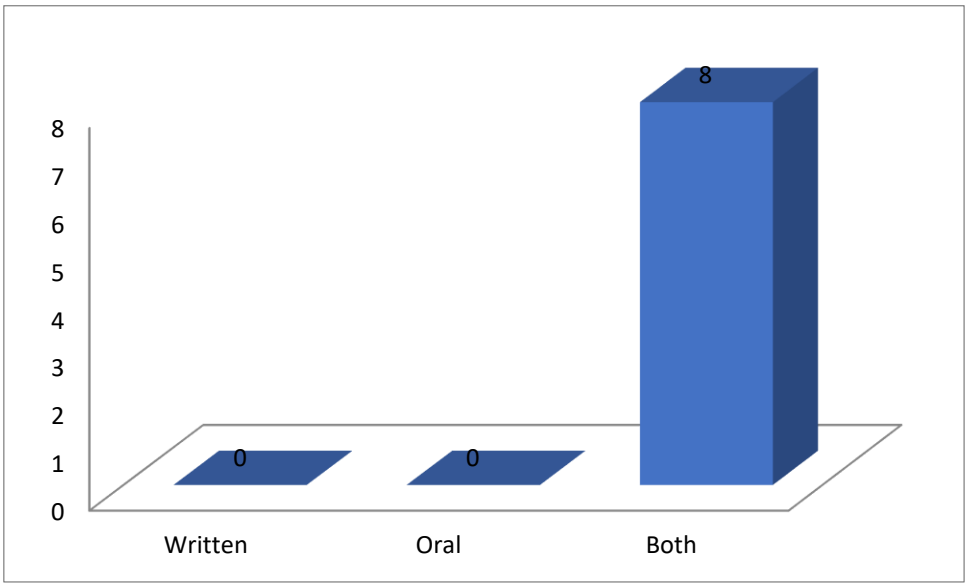



**Diagram V.1.11: Type of evaluation**

This question seeks information about the type of examination. In fact the examination procedure in Algerian universities is generally the same, a mixture of written and oral tests.

**Q14: What type of tests do you use?**

| A test with Questions on it | Multiple choice Questions | Essay Questions | Others | Total |
|---|---|---|---|---|
| 8 | / | / | / | 8 |

**Table V.1.15: Type of tests**

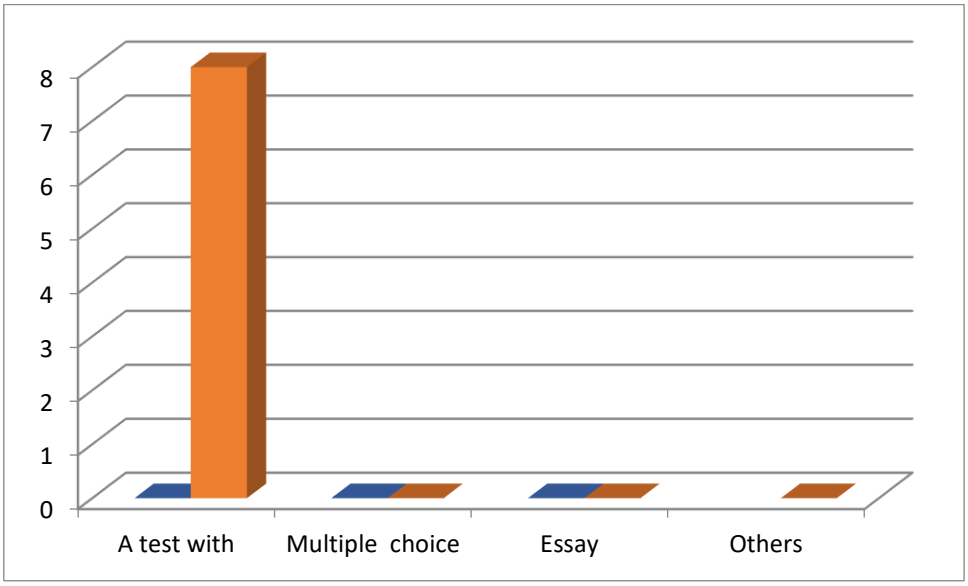



**Diagram V.1.12: Type of tests**

All the teachers agree that they assign students texts with questions based on them.

**Q15: How do the students find the content of the course?**

| They like it | They do not like it | Total |
|---|---|---|
| 3 | 5 | 8 |

**Table V.1.16: Students' opinion about the content**

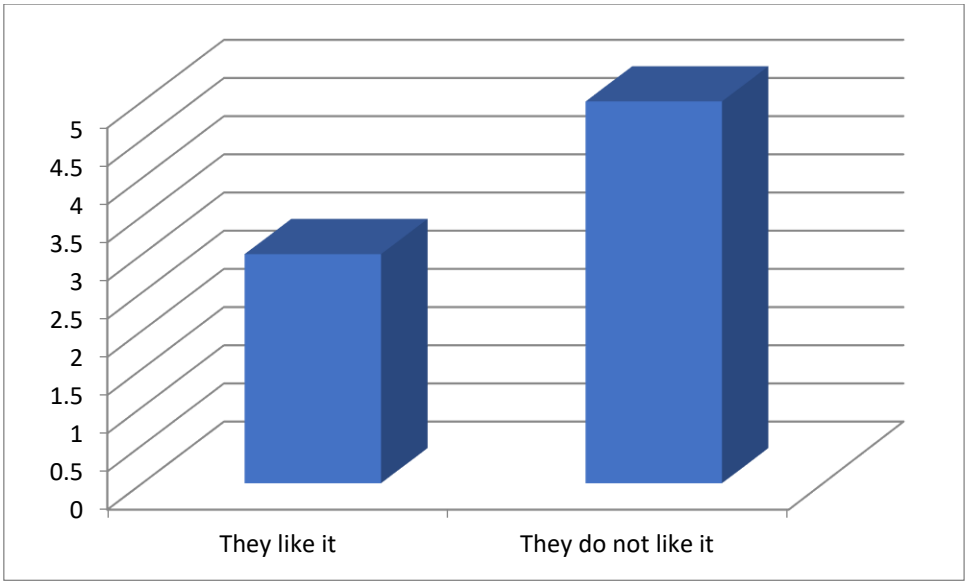



**Diagram V.1.13: Students' opinion about the content**

This question aims at evaluating the content of the teaching materials presented to the students. All the respondents feel that the content of the course is not interesting.

**Q16: Have you any suggestions for making the English course more effective and more relevant to the students' needs in their field of study?**

The respondents have no other suggestions for making the English course more effective and more relevant to the students' needs in their field of study.

### V.1.2 Students' Questionnaire

As has already been mentioned in the teachers' questionnaire report, in order to arrive at a better picture of the English teaching conditions and practices in the Departments of science and technology, it would be vital for the purpose of the study to ask the students about their learning difficulties, i.e.

To following section will be devoted to data analysis and interpretation.

**Background Information**

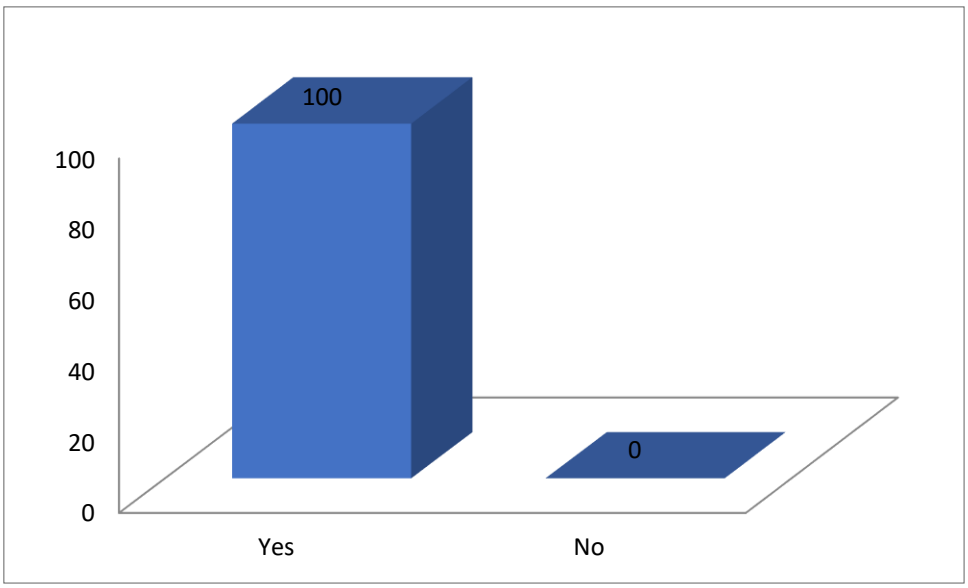
The sample included a total of 374 first year master students from the University of Batna who were enrolled in the English course during the second semester of 2009. Students were from the field of Agronomy, Biology, Chemistry, Civil engineering, Mechanics, Electronics and Veterinary studies. A total of 350 students completed the questionnaire at the end of the summer semester. All of our subjects had studied English as a foreign

language both at middle school and at secondary school, and one semester at the university.

