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TEACHING TECHNICAL ENGLISH TO HYDRAULICS STUDENTS

A Case Study:

Master One Students at the Department of Civil and Hydraulics Engineering in the University of Biskra

A Dissertation Submitted to the Department of Foreign languages in Partial Fulfillment
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Dedication

…. to my dear parents.

…. to my precious wife.

…. to my lovely daughters.

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Abstract

The Department of Civil and Hydraulics Engineering in the University of Biskra encounters problems related to teaching/learning English language in technical fields, while ESP has witnessed a considerable development since 1960's. In order to attempt helping to solve this problem, the present research aims, firstly, to diagnose the situation of teaching technical English to the hydraulics students in the context under exploration to gain an in-depth understanding on how instruction and learning are going on. Secondly, the objective is, therefore, to design new syllabi of English language for Specific Academic Purposes (ESAP) for second and third year in the graduate level, in addition to Master One students in Hydraulics. Due to these purposes, three main elements are considered: a literature review, a pilot course and needs analysis. In fact, 57 students of M1 had been taught English during one semester of study. Accordingly, quantitative and qualitative researches with non-randomized sampling were conducted. The analysis concerned, firstly, the quantitative assessment of students' level progress through the scores of the pretest, posttest and the final examination. Secondly, the qualitative analysis was about the answers to the questions administered to students. In this respect, a significant change in the level of students was observed. Hence our hypothesis (Pilot Course) was confirmed. Besides, a great majority of the students confirmed they had not studied technical vocabulary task at all in the license degree. However, we are satisfied to know that almost all the students liked the teaching method we adopted in M1. In fact, this observation is justified by the evolution of students' achievement in formative and summative assessments.

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List of Abbreviations

EAP: English for Academic Purposes

EBP: English for Business Purposes

ESAP: English for Specific Academic Purposes

EGAP: English for General Academic Purposes

EMP: English for Medical Purposes

EMFE: English for Management, Finance and Economics

EOP: English for Occupational Purposes

EPP: English for Professional Purposes

EST: English for Science and Technology

EVP: English for Vocational Purposes

EFL: English as a Foreign Language

ELT: English language Teaching

ESBP: English for Specific Business Purposes

M1 : Master One

PSA: Present Situation Analysis

TBL: Task-based Learning

TSA : Target Situation Analysis

General Introduction

Statement of the Problem

English for Specific Purposes (ESP) started in the early 1960s. The main reason of its appearance and emergence is the huge development of technology and economics in the USA. This quick expansion generated a demand for an international language, and consequently, a variety of language teaching books for specific needs was conceived. ''English has become the lingua franca of international relations''. Indeed, ESP incorporates English for Occupational Purposes (EOP) and English for Academic purposes (EAP). This latter is also called English for Specific Academic Purpose (ESAP), in order not to confuse it with English for General Academic Purpose (EGAP). The concept of ESAP is said to be appropriate for teaching English to students of Sciences and Technology, Business, and many other fields of knowledge.

However, because of the considerable technical development carried out by the Anglo-Saxon countries in various fields of knowledge, particularly in the technology fields, the Algerian university - which is francophone since the beginning of the twentieth century - tried to fill in this gap. Indeed, in order to allow students to exploit the existing English materials, the Algerian Ministry of Higher Education and Research incorporated the English course in the curriculum of many fields of education, and mainly in technology fields. However, no specific approach, method or techniques are proposed. Language teaching seems only limited to the translation of technical terminology or providing students with some grammatical items that cannot release the students from their linguistic weaknesses. In fact, this English course starts relatively late, and students are supported for two or three sessions only to justify the validation of the semester. In addition, most departments do not find teachers who are able to support technical English sessions, and the time assigned to this course is not sufficient. Moreover, the current teaching methods of English in technical disciplines are mostly traditional and outdated, and promote no advantages in acquiring knowledge. Thus, the use of English language in general and ESAP in particular still meets problems in the University of Biskra, in general, and in the Department of Civil and Hydraulics Engineering, in particular.

Significance of the Study

Contrary to what is currently applied in teaching English at the Division of hydraulics in the Department of Civil and Hydraulics Engineering, there are a variety of approaches capable of achieving the objectives recommended in the acquisition of English skills. Indeed,

the most used approaches in learning English language are multiple and diachronic, their combination can help to ensure the quality of teaching English, and therefore the quality of training students of technological disciplines.

Aims of the Study

This research aims, firstly, to diagnose the situation of teaching technical English to hydraulics students in the Department of Civil and Hydraulics Engineering. The second objective is, therefore, to design new courses of ESAP for License hydraulic students from second and third year and first year Master of hydraulics. For these purposes, three main elements are considered, namely needs analysis, pilot course and an extensive literature review. Indeed, the consideration of both case study and state of the art, should lead straightforwardly to the syllabus design.

Research Questions

Accordingly, three main research questions are considered:

1. What are the reasons of the failure of the current methods of teaching English to hydraulic students?
2. What are the proposed approaches/methods and techniques to allow students of Master degree to be competent in English appropriate to their field of knowledge?
3. How would be the syllabus of the English course proposed for the hydraulics students?

Hypotheses

Consequently, the present research is based on three main hypotheses that shall be tested and verified:

1. It is expected that the failure of the current experience of teaching technical English to hydraulics students could be explained by the following reasons: administrative selflessness, teachers' wrong choice, poor teaching quality, the inadequacy of the methods used and the low level of hydraulics students.

2. It is hypothesized that the combination of structural, functional and interactive teaching/learning approaches can help to ensure the quality of teaching technical English. The English macro skills have to be taught by an 'Integrative Skill Teaching Methodology'

3. It is put forward that learning ESAP/EST may consist of two main areas: knowledge and language skills. To enable students of technological branches to master the four English language skills, it would be appropriate to propose a syllabus distributed over six semesters of

the learning cycle, where the relevant vocabulary used in the examples will be drawn from the speciality study field.

Methodology

In the case study, the target population are students of the first year Master (M1). In fact, the choice of this class as a study sample was not made randomly, but was chosen because M1 is considered as the last year of the learning period of technical English. This choice is motivated by the fact that through the 'feedback' of M1 students, one can measure the level of learning/teaching that was given to them in 2nd and 3rd year license.

In order to analyse M1 hydraulics students' needs, and consequently that of the whole learning period of technical English in the Department of Civil and Hydraulics Engineering, quantitative and qualitative analysis of the collected data is performed. The analysis concerned, firstly, the quantitative assessment of students' level progress through test and treatment. Secondly, a qualitative analysis of the data collected from the answers to questions given to students through a questionnaire.