**Q1: Do your subject teachers recommend you to read in English?**

| Yes | *No* | Total |
|---|---|---|
| 100% | / | 100% |

**Table V.2.1: Recommended reading**




**DiagramV.2.1: Recommended reading**

All the students agree on the importance of learning English, they also claimed that they have to read research articles in English assigned to them by their subject teachers in order to complete the course.

**Q2 : Relative importance of each skill (1 = most to 4 = least)**

| Item | Listening | Speaking | Reading | Writing |
|---|---|---|---|---|
| 1 | 35% | 32% | 48% | 5% |
| 2 | 30% | 23% | 20% | 26% |
| 3 | 22% | 17% | 16% | 27% |
| 4 | 13% | 28% | 16% | 42% |
| Total | 100% | 100% | 100% | 100% |

**Table V.2.2: Importance of the four skills**

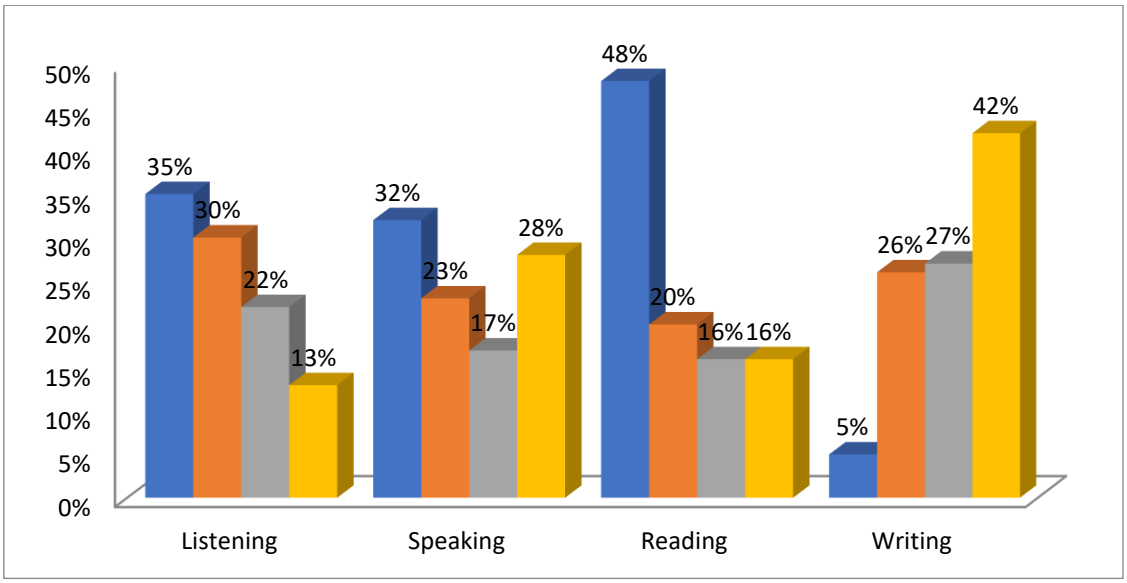



**Diagram V.2.3: Importance of the four skills**

From the table it is clear that reading is the most important skill. In fact, the reading skills are the important to be developed for science and technology students in Algeria.

**Q3 :Did you find any of the following difficult?**

| Listening | Speaking | Reading | Writing | Total |
|---|---|---|---|---|
| 21% | 45% | 15% | 19% | 100% |

**Table V.2.3: Students difficulties in the four skills**

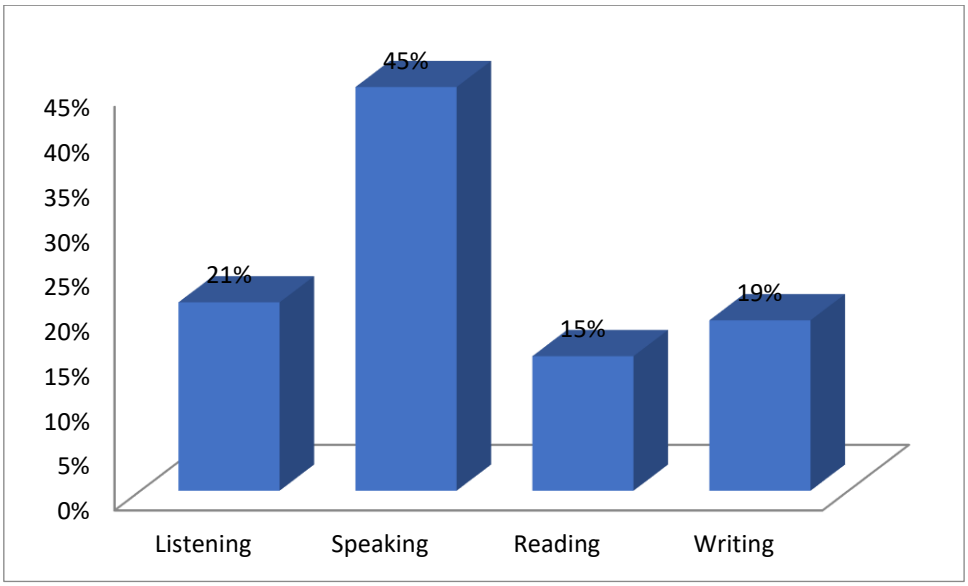



**Diagram V.2.4: Students difficulties in the four skills**

Most of students think that speaking is difficult for them. The listening skill is in second position of difficulty(21% ) then comes writing skills, with 19% and finally the reading skills with 15% reporting difficulty.

**Q4 :Do you attend English classes :**

| Yes | *No* | Total |
|---|---|---|
| 87% | 13% | 100% |

**Table V.2.4: Class attendance**

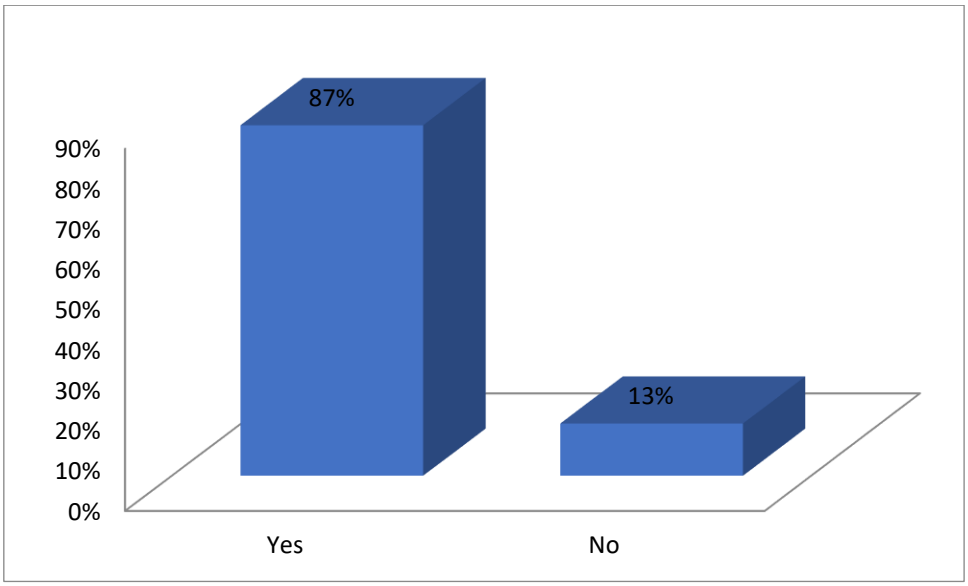



**Diagram V.2.5: Class attendance**

Most students said they attend regularly.

**Q5 : To what extent do the English courses satisfy your needs in your field of study:**

| Completely | *Partly* | Not at all | Total |
|---|---|---|---|
| 10% | 35% | 55% | 100% |

**Table V.2.5: students' opinion about the course**

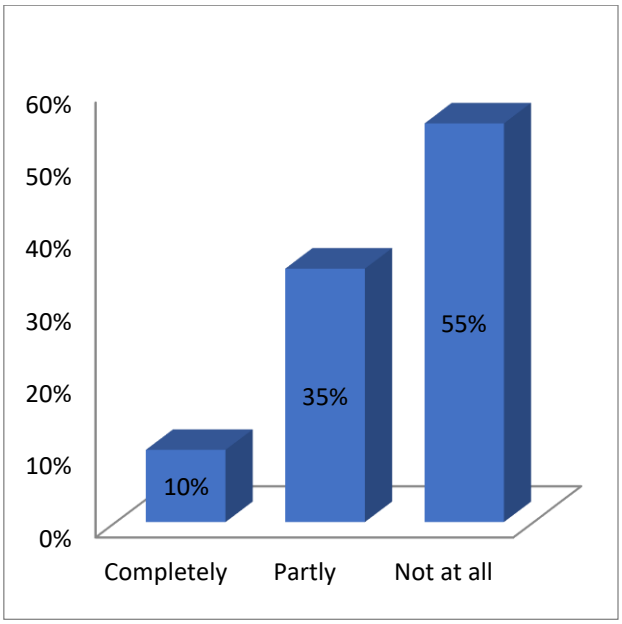



**Diagram V.2.6: students' opinion about the course**

**Q6: Does the teaching method used helped you acquire the necessary level of:**

| | Yes | No | Total |
|---|---|---|---|
| Listening skill | 34% | 66% | 100 |
| Speaking skill | 20% | 80% | 100 |
| Reading skill | 26% | 74% | 100 |
| Writing skill | 31% | 69% | 100 |