In this research, a quasi-experimental study with non-randomized sampling strategy is adopted.

Research limitations

The research will deliberately focus on students of M1 of hydraulics in one semester of study.

Structure of the Dissertation

The present dissertation is divided into two parts: the first one concerns an extended literature review about ESP, and the second one presents our field work. Each part is divided in three chapters.

The first chapter of the literature review will define the term ESP and explain its different types and characteristics. The second chapter will be dedicated mainly to the explanation of the types of syllabuses, the needs analysis and the types of evaluations. In the third and last chapter of the first part, a review of literature about the main approaches/methods used in teaching English as a foreign language will be presented. According to their characteristics, language teaching approaches are divided into three categories: structural, functional and interactive.

Moreover, in the first chapter of the second part of this study, it will be described the methodology used to assess the needs of M1 students in learning technical English. In the second chapter, it will be displayed the steps for the analysis of the collected data, by means of SPSS19 statistical software. The results will be followed by interpretation and discussion. In the third and final chapter a syllabus will be proposed. This latter will be distributed over the six semester of the English learning period.

Chapter One: Definitions, Origin and Characteristics of ESP

Introduction

English for Specific Purpose (ESP) started at early 1960s. The main reason of its appearance and emergence is the enormous expansion of technology and economics in the USA. This quick development generated a demand for an international language, and consequently, a variety of language teaching books for specific needs was conceived. Therefore, many definitions and types of ESP are given, depending on the purpose that is supposed to achieve. Indeed, Hutchinson and Waters (1987) view ESP as an "approach" to teaching rather than a "product", while Dudley-Evans (1998) describes it as an "attitude of mind."

This chapter attempts to answer the question: *what is ESP?* For this purpose a brief overview of the origins of ESP, its characteristics, its types and its basic concepts will be presented.

1.1. Definitions of ESP

According to Hutchinson and Waters (1987), "ESP is an approach to language teaching in which all decisions as content and method are based on the learner's reason for learning." (p. 19). Indeed, they argue that ESP must be seen an *approach* not as a *product*. However, according to Strevens (1977) "ESP concerns the emergence of a number of activities, movements and subjects that are carried out predominantly (though) not exclusively in English across the world" (p. 57). Coffey (1985) states that ESP is "a quick and economical use of the English language to pursue a course of academic study (EAP) or effectiveness in paid employment (EOP)" (p. 79). Lorenzo (2005), believe that ESP "concentrates more on language in context than on teaching grammar and language structures" (p. 1).

Thus, from these statements, one can define ESP, merely as an approach to language teaching that focuses on language in context.

1.2. Origin of ESP

The history of ESP started at early 1960s. According to Hutchinson and Waters (1987), three main reasons have urged the emergence of ESP: the demand of a Brave world, a revolution in linguistics, and focus on the learners. Hutchninson and Walters (1987) explains the first reason of this emergence is attributed to the enormous expansion of technology and economics, which appeared at the end of the Second World War, in the United States of America. This quick development generated a demand for an international language.

Obviously, English language became the first communication language in the world. Consequently, a variety of language teaching books for specific needs are conceived.

The second reason that led to the emergence of ESP was a revolution in linguistics. With the appearance of applied linguistics, the new studies focused on language in its communicative context. Therefore, most works in the early 1970s are in the area of English for Science and Technology (EST), which was carried out by many researchers, such as : Ewer and Latorre (1969), Swales (1971) and Selinker and Trimble (1976).

The last reason mentioned by Hutchinson and Waters (1987), which has influenced the emergence of ESP, is related to learners needs. Courses have to be relevant to learners' needs and interests. The authors argue that "the assumption underlying this approach was that the clear relevance of the English course to their needs would improve the learners' motivation and thereby make learning better and faster" (p. 8).

1.3. Characteristics of ESP

ESP is considered as an approach by Hutchinson and Waters (1987). They suggest that ESP does not concern a particular language, teaching methodology or material. The need for learning English is either for study purposes or work purposes.

Strevens (1988) distinguished between two concepts: absolute characteristics and variable characteristics of ESP. With regard to the absolute characteristics ESP courses are:

i. designed to meet the specific needs of the learner;

ii. related in content to particular disciplines or occupations;

iii. centred on language specific to those disciplines or occupations;

iv. in contrast to General English.

However, regarding the variable characteristics ESP courses:

i. may be restricted in the skills to be learned;

ii. may not be taught according to a particular methodology.

In the same vein, Robinson (1991) proposed two criteria to define ESP courses:

i. ESP programmes are normally goal-oriented.

ii. they derive from a needs analysis.

Following the study of Strevens (1988), Dudley-Evans and St. John (1998) divide the characteristics of ESP in two divisions: some absolute and some variable to explain ESP. The absolute characteristics contain the following principles:

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

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

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

The variable characteristics contain the following principles:

i. ESP may be related to or designed for specific disciplines;

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

iii. 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 also designed for learners at secondary school level.

iv. ESP is generally designed for intermediate or advanced students.

v. Most ESP courses assume some basic knowledge of the language systems (p.4).

Therefore, Hutchinson and Waters (1987) view ESP as an "approach" to teaching rather than a "product", while Dudley-Evans (1998) describes it as an "attitude of mind." Several other researchers pointed out many other characteristics of ESP.

1.4. Types of ESP

Depending on the useful purpose of ESP that is supposed to achieve, many types of classification are proposed. Mackay and Mountford (1978) propose three types of English learning purpose:

i.   Occupational requirements,

ii.   Vocational training programme, and

iii. Academic or professional study. (p. 2).

Based on this last classification, Munby (1978) divide ESP into two broad areas:

i. English for Occupational Purposes (EOP) "where the participant needs English to perform all or part of his occupational duties" , and

ii. English for educational Purposes (English for Academic Purpose or EAP) "where the participant needs English to pursue part or all of his studies" (p. 55).

Out of this, three types of ESP were categorized by Carver (1983) :

i.   English as a Restricted Language   (examples: Language used by air traffic controllers or by waiters)

ii.   English for Academic and Occupational Purposes (EAOP) (which is the heart of ESP), and

iii.   English with Specific Topics (needed in postgraduate reading studies, attending conferences or working in foreign institutions).

Hutchinson and Waters (1987) have established a "Tree of ELT" (Fig. 1.1), in which ESP is described and broken down into three branches:

i.   English for Science and Technology (EST)

ii.   English for Business and Economics (EBE), and

iii. English for Social Studies (ESS) (p. 17).