**Table V.2.6: Teaching method**

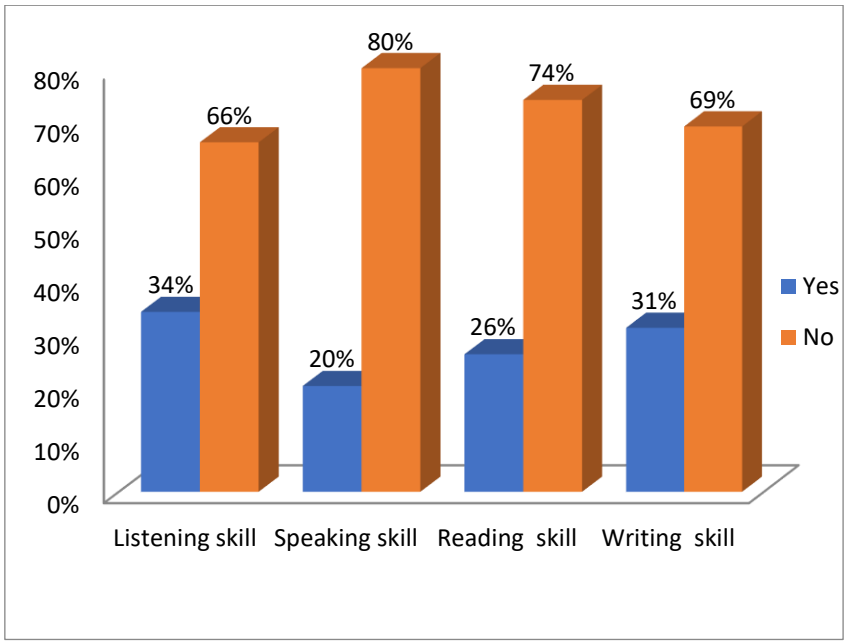



**Diagram IV.2.8: Teaching method**

The table shows clearly that the majority of the students find the teaching methods is inadequate to enable them acquire the competence that allow them to function effectively in the target situation.

**Q7: Is the time allocated to the English course:**

| Enough | Not enough | Total |
|---|---|---|
| 28% | 72% | 100% |

**Table V.2.7: Time allocated to the English course**

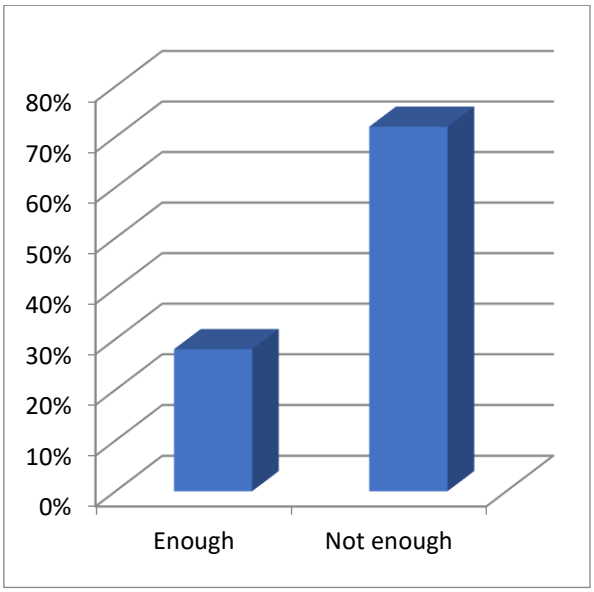



**Diagram V.2.9: Time allocated to the English course**

The table above is self-explanatory as the clear majority said that the time allocated to the English course is not enough.

**Q8: Do you have any suggestions for making the English course effective and useful to you as a student of science and technology**

## Discussion

Based on the findings, regarding the importance of English language, both groups of subjects think that the use of the English language is necessary, especially in the scientific world nowadays. As stated by Richards (1985):

> "A great deal of the world's scientific , commercial, economic, and technological knowledge is written in English, though the writers may be Chinese, Swedes, or Italians."

( Richards, (1985) cited in Nantaporn.N and Boosakorn.V (2001))

Drubin. D.G and Kellogg. D.R (2012) in their article maintain that' English is exclusively the language of science'.

As for the importance of the four skills, both groups agreed on the importance of the reading skills. This result confirms previous research done by many scholars.

A study by Gillett (2012) found that reading skills for academic purposes were important for most of the students to master the

readings of text books, technical journal articles, research reports, etc… written in English.

This finding is similar to findings of Azikiwe U(1998) and Nneji L (2014). In their study, they revealed that graduate students need reading skills to carry out research and to make optimal use of the information extracted from different sources.

As for the time allocation to the English course in the departments of science and technology, both groups said only one hour and a half per week during three academic years, which is not enough to develop students' communicative competence. As Holmes (1982) points out: "In ESP the main problem is usually one of time available and student experience. Accordingly, the objectives set by the teacher cannot be achieved during the course". Henbry (1997) made the same remark when he examined "The Impact of Class Schedule on Student Performance in a Financial Management Course" and found that the students would have less chance to understand the course if the course was scheduled just once a week.

Concerning classroom size, most of ESP teachers find difficulties in teaching large groups of students where the average size is 70. Becher (1999) agrees that students do not feel satisfied with large classroom, suggesting that ‘some learning opportunities may have been lost’. His view is similar with the findings of Bowden and Marton (1998) which suggest that “students and educators' motivation and attitude towards learning tends to be more negatively affected by larger classes”. Hence, no opportunity for students to practice or to be corrected.

In summary, and besides the non-existence of ESP course and inadequacy of teaching materials as well as methods of teaching revealed by both subjects, we believe that an ESP course based on learners’ needs is urgently needed for science and technology departments at Batna University.

## Section two: Phase Two

### V.2.Process of Developing a New ESP Course

Hutchinson and Water (1988) define course design as:

> "The process of interpreting the raw needs analysis data to produce an integrated series of learning experience to lead learners to a particular state of knowledge"
>
> (Hutchinson and Water (1988))

Thus, the key stages in ESP course design according to White (1988),Dudley Evans and St John (1998, p.121) are: needs analysis, setting objectives, formulation of content, material selection, course planning and teaching and learning, and evaluation.

### V.2.1 Step I: Needs Analysis

Needs assessment can prove two types of information. The first gives information on their current level on ESP and the second elicits information on what to achieve in ESP in the future work domain.

### V.2.2Step II: From Needs to Objectives

In this step, needs are translated to objectives in order to have a clear picture of what to teach, how to teach, and when to teach.

As Graves (1996) states, goals are general statement or final destination, the students need to achieve. Nunan (1988) maintains that the following seems to form the objective of a course:

1. Students will learn that.....

2. Students will be aware of.....

3. Students will develop.....

Thus, our EST students should be able to do the following:

1-Read & Comprehend authentic texts and glean information from written sources (journals, articles, etc…) in their specific discipline area.

2-Converse correctly on scientific topics

3-Listen to and understand specialized lectures in their field and take notes.

4-Summarize an article and write technical reports/research papers in their field of specialization.

Our study is concerned only with the first objective namely reading research articles , and this is due to the limited scope of this study.

The reasons behind using Reading research articles are:

First, needs analysis reveals that most of the students want to be able to read research articles in English in their field of study.

Second, most subject teachers assign their students research articles to read and summarize in order to complete the course.

Third, the professional performance of the overseas specialist studying or researching in a British universities must necessarily compare favorably with that of their native English fellow students. In other words, they must learn to master the skills requisite for taking information of a specialist. This last reason is directly connected with one of the most important objectives of the LMD system which is Mobility.

### V.2.3 Step III: Formulation of content

According to Stevens: (….) the content of SP-LT [special purpose language teaching] courses are thereby determined, in some or all of the following ways:

**I-restriction:** only those basic skills are included which are required by the learners' purposes.

**II-selection:** only those items of vocabulary, patterns of grammar, functions of language, are included which are required the learner's purposes.

**III-<u>themes & topics</u>:** only those themes, topics, situations, universes of discourse, etc are included which are required by the learner's purposes. (Cited in Robinson 1980:12).

Here teachers should determine which aspects of ESP learning will be included, integrated and used in the syllabus to meet the students' needs and expectation. In the case of science and technology, our students' ultimate goal of all reading is comprehension; that is, the ability to understand a text underlies all reading tasks. Thus, comprehension should be at the core of all reading instruction (Grabe and Stoller 2013).

That is, engaging learners in the act of reading through strategy instruction and structured lessons that include pre-reading activities, reading activities and post-reading activities to develop learners' knowledge and encourage creative language production through writing summaries.

According to Celano (2006):

> "Learners who struggle with comprehension possess inefficient strategies and use them inflexibly. They are usually unaware of what good comprehenders do and need to be shown how and when to apply a small repertoire of comprehension strategies."