Each of these subject areas is divided into two other branches: English for Academic Purposes (EAP) and English for Occupational Purposes (EOP).

Figure 1.1 represents some divisions made in ELT. With regards to ESP branches, the top level of the tree shows ESP subject area. These latter are divided into two main types of ESP, differentiated according to whether the learner requires English for Academic Purposes (EAP) or for Occupational Purposes (AOP). Hutchinson and Waters (1987) argue that "there is not a clear-cut distinction" (p. 16) between EAP and EOP. Indeed, authors state that "people can work and study simultaneously, and that "the language learnt in a study environment will be used later when the student takes up, or returns to, a job" (p. 16). For this end, EAP and EOP have been classified under the same category of ESP. However, a distinction have be made between common core English for General Academic Purposes (EGAP) and English for Specific Academic Purposes (ESAP). EGAP examines the skills and language associated with the study of all academic disciplines, while ESAP integrates the skills of EGAP with the features that distinguish one discipline from another.

English for Medical Studies	English for Technicians	English for Economics	English for Secretaries	English for Psychology	English for Teaching
English for Academic Purpose (EAP)	English for Occupational Purpose (EOP)	English for Academic Purpose (EAP)	English for Occupational Purpose (EOP)	English for Academic Purpose (EAP)	English for Occupational Purpose (EOP)

English for Science and Technology (EST) — English for Business and Economics (EBE) — English for Social Sciences (ESS)

Primary Secondary Tertiary

English for Specific Purposes (ESP) — General English (GE)

English as a Mother Tongue (EMT) — English as a Foreign Language (EFL) — English as a Mother Tongue (ESL)

English Language Teaching (ELT)

Language Teaching

Learning — Communication

Figure 1.1 : Tree of ELT, (source: Hutchinson and Walters, 1987, p. 17)

1.5. Basic Concepts of ESP

Five conceptions are fixed as the foundations, essential features or basic principles of ESP. Swale (1990) define them as 'enduring conceptions'. These five conceptions are: 1) authenticity, 2) research base, 3) language/text, 4) learning needs and 5) learning/methodology.

1.6.1. Authenticity

According to Close (1992), ESP teachers would need to establish the skills priorities of students in order to develop appropriate ESP teaching materials. As discussed above, the main purpose of ESP is to accomplish communicative competence. This target might be reached only by the use of authentic material, related to learners' fields. Skills-based approaches consider two main ways to the conception of authenticity in ESP : authenticity of texts and authenticity of tasks, in the sense that both ways should be linked to a given skill linked to the real word. Morrow (1980), argues that ESP learners were required to use ESP materials which employ the same skills and strategies as would be required in the target situation.

1.6.2. Research Base

The first scholars interested for a research base for ESP are Halliday, McIntosh and Strevens (1964). They asked for a programme of research into ESP registers. The principal limitation of this approach was its conception of text as register, restricting the analysis to the word and sentence levels as register was invariably defined in these terms.

1.6.3. Language/Text

In the 1990s, there were a number of ESP projects which were triggered by concerns over international safety and security. Several projects of specific English linked to specific filed were developed, such as SEASPEAK, AIRSPEAK, POLICESPEAK and NEWSPEAK, although register analysis remains restricted to native-speaker. The reaction against register analysis in the early 1970s concentrated on the communicative values of discourse rather than the lexical and grammatical properties of register. Allen and Widdowson (1974) argue that two kinds of ability, which an English course at ESP level should aim at developing, should be identified: the ability to recognize how sentences are used in the performance of acts of communication, and the ability to recognize and manipulate the formal devices which are used to combine sentences to create continuous passages of prose.

1.6.4. Learning Needs

Another concept of ESP oriented towards involving language and the content of students' area of specialization is to establish syllabus and a methodology of teaching, focusing on learners needs. Needs analysis was established in the 1970s as course designers came to see learners' purposes rather than specialist language as the driving force behind ESP.

Munby (1978) established needs by investigating the target situation for which learners were being prepared. Munby (1987), through his model, shows the place of needs as central to ESP. However, his model has been widely criticized for two apparently conflicting reasons: first, its over-fullness in design, and second, what it fails to take into account (that is, socio-political considerations, logistical considerations, administrative considerations, psycho-pedagogic, and methodological considerations). Thus, various forms of pedagogic needs have been identified to give more information about the learner and the educational environment. These forms include deficiency analysis, strategy analysis, and means analysis.

1.6.5. Learning/Methodology

Teaching language is no longer just a matter of application that serves all needs through any kind of syllabus and methodology. One very important issue in the context of ESP is programme assessment. Assessment involves an evaluation of the learners' ability to communicate effectively using the target language, as well as their ability to participate fully in the target discourse communities which have been initially defined as relevant to their needs. Hutchinson and Waters (1987) refer to this approach as the learning-centred approach and highlight the importance of teaching/learning style in ESP materials.

1.6.6. Difference between ESP and GE

Hutchinson and Waters (1987), in an answer to the question "What is the difference between the ESP and General English approach?" state, "in theory nothing, in practice a great deal" (p. 53). The distinction between ESP and GE is not the fact that a specific need exists, but rather an awareness of the need.

According to Lorenzo (2005, p. 1), ESP "concentrates more on language in context than on teaching grammar and language structures". Indeed, from both definitions, one may understand that GE and ESP diverge not only in the nature of the learner, but also in the aim of instruction. In GE both micro and macro skills are taught to the learners, while in ESP it is a needs analysis that determines which skills are most needed.

1.7. Conclusion

In this chapter, ESP is defined as an *approach* to language teaching rather than *product*. Thus, ESP focuses more on language in context than on teaching grammar and language structure. It is noted that the main reason of its emergence, after the Second World War, is the huge expansion of technology and economics in the USA, which generated a

demand for an international language. Besides, many characteristics of ESP are presented, which are divided, generally, in two concepts: absolute characteristics and variable characteristics. In addition, depending on the useful purpose of ESP that is supposed to achieve, many types of classification are proposed. Hutchinson and Waters (1987) have established a "Tree of ELT" in which ESP is described and broken down into three branches: EST, EBE and ESS, and each of these areas is divided into two branches: EAP and EOP. Moreover, five conceptions as basic principles of ESP are explained in this chapter, defined as 'enduring conceptions' by Swale (1990). These five conceptions are: authenticity, research base, language/text, learning needs and learning/methodology.

Chapter Two: ESP Course and Syllabus Design

Introduction

In this chapter, the difference between courses, syllabus and curriculum will be clarified. The different types of syllabuses in language learning will be also presented. In addition, three main approaches of course design will be explained, namely: Language-centred, Skills-centred and learning-centred. Two other topics will be examined in this chapter, these concern needs analysis and types of evaluation.

2.1. Definitions of Course, Syllabus, Curriculum and Course/Syllabus Design

2.1.1. Course

A Course could be defined simply as a series of lessons. However, the terms "syllabus", "syllabus design" and "curriculum" have given rise to confusion. So, it is not easy to distinguish between them.

2.1.2. Syllabus

Shaw (1975) defines a syllabus as "a statement of the plan for any part of the curriculum, excluding the element of curriculum evaluation itself" (p. 62). While, Hutchinson and Waters (1987) define syllabus as follows: "At its simplest level, a syllabus can be described as a statement of what is to be learnt; it reflects the language and linguistic performance" (p.80). However, Graves (1996), citing White's (1988) definition, states that "A syllabus will be defined narrowly as the specification and ordering of content of a course or courses". Syllabus is most often defined as specifications of content to be taught in a course, and is concerned with course objectives (Dubin & Olshtain, 1986; Jordan, 1997; Nunan, 1988; Richards, 2001). In this respect, it is clear that a syllabus is limited to particular subject of a particular class.

2.1.3. Curriculum

Shaw's (1975) says, "... the curriculum includes the goals, objectives, content, processes, resources, and means of evaluation of all the learning experiences planned for pupils both in and out of the school and community, through classroom instruction and related programs..." (p. 83). According to Allen (1984, p.64), Curriculum is "a very general concept involving consideration of the whole complex of philosophical, social, and administrative factors which contribute to the planning of an education programme". From this definition it is ostensible

that curriculum is a wider concept as compared with syllabus, so that it includes everything about learning/teaching.

2.1.4. Syllabus Design

According to Taba (1962) a syllabus design should follow the following steps:

    i. needs analysis

    ii. formulation of objectives

    iii. selection of content

    iv. organization of content

    v. selection of learning activities

    vi. organization of learning activities

    vii. decisions about what needs evaluating and how to evaluate.

For Munby (1984), syllabus design is "a matter of specifying the content that needs to be taught and then organizing it into a teaching syllabus of appropriate learning units. In line with this assumptions, Webb (1976) notes that syllabus design is seen as the organization of the selected contents into an ordered and practical sequence for teaching purposes. He proposes the following criteria:

    i. progress from known to unknown matter,

    ii. appropriate size of teaching units,

    iii. a proper variety of activity,

    iv. teachability and

    v. creating a sense of purpose for the student.

2.2. Types of Syllabus

Hutchinson and Waters (1987) classifies syllabuses on six main types, depending on what will be learnt :   1. Evaluation Syllabus, 2. Organizational Syllabus, 3. Materials Syllabus, 4. Teacher Syllabus, 5. Classroom Syllabus and Learner Syllabus.

2.2.1. Evaluation Syllabus

This is a statement of what is to be learnt, handed down by ministries and/or regulatory bodies. "It states what a successful learner will known by the end of the course. In effect, it puts on record the basis on which success or failure will be evaluated. Thus we might refer to this as an *evaluation* syllabus. It reflects an official assumption as to the nature of language and linguistic performance" (Hutchinson & Waters, 1987, p. 80). This type of syllabus cannot be used without having a view of the different components of language.

2.2.2. The Organizational Syllabus

Organizational syllabus considers both what should be learnt and the order in which it should be learnt. Example of an organizational syllabus is the contents page of a textbook. It differs from evaluation syllabus "in that it carries assumptions about the nature of learning as well as language, since, in organizing the items in a syllabus, it is necessary to consider factors which depend upon a view of how people learn (Hutchinson & Waters, 1987, p. 81). The following factors must be considered :

- What is more easily learnt

- What is more fundamental to learning?

- Are some items needed in order to learn other items?

- What is more useful in the classroom?

2.2.3. The Materials Syllabus

In this kind of syllabus the focus is on how learning will be achieved. The first person to interpret the material is the material writer. While writing the materials, the writer makes assumptions about the nature of language, language learning and language use. "The author decides the contexts in which the language will appear, the relative weightings and integration of skills, the number and the type of exercises to be spent on any aspect of language, the degree of recycling or revision." (Hutchinson & Waters, 1987, p. 81).

2.2.4. The Teacher Syllabus

As studies are provided to students through the mediation of a teacher, we have the teacher syllabus (Breen, 1984). "The teacher can influence the clarity, intensity and frequency of any item, and thereby affect the image that the learners receive." (Hutchinson & Waters, 1987, p. 82).

2.2.5. Classroom Syllabus

Two target objectives are necessary in a classroom, to plan a lesson and to achieve what has been planned in the classroom. According to Hutchinson and Waters (1987), Many conditions may affect the planned lesson. Some of them are extraneous factors such as noise from outside, hot weather, interruptions to deal with other things. Other conditions that may affect the classroom learning might come from the learners as a group such as tiredness, distractions, etc. However, the authors point out that the classroom is not simply a neutral channel for the passage of information from teacher to learner, it is a dynamic, interactive

environment, which affects the nature both of what is taught and what is learnt (p. 82). According to Breen (1984), "the classroom generates its own syllabus" (p. 66).

2.2.6. The Learner Syllabus

The learner syllabus is an internal syllabus. It is the network of knowledge that develops in the learner's brain and which enables that learner to comprehend and store the later knowledge (Hutchinson & Waters, 1987, p. 83). Candlin (1984) describes it as "a retrospective record of what has been learnt rather than a prospective plan of what will be learnt."

Besides, a syllabus can be 'Product oriented' or 'Process oriented'. Indeed, product-oriented syllabus, which is a synthetic approach, focuses on the product (out puts) of language learning. It contains the following approaches to syllabus design (Wilkins, 1976):

i.   structural approach : it is organized around grammar;

ii. situational approach : it is organized around speech setting and language use in everyday life;

i.   notional/functional approach: it emphasizes the communicative functions of language communicative use of patterns.

However, process-oriented syllabus, which is an analytic approach, focuses on the specification of learning tasks and activities that students will undertake. It encompasses the following approaches: procedural/task-based, learner-led and proportional.

i.   procedural/task-based approach: It focuses on practice and interaction, and uses tasks and activities to encourage learners to use the language communicatively. (Ellis, 1999);

ii. learner-led approach: it emphasises what learner want to do. In fact, it involves students' interest and motivation in the syllabus design (Breen and Candlin, 1984);

iii. proportional approach: it is designed to be dynamic, not static, with ample opportunity for feedback and flexibility (Yelden, 1987).