(Celano ;2006)

Providing students with explicit instruction in comprehension strategies can be an effective way to help them overcome difficulties in understanding texts (Graham &Bellert, 2004). The more explicit the comprehension strategy and self-regulatory instruction, the higher the likelihood that the learner will make significant gains in comprehension (Manset-Williamson & Nelson, 2005). As learners become more competent and confident of their comprehension, the less support they require from the teacher. (Duke, N. K., & Pearson, P. 2002)

Short and Powers (2006) studied strategy instruction and its effect on students. When they compared the results, they found that students who were trained with strategies achieved better in their writing.

Two studies compared reading strategies of more and less successful EFL learners. Šamo (2006) found that more successful learners used more reading strategies compared to less successful peers.

Nikolov (2006) compared the use of reading and writing test-taking strategies of young top achievers and low achievers. Her study indicated that good language performance is linked to the use of strategies.

Another study was done by Macaro and Erler (2008) aiming to enhance the achievement of young-beginner readers of French through strategy instruction in England. The results revealed improvement and positive attitudes towards reading..

In addition, most of science and technology students are asked by their teachers to write a report after they carry out a field research or laboratory experiment. These reports obey to some universal principles of writing such as the rhetorical functions. These universal rhetorical functions are used to organise scientific and technical writing. Including these functions in the ESP course is important in developing students' reading comprehension and recall.

According to Meyer and Freedle(1984):

> 'Familiarity with the structural scaffolding, in which a reader constructs his expectations of text content, showed how awareness of rhetorical structure affected comprehension and recall'.
>
> (Meyer and Freedle(1984))

For Selinker (1976)et all, it is the students' lack of knowledge of the rhetorical structure of the discourse which hinders them. Both Hill and Swales (1981) are concerned with the same problem in their work. Carrell(1987) supports this view

claiming that knowledge of a text's structure aids comprehension and production of such texts.

Thus, in order to read efficiently, a student has to perceive and interpret not only lexical meaning but grammatical and rhetorical structure.

### V.2.4 Step IV: Material Selection

According to Tomlinson (2008):

> "Materials can be defined as anything or any source that can be used to assist the students in the process of language learning. It can be text books, workbooks, Audio video, photocopied hand outs, paper cutting or anything that informs the language being learned".
>
> ( Tomlinson (2008))

He added materials in ESP are tailored to meet the needs and interest of a specific group of learners.

Sysoyer (2000) stressed on the issue of centrality of the learner's needs analysis as the main features that many authors in the field of materials design agree of.

In the process of designing ESP materials, Harding (2007) suggested three recommendations to consider while coming up with a set of materials:

- Use context, texts, and situations from the students' subject area whether they are real or stimulated they will naturally involve the language the students need.
- Exploit authentic materials that students use in their specialism or vocation –Do not be put off by the fact that it may not look like 'normal English'.
- Make the tasks authentic as well as the tasks –Get the students doing things with the materials that they actually need to do their work.

In the context of Science and Technology studies, the materials used for these students are supposed to be integrated with the text that they use in the real world.

The main aim is that texts used should reflect the target situation and also should relate to their background knowledge.

**Points to consider when designing ESP materials**

According to Tomlinson (2008) the following points are of high importance when designing ES materials.

a. Generally speaking, the more focused the course, the greater the knowledge of the specialism required by the course designer and the teacher.
b. The learners will very often know more than the teacher about the topic area of the lesson.
c. The greater the specialization, the more obvious the differences in course content; however, all areas of ESP will share a common basis in general English.
d. In theory, it is easier to predict learners' specific language needs at the ESP end of the continuum.
e. The position of a course on the continuum in no way dictates what approach, method or techniques should be used in class.

f. A course especially developed for a specific context and group of learners will not necessarily be limited to the language used in that context. Depending on the time available, apparently unrelated EGP content can be used to develop fluency and provide variety.

g. The proficiency levels of learners may set limits on the level of specificity of a course. At lower levels, more attention will probably be given to proficiency in general English.

**A Recommended Sequence for Preparing Materials**

**(Tomlinson (2008))**

1. Determine the needs and preferences of the students and institution/corporation through questionnaires and /or interviews.
2. Decide what sort of language contexts the course will focus on (e.g., lectures, business meetings).
3. Decide on the categories presenting the language in the course (e.g., grammar, function, lexis, situation, topic, communicative skill)

4. Decide what language skills and sub-skills the course will focus on (e.g., listening, speaking, reading, writing) , taking into account learners' and company's objectives.
5. Design the syllabus; will it be cumulative, or will each unit/lesson be independent?
6. Decide the types of activities that will be used in the course (e.g., individual, pair, group, whole class).
7. Decide on the page layout of worksheets; prepare templates.
8. Prepare the materials.
9. Pilot the materials; collect and collate feedback through questionnaires and interviews.
10. Revise the materials.
11. Use the materials.
12. Get feedback from students, teachers and sponsors during and after the course through e.g., questionnaires, interviewers, classroom observations by peer teachers and managers, videotaping of lessons, lesson comment sheets.

13. Revise the materials if necessary. Periodically review the course.

**Key features in Material Selection**

According to Saraceni (2000) the main key features in material design are:

**1- Learner centred**

The materials should put learners at the center of the learning process whereas teachers and/or materials should represent the facilitator of language learning

**Universal**

Materials should be based on universally appealing topics. A rich source of this type of topics comes from research articles.

**2- Authentic**

Materials should be based on authentic texts. Therefore, the activities and tasks with such texts should also be authentic in order to expose the learners to realistic input.

### V.2.5 Step V : Course Planning

In order for the course to go smoothly and make the student understand the subject areas given in an ESP material, activities are given in an order. Thus we divided the lessons into two main sections

**Section one: Characteristics of specialist prose**

The use of passive in scientific and technical writing

Nominalisation

Grammatical and lexical metaphor

Tense in EST

Vocabulary in EST

**Section two: The research article**

Abstract

Introduction

Materials and methods

Results and discussion

In section one the student has the opportunity to learn the main features of scientific English as they appear in authentic texts related to his field of study.

Once the student is familiar with those features, s/he can understand the material presented in section two. That is, to understand rhetorical divisions and their functions of a research article in order to read experimental-research papers effectively, using the techniques of skimming, scanning and critical reading. A sample genre is examined in details: the research article.

### V.2.6 Step VI: Evaluating the Course

Course evaluation is the last stage. Teachers should evaluate their courses to improve and promote their effectiveness. Evaluation is usually described as implicit or explicit. It is also a way to show weaknesses or features that were just not suitable for the particular group of learners.

1- Implicit evaluation takes place during the semester, when learners, by their marks, participation, and motivation.

2- Explicit evaluation may take place at the end of the course. Using questionnaires, surveys, talks, etc. teachers ask the students to express their attitude towards the subject matter, instructional methods, activities, and teacher's role and so on.

### V.2.7 Sample lessons

Having specified reading as the students' most needed language skill, it was decided to design an EST course as an attempt to help students improve their academic performance. Thus, the main objectives of the course are twofold:

First, teaching the rhetorical organisation of experimental research papers by presenting information about the structure of research articles section by section. The course also includes teaching exercises on elements of English language usage that are particularly relevant to each section of a research article.

Second, teaching EST students to read experimental papers using the techniques of skimming, scanning and critical reading.

Our EST students face dual responsibility: learning English and using English to learn which needs great deal of written practice in the target language associated with study skills. Robinson (1980) states, 'A skill has to be mastered: it cannot simply be explained, but must also be extensively practised' (p. 32).

Hence, the following lessons take a practical approach to developing students' reading skills.

The research article used in this study was selected by subject teachers and retrieved from the following web site:

**Growth and Yield Response of Soybean to Organic and Inorganic Fertiliser in Edo Rainforest of Nigeria**



**Research article structure**

Conventional article structure: AIMRAD (Abstract, Introduction, Materials and Methods, Results, and Discussion).

The term IMRAD indicates a pattern or format more than the words covered by the abbreviation. With the American National Standards Institute (ANSI) adopting the term as the standard, first

in 1972 and again in 1979 (ANSI 1979), it has become the choice of most research journals.( cited in P. K. R. Nair and V. D. Nair, 2014)

## 1- Abstract

Abstract is a mini-version of the paper (Day 1998). The American National Standards Institute says ‘‘A well prepared abstract enables readers to identify the basic content of a document quickly and accurately, to determine its relevance to their interests, and thus to decide whether they need to read the document in its entirety’’ (ANSI 1979). Therefore, it is extremely important that the Abstract be written clearly.

**Subheading of Abstract**

Some background information, purpose of the study and its scope (from the introduction section)

Some information about the methods used in the study (from the method section)

The most important results of the study (from the results section)

A statement of conclusion or recommendation (from the conclusion section)

**Task 1 Analysing Summaries**

Read the Summary of the research article and identify which of the information elements listed above are present, and in which sentence(s). Discuss your findings with a colleague.

Compare your answer with our suggestions.

## 2- Introduction

**Framework for the structure of introduction sections**

Introduction sections have three essential steps.

**STEP1.SITUATION**: Explain the background and importance of the topic.

**STEP2.PROBLEM**: Review and show problems with previous research, methods, or theories in the field.

**STEP3.SOLUTION:** Introduce your paper as a solution to these problems or missing areas of research.

**2. Example analysis of an introduction section**

## STEP1. SITUATION

The use of fertilizer is one of the most important factors to increase crop yield in soya bean production. Phosphorus is an important element which application is necessary for growth, development and yield of soya beans [1]. Reasonable yield and profit can be obtained from the production of soya bean if farmers concern themselves with the various ways in which growth and yield of the crop can be enhanced. One of these ways is to consider the nutrient requirement of the crop. This is important because of the depletion of nutrients in the soil caused by continuous cropping. [2] suggested that for continuous use of land for crop production, organic and inorganic fertilizers must be incorporated into the soil as this will provide multiple benefits for improving the chemical and physical status of the soil as well as improve yield of soya bean.

[3] showed that adding compost to the soil along with fertilizer application will result in increased crop yield. [4] worked on the effect of packaged organic and inorganic fertilizers on the growth and yield of soya bean. The study showed that moderate rates of

NPK 15:15:15 fertilizer (100 or 200 kg/ha) can be applied to boost soya bean production. Similarly, low levels of packaged organic fertilizer can be applied as plants responded well to these levels in the experiment reported.

**STEP2. PROBLEM**

Application of mineral fertilizer as soil fertility management under intensive continuous cropping is no longer feasible due to non availability, high cost where available and the numerous side effects on the soil [5]. Farmers using mineral fertilizer for years usually notice signs of soil exhaustion shown by sick appearance of the plant, leaf discolorations, retarded growth and low yield. A combined use of both organic and inorganic fertilizer is beneficial.

**STEP3. SOLUTION**

Research has shown that adding organic manure along with mineral fertilizer will result in increase crop yield [3]. [6] evaluated the effect of fertilizer on the grain yield of soya bean. He reported that nutrients in inorganic fertilizers are readily

available for soya bean plant uptake upon application while the organic forms of nutrient are slowly available.

The objective of this study therefore is to examine the effect of organic and inorganic fertilizers on the agronomic performance of soya bean with a view to determining their optimum level for the crop.

The introduction often includes several verb tenses, each providing a different context for the statement that is accompanies.

First, when stating a fact that is widely accepted, the present tense is appropriate.

Examples : DNA is composed of four nucleotides” .

Use of the present tense signifies that the statement reflects the current understanding of the matter at hand.

Second, most introductions also include references to previous research. When referring to a previous study with results that are still relevant, use the present perfect tense.

Example:

Third, in some other parts of an introduction, the past tense is needed. When referring specifically to the methods used in a previous paper, the past tense is best.

Example:

The review of literature is presented in past tense (‘‘Studies showed that …’’), or in present perfect tense if it is common knowledge (‘‘Studies have shown that …’’). The objective is written in past tense (‘‘the objective of the current study was…’’).

1) Use **present tense** when a fact has been published.

*Streptomycin stops the growth of tuberculosis (Smith, 1980).*

*Several reports describe similar findings (Jones et al. 2005).*

*Larger cod females produce larger eggs (Kjesbu, 1989).*

2) Use the **past tense** for unpublished results.

*Fish larvae grew best at 21°C.*

To help students see what we mean by these stages, we first ask them to read the article introduction and identify the stages and their locations.

**Task 1Introduction stages**

Read the introduction of the article, decide if all stages are present, and mark where each one begins and ends.

Are some sentences written in the present tense? How many?

Are some sentences written in the present perfect tense? How many?

Which tense is used more? Why do you think this is the case?

How many sentences contain references?

What kinds of sentences do not have references?

**Task 2 Signal words for the research gap**

Reread the Introductions and identify the signal words that indicate a gap is being described. List them and then compare your answer with suggestions.

**3- <u>Materials and methods</u>**

The section should include the following:

• Exact description of the study location, plants or animals, material used with exact technical specification

•Design of the experiment with number of replications and sampling procedures used

•Statistical and mathematical procedures used to analyze and summarize the data.

Methods followed should be described, usually in chronological order, with as much precision and detail as necessary.

The Materials and Methods section is presented in past tense using the passive form.

Example: A field experiment was conducted at the Department of Crop Science

Transition phrases are also used to show relationships between steps in time and space.

EXAMPLES

Plants were thinned to 1 seedling per stand 2 weeks after planting. Weeding was done manually at 3, 8 and 12 weeks after sowing. Two weeks before planting, poultry manure was incorporated into the soil and the inorganic NPK 15:15:15 fertilizer was applied based on the treatment.

Structure of the passive

The passive voice is formed by some part of the verb **to be** put in the tense of the active verb plus the past participle of the main verb.[Verb be +ed].

EXAMPLES

Active sentence: I carried out the experiment.

Passive sentence: The experiment was carried out

**4- <u>Results</u>**

• Repeat in the text only the most important findings shown in tables and graphs; in other words, do not repeat in the text all or many of the data presented in tables and figures

• Cite in the text every table and figure by number

• Include only tables and figures that are necessary, clear, and worth reproducing.

The results section is written using the past tense

Example:

There was increase in plant height per plant of soya beans in response to the organic and inorganic fertilizer treatments when compared with the control.

The present tense is used when referring to figures, tables, sections, results, or data).

Examples: our results demonstrate that , Figure 1 shows ,…

**Task 1** Verb usage in Results sections

1 Read the extract from a Results section below and identify which verb tenses/verb forms are represented by the underlined words in each sentence(present, past, or modal verb). Can you think of a reason for the use of different tenses in different sentences?

**Task2**

In Results sections, the past tense is used to talk about . . .

The present tense is used in sentences that . . .

Modal verbs are used to . . .

## 5- Discussion

The discussion section consists of the following elements

1 A reference to the main purpose or hypothesis of the study, or a summary of the main activity of the study.

2 A restatement or review of the most important findings.

3 Explanations for the findings, supported by references to relevant literature.

4 Limitations of the study that restrict the extent to which the findings can be generalized beyond the study conditions.

5 Implications of the study (generalizations from the results: what the results mean in the context of the broader field).

6 Recommendations for future research and/or practical applications.

The Discussion section is written in both present and past tenses. Current knowledge (from literature) is stated in present tense, whereas the work being reported and discussed in the paper (your own work) is presented in past tense.

When referring to specific results or methods, use the past tense, but use the present when presenting conclusions (“we conclude that ….). It may include the future tense if directions for additional research are brought up.

**Task 1 Structures of Discussion sections**

Check the Discussion section of the selected research article.

. Does it include subheadings?

. Is it followed by a separate section headed Conclusion(s)?

**Task 2**

1- read the discussion section and mark the beginning and the end of each subheading?

2- Which tense is used in each subheading and why?

**Task2**

In which part of the research article do you think these fragments appear?

Reorder them to get a coherent Abstract?

a- The application of 2.5 t/ha poultry manure + 150 kg/ha NPK 15:15:15 is therefore suggested for the growth and yield of soyabean in Edo rainforest of Nigeria.

b- The experiment was laid out as a randomized complete block design (RCBD) in three replications with six treatments viz: 0, 200 kg/ha NPK 15:15:15, 10 t/ha poultry manure, 7 t/ha poultry manure + 60 kg/ha NPK 15:15:15, 5 t/ha poultry manure + 100 kg/ha NPK 15:15:15, 2.5 t/ha poultry manure + 150 kg/ha NPK 15:15:15. Parameters on vegetative and reproductive traits were taken on five randomly selected plants.

c- In tropical and subtropical areas, the importance of organic manure and inorganic fertilizer in increasing crop production for food security cannot be overemphasized.

d- Results showed that plant height, number of branches and number of leaves per plant were enhanced by organic and inorganic fertilizers. Similarly, combined application of organic and inorganic fertilizer

increased the pod weight/plant compared to the sole application of organic and inorganic fertilizer.

e- A field study was therefore conducted at the Department of Crop Science, University of Benin Teaching and Research Farm, Benin City, Edo State during the 2012/2013 cropping seasons, to investigate the effects of poultry manure and inorganic NPK 15:15:15 fertilizer on the growth and yield of soya bean (Glycine max (L.) Merr).

f- Application rate of 2.5 t/ha poultry manure + 150 kg/ha NPK 15:15:15 gave the highest grain yield of 7.367 t/ha followed by 5 t/ha poultry manure + 100 kg/ha NPK which gave (7.244 t/ha), application rate of 7 t/ha poultry manure + 60 kg/ha NPK gave (6.654 t/ha), while 10 t/ha poultry manure gave (3.889 t/ha) and this was followed by application rate of 200 kg/ha NPK 15:15:15 which gave (4.112 t/ha) and the control gave the lowest grain yield of (3.245 t/ha).