2.3. Approaches of Course Design

According to students' needs analysis, there are several approaches of courses design. Hutchinson & Waters, (1987, p. 83) identify three main types of course design : language-centred, Skill-centred and learning-centred.

2.3.1.   Language-centred Approach to Course Design

The Language-centred course design aims to connect between the analysis of the target situation and the content of ESP course. It proceeds as follow:
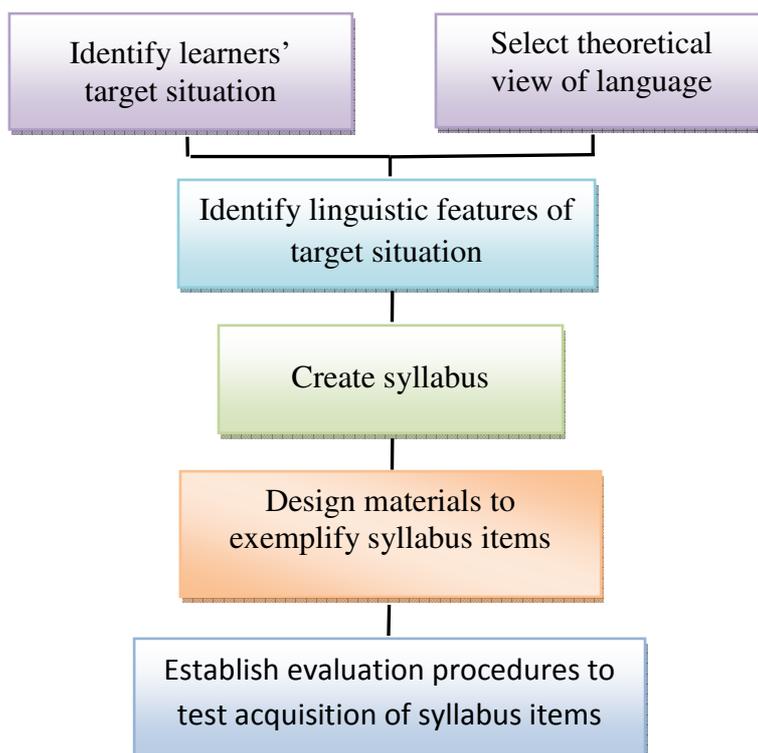
Figure 2.1: Language-centred approach to course design

(Source: Hutchinson and Waters, 1987, p. 66)

Hutchinson and Waters (1987) point out the weaknesses of language-centred approach in constructing a syllabus :

i.   it is not learner-centred but simply learner-restricted syllabus.

ii. It is a static and an inflexible procedure. Once the initial target situation analysis is done, no change occurs.

iii. It appears to be systematic.

iv. It gives no acknowledgment to other factors which play a part in course design.

v. Language-centred approach is at the surface level. It says nothing about competence that underlies performance.

2.3.2. Skills-centred Approach to Course Design

The skills-centred course design "sees the ESP course as helping learners to develop skills and strategies which will continue to develop after the ESP course itself." (Hutchinson & Waters, 1987). The authors argue that this approach "provides a basis for discovering the underlying competence that enables people to perform in the target situation" (70). In this approach the course design is oriented language in use rather than language learning.
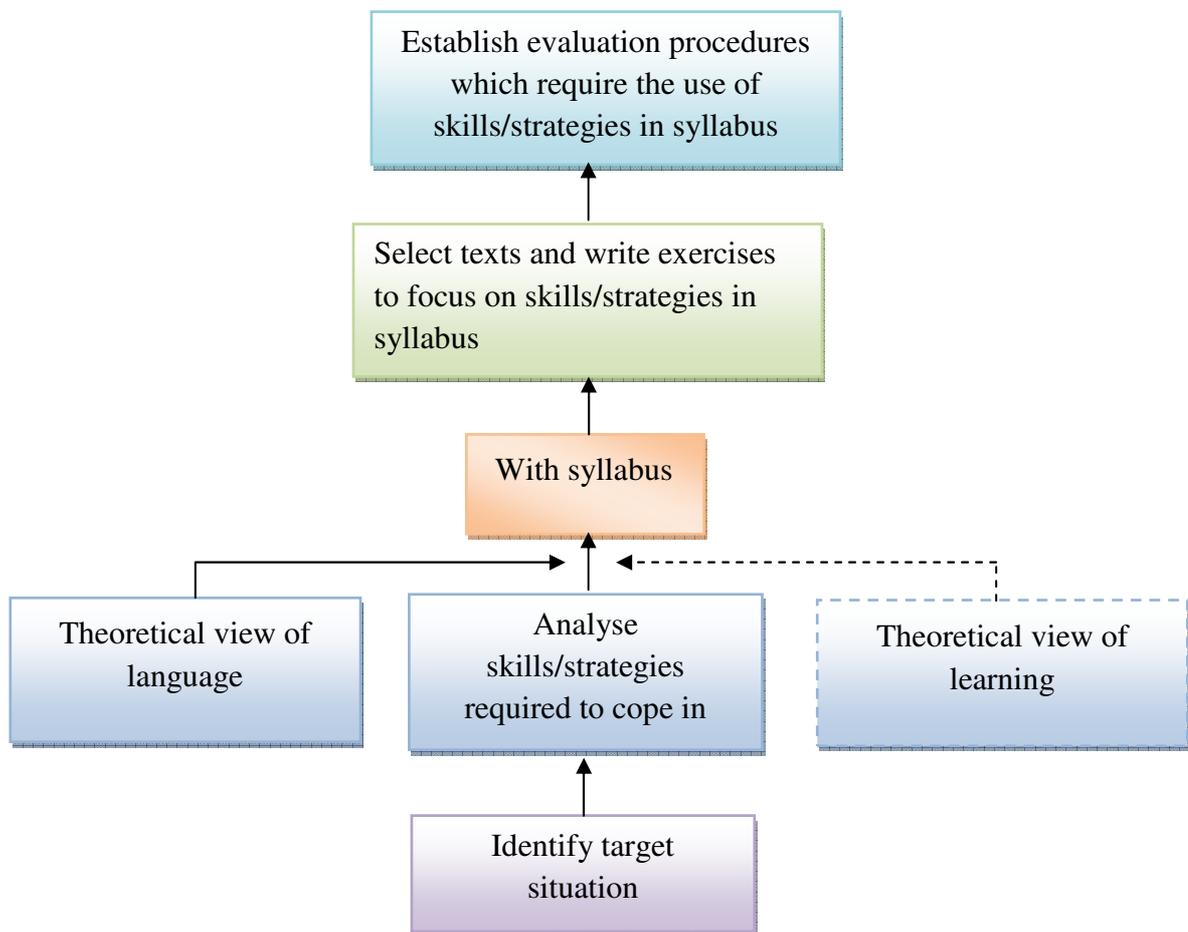
Figure 2.2 : Skills-centred approach to course design

(source: Hutchinson and Waters, 1987, p. 71)

2.3.3. A learning-centred Approach to Course Design

This approach to course design gives more attention to how learners learn. Indeed, Hutchinson and Waters (1987) argue that this approach " is based on the principle that learning is totally determined by the learner." (72). In addition, learner needs are approached

from two sides: target needs and learning needs. Target needs are defined as "what the learner needs to do in the target situation" (Hutchinson & Waters, 1987, p. 54). However, learning is "an internal process, which is crucially dependent upon the knowledge the learners already have and their ability and motivation to use it." (Hutchinson & Waters, 1987, p. 72). Besides, authors state the learner is one factor considered in the learning process, but not the only one. The learner-centred course design process is shown in the following figure.
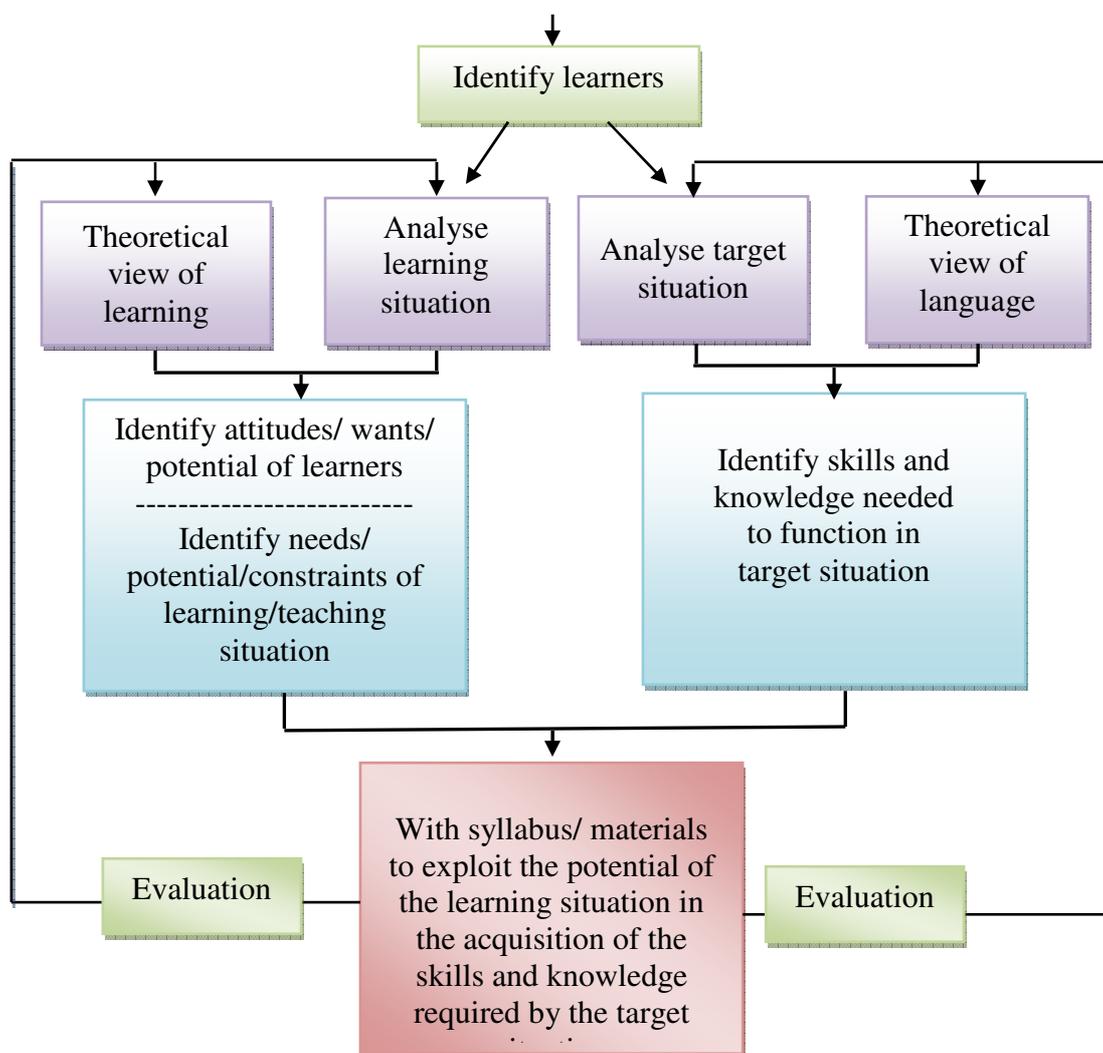
Figure 2.3 : Learning-centred approach to course design

(soured: Hutchinson and Waters, 1987, p. 74)