## Section three: Phase three

## Data Analysis and Interpretation of the Experimental Study

### Introduction

This chapter describes the choice of the method, the process of data analysis for the reading comprehension test, and the students' attitudes questionnaire

### V.3.1 Choice of the Method

According to Herbert W.S and Elena .S (1990,p. 148)

> "In the real world in which schools and classes exist, serious limitations are placed on the freedom of researchers to manipulate and control the conditions under which they conduct research. Language program administrators are generally unwilling to disturb their ongoing programs and allow reorganisation of classes in order to randomise the assignment of subjects to different experimental groups. Teachers are under pressure to advance the abilities of their students and are jealous of time taken from class, unless they feel that there will be some immediate beneficial effects, such as learning improvement or more effective teaching."

(Herbert W.S and Elena .S ,1990)

The research was conducted under conditions in which it was difficult to control many of the variables and in which subjects cannot be assigned to special groups for the purposes of the research.

This study involved classrooms in natural settings; thus, it cannot approach true experimental conditions and contains limitations within the research design that reduce the generalizability of results to a population other than the one studied.

Quasi-experimental designs (Campbell and Stanley, 1963) are constructed from situations which already exist in the real world, and are probably more representative of the conditions found in educational contexts.

In most educational settings random assignment of students by the researcher is rarely possible and therefore researchers often have to resort to a 'quasi-experimental design'. Quasi-experiments are similar to true' experiments in every respect except that they

do not use random assignment to create the comparisons from which treatment-caused change is inferred (Cook and Campbell I979). Because of the practical constraints, working with 'non-equivalent groups' has become an accepted research methodology in field studies where randomization is impossible or impractical.

The choice of research design was based on an attempt to explain variance in student achievement through teaching methods. Within the classroom setting, the methodology of the teacher plays a crucial role in student achievement; however, as Walberg (1984) explains, there are many other factors that affect student achievement that are beyond the control of the teacher and the researcher. Factors such as students' level and prior ability level in English language may be intervening variables that affect the external validity of this study.

### V.3.2 Population

26 students from Batna University studying in the 2nd year master Environment Protection and Ecology department participated in this experiment. The participants were already

divided into two groups and assigned to different treatment conditions.

The students of this department were chosen firstly, due to the cooperation of the head of the department, and availability of appropriate time, secondly, both groups were taught by the same teacher.

### V.3.3 Research Instruments

In order to measure the achievement of students before and after the study in the subject of English for specific purposes a Pretest, Posttest, and attitude scale were developed for the study. Achievement test (pretest as well as posttest) consisted of writing an abstract of the research article

The questionnaire and test were completed in class and the time allowed was 15 Minutes for the questionnaire and 105 for the test. Then, the answers were recorded and statistically evaluated using the SPSS (Statistical Package for Social Sciences).

The design of the study can be described as given below in the Table 1:

| **Groups** | **Pre-test** | **Experimental Design** | **Post-test** |
|---|---|---|---|
| Experimental | | Reading comprehension | |
| Control | | Terminology | |

Table 1.experimental design used in the study

As can be seen in Table 1, one can see the scales applied on the subjects of the study.

### V.3.4Procedure of the Experiment

1- The traditional approach was based mainly on translation. The students were being given simplified scientific texts and were asked to look up unfamiliar word in a dictionary. Then, they were asked to translate the texts into the mother tongue.

2- The approach with the experimental group was completely different, it was based on reading comprehension.

Three research articles in their field of study have been selected by subject teachers; the time devoted to practicing each of them was three sessions (4.30h). Each session presents a phase in the experiment.

1- With the first article, the approach followed was teacher-learner centred.

The students were first asked to read the abstract and skim its structure as first step towards grasping the meaning and to extract the information out of it .For example teacher's questions

Abstracts usually contain four kinds of information:

- purpose or rationale of study (why they did it)
- methodology (how they did it)
- results (what they found)
- conclusion (what it means)

The same activity was repeated by the teacher to decode the rest part of the research article (introduction, materials and methods, results and discussion, and conclusion)

2- With the second article, the approach followed was learner-centred.

The same process was repeated, however, with the second article, most of the work is done by the students in a group work. The teacher acts as a facilitator.

This process is repeated several times until it becomes mechanical.

3- With the third article, the students work individually.

The teacher removes the abstract before distributing it and asks the students to write the answers to the questions in an abstract format. The students then compare their abstracts with the original.

### V.3.5 Findings

The purpose of the study was, therefore, to investigate the effect of Reading comprehension instruction approach on 2nd year Master students' achievement and attitude towards the English for Specific Purposes.

The main objectives of the study were:

1. To measure the achievement of the experimental group and control group after providing treatment to the experimental group.

2. To measure the attitude of the experimental group and control group after providing treatment to experimental group.

3. To compare the achievement of the experimental group with the control group after experiment.

4. To compare the attitude of the experimental group and control group after providing treatment.

To achieve the above-mentioned objectives, following null hypotheses were formulated and tested:

1. There is no significant difference between mean achievement scores of the experimental group and the control group before the experiment.

2. There is no significant difference between mean attitude score of experimental group and control group before the experiment.

3. There is no significant difference between the mean achievement scores of experimental group and control group after the experiment.

4. There is no significant difference between mean attitude scores of the experimental group and the control group after the experiment.

It is expected that the results of this study will be helpful for teachers to select and use the appropriate methods of teaching English for specific purposes.

**Table 2: Significance of difference between the mean achievement scores of experimental group and control group before the experiment.**

| GROUPS | N | t | p |
|---|---|---|---|
| EXPERIMENTAL | 13 | 0.25 | <0.05 |
| CONTROL | 13 | | |

As table 2 shows that difference between mean achievement scores of the experimental and the control groups were statistically not significant at 0.05 level. The null hypothesis1 was therefore accepted. Both the groups were found equal as far as their previous knowledge was concerned.

**Table 3: Significance of difference between mean attitude scores of the experimental group and control group before the experiment.**

| GROUPS | N | t | p |
|---|---|---|---|
| EXPERIMENTAL | 13 | 0.15 | <0.05 |
| CONTROL | 13 | | |

Table 3 shows that the difference between the two mean attitude scores was statistically not significant at 0.05 level. The null hypotheses2 was therefore accepted. Hence both the groups were almost equal in attitude scores.

**Table 4: Significance of difference between the mean achievement scores of experimental group and control group after the experiment.**

| GROUPS | N | t | p |
|---|---|---|---|
| EXPERIMENTAL | 13 | 3.01 | <0.001 |
| CONTROL | 13 | | |

As table 4 clarifies that the difference between the two mean achievement scores were found statistically significant at.001 level. The null hypotheses 3 was, therefore, rejected. Hence both the groups were found different in achievement scores, the difference being in favor of the experimental group.

**Table 5: Significance of difference between mean attitude scores of the experimental group and the control group after the experiment.**

| GROUPS | N | t | p |
|---|---|---|---|
| EXPERIMENTAL | 13 | 2.54 | <0.001 |
| CONTROL | 13 | | |

The table 5 above depicts that the difference between the two mean attitude scores was found highly significant at .001 level. The null hypotheses4 was, therefore, rejected. Hence both the groups were found different in post-test attitude scores, the difference being highly in favor of the experimental group.

# Chapter VI Discussion of findings, Conclusions, Suggestions, and Recommendations

## VI.1 Study Findings

## VI.2 Discussion of the Study Findings

## VI.3 Conclusions

## VI.4Suggestions and Recommendation

# Chapter VI Discussion of findings, Conclusions, Suggestions and Recommendations

## VI.1 Study Findings

As highlighted in the previous chapter the study findings were as follows:

1- The difference between mean achievement scores of the experimental and the control groups were found statistically not significant at 0.05 level. The null hypothesis 1 was therefore accepted. Both the groups were found equal as far as their previous knowledge was concerned.

2- The difference between the two mean achievement scores were found statistically significant at .001 level. The null hypothesis 3 was, therefore, rejected. Hence both the groups were found to be different in achievement scores, the difference being in favor of the experimental group.

3- The difference between the two mean attitude scores was statistically not significant at 0.05 level. The null hypotheses 2

was therefore accepted. Hence both the groups were equal in attitude scores.

4- the difference between the two mean attitude scores was found significant at .001 level. The null hypotheses 4 was, therefore, rejected. Hence both the groups were found different in post-test attitude scores, the difference being highly in favor of the experimental group.

## VI.2 Discussion of the Study Findings

As presented in the pre-test findings of English academic achievement test, there was no significant difference between the experimental and control groups in terms of their academic achievement scores in English lesson.

The findings of post-test at the end of the twelve-week implementation, however, indicate that the experimental group performed better than the control group. The difference acquired between these two groups can be attributed to their motivation in taking an active role in the learning process. The positive contribution of the focus on reading scientific English on students' academic achievement in this research supported the findings reported in the related literature (Hudson, 1991; Swales, 2001; Smith, 1998). Smith suggests that the EST student needs only reading. Swales identified reading as being his students' greatest need. Sichomphoo (1998:1) stated that "reading skill is more important than other skills for learners who studied English

and used it as a second language anywhere in daily life's communication. It is also the skill useful for self-learning activities." Grabe and Stroller (1997:78-94) also stated that "reading is probably the most important skill for second language learning in academic contest." Furthermore, Jakpim (1992) said that "among the four skills student will have a chance to use, reading skill is the most. People who are proficient in reading English will benefit greatly from their reading." The studies of Paulston and Bruder (1982) and Deboer (1997:14-16) agreed that reading is the most necessary and important skill. Also, reading is a skill, to which students should pay more attention than any other skill. In addition, Pett (1982:23) pointed out that of all the four language skills, the skill that students always retain is reading.