Besides, the following diagram establishes the relationship between the three approaches to course design.

```
                    ┌─────────────────────────┐
────────────────────┤  Identify target situation │    Identify target situation
                    └─────────────────────────┘    ────────────────────────────
                              │                      considers the learner to here
                    ┌─────────────────────────┐
                    │   Analyse target situation │
                    └─────────────────────────┘
                              │
                    ┌─────────────────────────┐
                    │  Analyse learning situation │
                    └─────────────────────────┘
                              │
                    ┌─────────────────────────┐
                    │       Write syllabus      │
                    └─────────────────────────┘
                              │
                    ┌─────────────────────────┐
                    │      Write materials      │
                    └─────────────────────────┘
                              │
                    ┌─────────────────────────┐
                    │      Teach material       │
                    └─────────────────────────┘
                              │
                    ┌─────────────────────────┐
────────────────────┤ Evaluate learner achievement │
                    └─────────────────────────┘        A learning-centred must
                                                    ────────────────────────────
                                                     consider the learner at every
                                                           stage situation
```
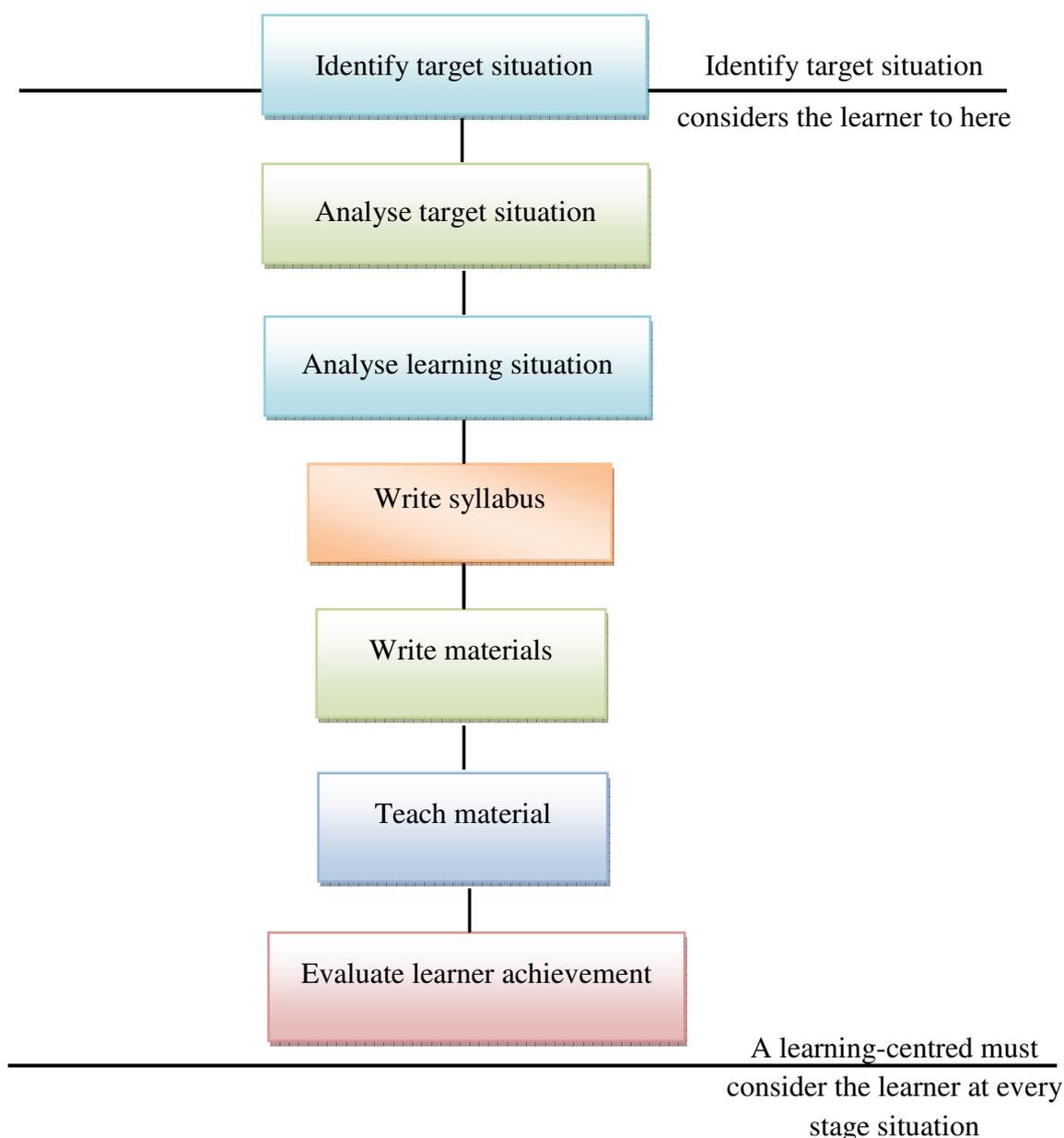
Figure 2.4: A comparison of approaches to course design

(source: Hutchinson and Waters, 1987, p. 73)

2.4. Needs analysis

According to Dudley-Evans & St. John (1998), needs analysis is the process of establishing what and how of a course. According to Brown (1995), needs analysis is "the systematic collection and analysis of all subjective and objective information necessary to define and validate defensible curriculum purposes that satisfy the language learning requirements of students within the context of particular institutions that influence the learning and teaching situation" (p. 36). For Jordan (1997), "needs analysis is the requirement for fact-finding or the collection of data" (p. 22). Hutchinson and Waters (1987) add that needs analysis is "the most characteristic feature of ESP course design." They state that it is more useful to look at the target needs by considering: *necessities, lacks* and *wants*.

i. Necessities: Authors define necessities as " the type of need determined by the demands of target situation, ..., what the learner has to know in order to function effectively".

ii. Lacks : By knowing what the learner know already, we can define which of the necessities the learner lacks (Hutchinson and Waters,1987).

iii. Wants: in addition to the both above issues, "the learners too have a view as to what their needs are." (Hutchinson & Waters, 1987).

2.5. Evaluation

According to Hutchinson and Waters (1987), two forms of evaluation are considered : learner assesment and course evaluation.

2.5.1. Learner Assesment

In ESP, three basic types of assessment are considered : Placement tests, achievement tests and proficiency tests.

i. Placement tests: used to place learners in the ESP course most suited to their needs. It is a kind of pretest.

ii. Achievement tests: used to assess the attainment process of learners.

iii. Proficiency tests: these assess whether or not the student can cope with the demands of a particular situation. (Hutchinson and Waters (1987)

2.5.1.1. Types of Assessments

Assessment may be formative, as well as summative.

i. Formative assessments: it is used to diagnose learners' strengths and weaknesses, and help teachers determine next steps to carry out during the learning process.

ii. Summative assessment: it is used to evaluate learners' general level of achievement. The purpose is also to discriminate and compare among individuals, for administrative need.

2.5.2. Course Evaluation

According to Hutchinson and waters (1987), course evaluation "helps to show how well the course is actually fulfilling the need." There are four aspects of ESP course evaluation to considere (Anderson and Waters, 1983), cited in (Hutchinson and waters, 1987, p. 152) :

i. What should be evaluated?

- The teacher's ability to collect information and use them.

- Ability to satisfy the learners needs as language learners and language users.

ii. How can ESP courses be evaluated?

- It could be evaluated through tests, questionnaires, discussions, interview, comments, etc.

iii. Who should be involved in the evaluation?

- The ESP teacher, the learners and course designers.

iv. When (and how often) should evaluation take place?