In terms of the attitude towards English course, there was a significant difference between the experimental and the control groups. As presented in the pre-test findings of English lesson attitude of students, there was no significant difference between the experimental and control groups in terms of their attitudes

towards English lesson. The findings of post-test at the end of the twelve-week implementation, however, indicate that the experimental group performed better than the control group. In other words, the experimental group had developed more positive attitudes towards the lesson than the control group. These results confirm previous research done by many scholars. According to Weddle and Van Duzer (1997) when the curriculum content, materials, and teaching approaches match learners needs, learners motivation and attitudes towards learning English are enhanced.

Carson (2000), also holds that carefully identified needs and appropriate teaching materials for students will create a positive attitude towards learning. As Mitchell and Myles (2001) stated ―the attitudes of the learner toward the target language, its speakers, and the learning context, may all play some part in explaining success or lack of it.

Attitudes of language learners may affect their language learning proficiency and the successful implementation of language education policies (Snow, 2007; Young, 2006). Learners‘

positive attitudes may lead to increased motivation, which, in turn, may lead to successful attainment of proficiency due to increased input and interaction‖ (Young, 2006, p. 480).In this regard, future studies are suggested to more deeply delve into the relationships between attitudes and achievements. That finding can make valuable contributions to our understanding of language learning, by illuminating how attitudes could impact the language learners‘ achievements.

## VI.3 Conclusions

Based on the study findings and their interpretation the following conclusions were drawn:

A common point in phase one, and taking into account previews studies on needs analysis, we can conclude that whatever the field of study, scientific or technical, when teaching English for specific purposes we aim at developing in our learners a certain competence so that they can use it efficiently in the target situation.

Thus, our EST students should be able to do the following:

1-Read & Comprehend authentic texts and glean information from written sources (journals, articles, etc…) in their specific discipline area.

2-Converse correctly on scientific topics

3-Listen to and understand specialized lectures in their field and take notes.

4-Summarize an article and write technical reports/research papers in their field of specialization.

From phase two, we can sum up that there are some universal principles and criteria for language learning materials, that is, materials should be centred on the learner, universal, and authentic.

It can be summed up from phase three that the emphasis on reading comprehension enhanced students' achievement level and made them more interested and more effective with positive attitudes towards English. Therefore, more English courses specially designed and geared to students' needs are recommended as an urgent need for Science and Technology students at Batna University.

## VI.4Suggestions and Recommendation

As might be expected, results from research in this study led us to draw the following suggestions and recommendations:

**1- Proposal for an ESP Curriculum**

based on the following principles:

_It should be a universal, authentic document and based on learners' needs.

_It should be relevant to the target situations in which ESP students will function as specialists.

Its content should:

_ be based on international levels of proficiency

_ take into account the students' needs and backgrounds.

**2- Teacher training**

ESP teacher training can be realised through:

_ an initial EFL teacher training, where an ESP component should be introduced

_ an in-service training for ESP practitioners via seminars, workshops, conferences, etc.

Where the following components should be includes.

- ESP definition, branches and sub divisions
- Needs analysis
- ESP course design
- Tense in science and technology
- Research articles structure
- Sentence structure
- The use of passive in scientific English

## General conclusion

This study was conducted to investigate the needs of the science and technology students in the use of English for Specific Purposes at Batna University through three different stages. Stage one a needs analysis was carried out by two groups: science and technology students and their teachers of English using a questionnaire for the students and a structured interview for their teachers of English. Stage two students' needs were matched with the course objectives, and lessons were proposed and implemented in a period of ten weeks. The third stage an experiment was carried out on 1st year master Environment Protection and Ecology students. The findings reveal the positive opinions of all two groups on the needs of using the specific English courses tailored for science and technology students at Batna University.

Based on the study findings and their interpretation the following conclusions were drawn:

A common point in phase one, and taking into account previous studies on needs analysis, we can conclude that whatever

the field of study, scientific or technical, when teaching English for specific purposes we aim at developing in our learners a certain competence so that they can use it efficiently in the target situation.

Thus, our EST students should be able to do the following:

1-Read & Comprehend authentic texts and glean information from written sources (journals, articles, etc…) in their specific discipline area.

2-Converse correctly on scientific topics

3-Listen to and understand specialized lectures in their field and take notes.

4-Summarize an article and write technical reports/research papers in their field of specialization.

From phase two, we can sum up that there are some universal principles and criteria for language learning materials, that is, materials should be centred on the learner, universal, and authentic.

It can be summed up from phase three that the emphasis on reading comprehension enhanced students' achievement level and made them more interested and more effective with positive attitudes towards English. Therefore, we believe that an ESP course based on learners' needs is urgently needed.

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# Appendices

## Appendix 01 Students' Questionnaire

Dear student

We would highly appreciate if you answer the questions frankly behind which we aim at gathering information about the teaching learning process in your department as well as your needs in learning English. This questionnaire is strictly confidential.

**Background information**

Department: ……

Age: ……

Sex: male female

How many years have you been learning English …….

1- Do your subject teachers recommend you to read in English?

| | |
|---|---|
| Yes | |
| No | |

If yes , specify ……

2- Indicate the relative importance of each skill to you in your studies

**(1 = most to 4 = least).**

| | |
|---|---|
| Reading | |
| Speaking | |
| Listening | |
| Writing | |

3- Did you find any of the following skills difficult:

| | |
|---|---|
| Speaking | |
| Reading | |
| Listening | |
| Writing | |

4- Do you attend English classes

| | |
|---|---|
| Yes | |
| No | |

5- To what extent do the English courses satisfy your needs in your field of study:

| | |
|---|---|
| completely | |
| Partly | |
| not at all | |

6- Does the teaching method used by your teacher help you to acquire the necessary level of:

| | |
|---|---|
| Listening skill | |
| Speaking skill | |
| Reading skill | |
| Writing skill | |

7- Do you have any suggestions for making the English course more effective and useful to you as a student of Agronomy?

……
……
……
……

**THANK YOU VERY MUCH FOR COOPERATION**

## Appendix 02 Teachers' Interview

Dear colleague!

The purpose of this interview is to find out whether the current state of teaching English for Specific Purposes in the Departments of Science and Technology meets your current and potential needs for you to function successfully. As you are among the people who are directly involved in and influence the process of ESP teaching and learning, your opinion is highly appreciated.

1- Your status in the Department:

| | |
|---|---|
| Part time teacher | |
| Full time teacher | |

2- Your Degree :

| | |
|---|---|
| License | |
| Magister | |
| Doctorate | |

3- Did you have any E.S.P Training courses?

| | |
|---|---|
| Yes | |
| No | |

4- Your experience in teaching English:

| | |
|---|---|
| years of teaching in middle schools | |
| years of teaching in secondary schools | |
| years of teaching at the University | |

5- What is the average size of each class?

Number of students …….

6- Do you have any special material designed for your students?

| | |
|---|---|
| Yes | |
| No | |

7- Do these materials cover the needs of the entire course?

| | |
|---|---|
| Yes | |
| No | |

8- How would you classify the following skills in terms of importance .

| | Very important | Important | Not important |
|---|---|---|---|
| Listening | | | |
| Speaking | | | |
| Reading | | | |
| Writing | | | |

9- In which aspects of English do you think students are usually weak?

| | |
|---|---|
| Vocabulary | |
| Sentence structure | |
| Reading comprehension | |
| Grammar | |
| Writing and composition | |
| Speaking and conversation skills | |
| Scientific and technical English | |

10- Do the following objectives describe the teaching of English in the Department?

| | Yes | No |
|---|---|---|
| Training to use Scientific and technical texts in English | | |
| Attending lectures and courses taught in English | | |
| Studying English just as a part of their curriculum | | |

11- The students require English in order to : (1: most) to (4: least)

| | |
|---|---|
| Understand lectures in their field of study in English | |
| Take part in oral discussion in English | |
| Read textbooks in their field of study | |
| Write answers to examination questions | |

12- Do you work in collaboration with the subject lecturers?

| | |
|---|---|
| Yes | |
| No | |

If yes, what kind of collaboration is involved?

……
……
……

13- How do you evaluate your students?

| | |
|---|---|
| Oral test | |
| Written test | |
| Both | |

14- What type of tests do you use?

| | |
|---|---|
| a text with questions on it | |
| Multiple-choice questions | |
| Essay questions | |
| Others | |

15- How do the students find the content you present to them?

| | |
|---|---|
| They like it | |
| They do not like it | |

16- Have you any suggestions for making the English course more effective and more relevant to the students' needs in their field of study?

……
……

**THANK YOU VERY MUCH FOR COOPERATION**

## Appendix 03 Attitude Scale

**Attitude Scale Towards English lesson and teachers method**

Dear student,

This attitude scale has been designed to help the researcher investigate your attitudes towards learning English in general and towards the teacher method in particular. Read each statement and then tick (□) the box that best reflects your opinion. Note that (1) = strongly disagree, (2) = Disagree, (3) = Not Sure, (4) = Agree, and (5) = Strongly agree.

Please, give your answer honestly as the information will be used for the purpose of a research intended to improve the teaching and learning of English. Remember there is no right or wrong answers; just answer as accurately as possible.

Thank you in advance for your kind cooperation.

| | **Attitudes towards Learning English** | | | | | |
|---|---|---|---|---|---|---|
| **N°** | **Item** | **1** | **2** | **3** | **4** | **5** |
| **01** | I prefer to focus on other subjects rather than English. | | | | | |
| **02** | I find learning English boring. | | | | | |
| **03** | I learn English just to pass the exams. | | | | | |
| **04** | I learn a lot in the English class | | | | | |
| **05** | Studying English can be important for me because I may need it later (e.g. job, studies) | | | | | |
| **06** | Studying enables me to search for information and materials in English on the internet. | | | | | |
| **07** | Studying English provides me with an interesting intellectual activity | | | | | |
| **08** | Studying English enables me to read English books. | | | | | |
| **09** | Studying English makes me feel more confident. | | | | | |
| **10** | Knowing English is an important goal in my life | | | | | |

| | **Attitudes towards the lesson and teaching activities** | | | | | |
|---|---|---|---|---|---|---|
| **N°** | **Item** | **1** | **2** | **3** | **4** | **5** |
| **01** | The lesson increases my interest in learning English. | | | | | |
| **02** | It is easy to work collaboratively with other students to finish the activities successfully | | | | | |
| **03** | The activities help me to transfer what I learnt in the classroom to outside the classroom | | | | | |
| **04** | I can easily ask my peer about what I do not understand about THE lesson. | | | | | |
| **05** | I exchange ideas with my peers during the task procedure. | | | | | |
| **06** | I use integrated language skills such as reading, writing, listening, speaking, grammar and vocabulary while doing the task. | | | | | |
| **07** | I like working in a group. | | | | | |
| **08** | The task helps me read and comprehend the text better than before. | | | | | |
| **09** | The task helps me write better than before. | | | | | |
| **10** | The task helps me read better than before. | | | | | |
| **11** | The task helps me enhance my self-confidence in English language learning | | | | | |
| **12** | The task helps me enhance the sense of responsibility. | | | | | |
| **13** | Task makes the classroom atmosphere a more enjoyable place for me. | | | | | |
| **14** | The task helps students become more independent learners. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **15** | Tasks encourage students to develop self-assessment skills and evaluate the strengths and weaknesses of their own work. | | | | | |
| **16** | I think learning via research articles is time consuming. | | | | | |
| **17** | There is improvement in my reading Ability | | | | | |
| **18** | I am motivated to learn reading using research articles | | | | | |
| **19** | I feel bored in learning reading through research articles | | | | | |
| **20** | Should we continue applying this method in the future | | | | | |

## Appendix 04 Test

Write an abstract to the following research article

**The Dynamics of Buckwheat**

AlicjaPecioandGranaPodolska

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**Introduction**

Agricultural yield of buckwheat depends on biological yield and intensity of assimilates movement to generative organs. Reaching of agricultural yield high level is possible when dynamics of total buckwheat plant mass increment is also high. In this case the plants create great number of well nectarine flowers.

Fast tempo of overground part of buckwheat plant growth is relevant to well-developed root system. Buckwheat root system is very significant because the plant is cultivated on poorer soils where water and nutrients good supply is difficult t. The plants with strong root system are better developed and produce better fruit (yield) .

The studies on root system development and its activity are difficult due to technical problems but they are still very useful. In presented studies the authors intended to describe the dynamics of buckwheat root system growth and its relationship with overground plant parts increment.

## Materials and Methods

The greenhouse experiment with buckwheat plants were conducted in 1992-1995years in the Institute of Soil Science and Plant Cultivation in Poland.

The Seeds were sown into Mitcherlich's pots filled with mixture of 5 k-g very good rye complex soil and 2 kg sand.

Before sowing phosphorus (5.46 g KH2P04 I pot), potassium (0.93 g KH2S04 I pot),magnesium (500 mg MgS04 / pot) and microele1nents (FeC13 - 50 mg / pot, H3B03 - 5 mg /pot, MnS04 - 3 mg / pot, CuS04-4 mg / pot) fertilizers were applied.

Nitrogen fertilization (NH4N03) 1.5 g N / pot was applied in three equal parts: before sowing, in 4-5 leaves buckwheat stage and on the flowering beginning.

Five buckwheat seeds were sown into each pot be1ween llth and 15th day of May.

Beginning from sowing date, after each 10 days samples of plan s were taken. In this order all plants from 3 pots (3 replications) were taken out by washing with strong water stream on 0.3 mm holes diameter sieve. After overground and underground plants parts separation length of roots and stems measurements were taken. Then all parts : roots, stems, leaves, flowers and seeds were separately dried in oven with 105 )temperature and weighted .

All data as an average of five plants from each pot were compared.

**Results**

Due to overground and underground buckwheat plants parts growth processes and dry matter storing were similar in each year, the paper presents average results of 3 years experiment.

The roots in both seedlobes (10 days after sowing date) and 2-3 leaves(20 days after sowing)buckwheat plants stages were longer than the stems accordingly 0.7 and 3.0 cm. During late vegetation stages overground part was longer then roots were (Fig. l). The

maximum difference between overground and underground parts was 118.5 cm 80 days after sowing and it was on the same level to the end of buckwheat vegetation period.

The root system length (Fig.1) increased up to 40th day after sowing, it means up the time when

flowering started. The length of mot system reached 23 .4 cm. During next 20 days (up to seed maturity beginning) root system length slowly decreased. From that time to the end of buckwheat vegetation period the length of mots stated on the same level of about 17 cm.

The overground part length increased up to 70th day after sowing (seed maturity) and was steady 136.0 cm. During period from 30th to 50th day after sowing (from buds to seed creating stages) the greatest increments were observed. Ten days increments of stems length was in that period more than 44 cm (Fig. 1).

Dry matter of mot system increased up to 60th day after sowing, it means up to beginning of buckwheat seed maturity . It stayed on the high level through 20 days. After 80 days from sowing time mots

mass urgently decreased . It took about 10 days and then mots dry matter didn't change any more (Fig.2, 3).

The analysis of buckwheat plant overground part individual organs during vegetation period indicates that their dry matter increased during whole vegetation period and it was bigger than dry matter of root system (Fig.3).

Stems dry matter increased during 70 days after sowing time and then it didn't change to the end of vegetation period. Dry matter of leaves has increased for 60 days from sowing, it means to the seed maturity beginning and then it quickly decreased. It was probably relevant to the assimilates movement from leaves to generative organs. Dry matter of flowers increased to the end of vegetation period.

Buckwheat seed started to form 60th after sowing. From that moment to the harvest time its weigh has increased. The greatest seed mass increments were observed between 60th and 80thafter sowing. Smaller increments after 80 days of vegetation were probably relevant to mots and leaves dry matter reduction.

## Conclusion

Under pot experiment conditions buckwheat mot system length has increased for 40 days since sowing date, it means to the flowering beginning but stem length has increased for 70 days - to seed maturity stage.

During buckwheat whole vegetation period overground part dry matter was bigger than dry matter.

Root system dry matter has increased for 60 days from sowing date and overground part dry matter increased up to the harvest time.

The greatest dry matter increments of mots were observed between 50th and 60th day and overground part - between 40th and 70th days after sowing time.

Between 70th and 80th days after sowing gig reduction of mot system mass was observed.

Increment of overground part mass after some roots depth proves that the alive part of roots was still physiologic ally active up to the harvest time.

**ملخص**

تهدف هذه الدراسة الى تحديد حاجات طلبة كلية العلوم و التكنلوجية بجامعة باتنة في استعمال اللغة الانجليزية لأهداف خاصة. وتم تحليل هذه الحاجات عن طريق مجموعتين طلبة العلوم و التكنلوجية واساتذتهم المكلفون بتدريس اللغة الانجليزية. وقد اعتمدنا في دراستنا على ثلاث مراحل. المرحلة الاولى استبيان للطلبة و مقابلة بالنسبة لأساتذة اللغة الانجليزية.

المرحلة الثانية ترجمة هذه الحاجات الى اهداف و تحضير دروس تتماشه و هذه الاخيرة.

المرحلة الثالثة تعتمد على المنهج التجريبي لمعرفة اراء الطلبة حول هذه الدروس و مدى فعالياتها في تحسين مستواهم الدراسي في اللغة الانجليزية.تبين النتائج الآراء الإيجابية لكل من المجموعتين فيما يتعلق بالموافقة على ضرورة دروس الانجليزية التخصصية لطلبة العلوم و التكنلوجية بجامعة باتنة و تعتبر القراءة اهم مهارة لغوية. وقد انهينا هذه الدراسة ببعض التوصيات منها تكثيف دروس الانجليزية التخصصية و التي لها علاقة بمجال تخصص طلبة العلوم و التكنلوجية بجامعة باتنة .