It is difficult to determine how often course evaluation should be done. It depends on the characteristics of the individual situation. However, according to Hutchinson and Waters (1987), the most important times occur :

- in the first week of the course,
- at regular intervals throughout the course,
- at the end of the course, and
- if possible, after the course

Conclusion

In this chapter, the difference between courses, syllabus and curriculum is clarified. It is noted that syllabus is a more detailed statement which translates the general goals of the curriculum into more specific objectives about the teaching procedures. Besides, it is worth mentioning that a syllabus can be a *product oriented*, when focusing on the out puts of language learning, and is called *process oriented*, when focusing on communicative skills. The first kind of syllabus, also called *synthetic approach*, contains the following approaches: structural, situational and notional/functional, while the second syllabus, called also analytic approach, encompasses the following approaches: Procedural/task-based, learner-led and proportional. In this respect, three main approaches of course design are explained, namely: Language-centred, Skills-centred and learning-centred. The focus was on the learning-centred approach to course design, because it relies on the recognition of the complexity of the learning situation. Besides, in this chapter, it is also examined needs analysis. The latter is to establish what and how of the course, through data collection. It is noted that it is useful to look at the target needs by considering: necessity, lacks and wants. Hence, two kinds of evaluation are considered: learner assessment and course evaluation.

Chapter Three: Approaches and Methods in Language Teaching

Introduction

In this chapter, we shall present a review of the literature about the main approaches/methods used in teaching English as a foreign language. Certainly, according to the characteristics, language teaching approaches are divided into three categories: structural, functional and interactive. The structural category considers language as a system of structurally related elements, particularly grammar. The functional category sees language as needed to express or accomplish a certain function as requesting something. The interactive category considers language as a vehicle for the creation and maintenance of social relations, focusing on patterns of moves, acts, negotiation and interaction found in conversational exchanges.

3.1. Structural approaches/methods

3.1.1. Grammar Translation Method (GTM)

This method appeared in the 19th century. It focused on the knowledge of Latin and Greek, which were the dominant languages in the universities. It emphasises the memorization of both grammar rules and long lists of native-language equivalent vocabulary. First language and target language were always compared. The focus was also on the study of a written text. However, reading and writing were more emphasised, rather than listening and speaking. (Richards & Rodgers (2001)

Therefore, this method is based on the deductive learning. The rules are given by the teacher explicitly and mainly through the mother tongue. (Richards & Rodgers (2001)

3.1.2. Audio-Lingual Method

This method is called also "the army method" because it was developed by the U.S.A army during the Second World War. The goal was to teach students to speak a foreign language as native speakers. It focuses on phonology, morphology and pronunciation. Dialogues are the basic form of materials in this method. The dialogue serves three functions: it illustrates the target structure, illustrates the situation where the structure may be used, and provides cultural information for language use. However, contrarily to the GTM method, the first language is eliminated from the classroom. (Richards & Rodgers (2001)

3.2. Functional Approaches/Methods

3.2.1. Oral Approach /Situational Language Teaching

This method is developed in the 1930's to the 1960's by the British applied linguists. It relied on the structural view of language. Both speech and structure were seen to be the basis of language. It focuses on oral practices where stress and intonation practice are important. (Richards & Rodgers (2001)

3.3. Interactive Approaches/Methods

3.3.1. Direct Method

This method was proposed first by French and German educators and then introduced to American commercial language schools by Berlitz at the 20th century. It seems that this approach was elaborated as a reaction to the GTM. This method argues that the language should be learned in the same way children begin to learn his/her L1 language. In this method there is no recourse to translation. The four skills are learnt inductively, however, the grammar rules are not explicitly taught. (Richards & Rodgers (2001)

3.3.2. Suggestopedia

It is the study of suggestive factors in a learning situation, which means that "the brain can be stimulated through the power of suggestion. Developed by Georgi Lozanov, suggestopedia sees the physical surroundings and atmosphere of the classeroom as a vital importance. (Richards & Rodgers (2001)

3.3.3. Total Physical Response (TPR)

This method was developed in the 1970s. It was mainly based on the principle that the human brain is programmed for acquiring any natural language. "If children learn much of their language from speech directed at them in the form of commands to perform actions, the adults will learn best in that way too. Accordingly, TPR asks students to respond physically to the language they hear." (Richards & Rodgers (2001)

3.3.4 The Silent Way

This method was founded in the early 1970's by Caleb GATTEGNO, sharing many of the same essential principles as a cognitive code. The most dominant characteristic of the method was that the teacher typically stayed silent most of the time, as part of his/her role as

helper because is believed that the learner discovers and creates language rather than just remembers and repeats what has been taught. (Richards & Rodgers (2001)

3.3.5 Notional/Functional Approach

This approach proposed in 1972 by the British linguist D. A.WILKINS, it showed how language could be categorized on the bases of notions, such as: quantity, location and time; and functions such as: making requests, making offers and apologizing. (Richards & Rodgers (2001)

3.3.6 Communicative Language Teaching/Learning

This method is interested in giving students the skills to be able to communicate under various circumstances. It emphasises more on obtaining native-speaker-like fluency and pronunciation rather than the learning of specific grammatical rules. The focus is on functional language usage and the learners' communicative competence to express their own ideas, feelings, attitudes, desires and needs. (Richards & Rodgers (2001)

3.3.7 Competency-based Teaching / Learning

The goal of this method is to enable students to become autonomous individuals capable of coping with the demands of the world. CBLT teaches language as a function of communication about concrete tasks. The emphasis is on overt behaviors rather than on knowledge or the ability to talk about language and skills. (Richards & Rodgers (2001)

Conclusion

The most used approaches in learning English language are multiple and diachronic. Each one of them has a number of qualitative properties. Their combination can help to ensure the quality of teaching English, and therefore the quality of training students of technological disciplines. These approaches are divided into three categories: structural, functional and interactive. Therefore, the most important approaches and methods are : 'Grammar-Translation Methods', 'Audio-lingual Method', 'Oral Approach or Situational Language Teaching', 'Direct Method', 'Suggestopedia', 'Total Physical Response', 'The Silent Way', 'Notional Functional Approach', 'Communicative Language Teachind / Learning' and 'Competency Based Teaching / Learning'.

Chapter One : Study Description

Introduction

Before designing courses of English for Specific Academic Purposes (ESAP or EAP), it is necessary to highlight the academic and professional goals targeted by the training. The objective, therefore, is to design new courses of ESAP for License hydraulic students from second and third year and first year Master in the Department of Civil and Hydraulics Engineering of the University of Biskra (Algeria). For this purpose, three main elements are considered, namely needs analysis, pilot course and an extensive literature review. The consideration of both case study and state of the art should lead straightforwardly to the syllabus design (Figure 1.1).
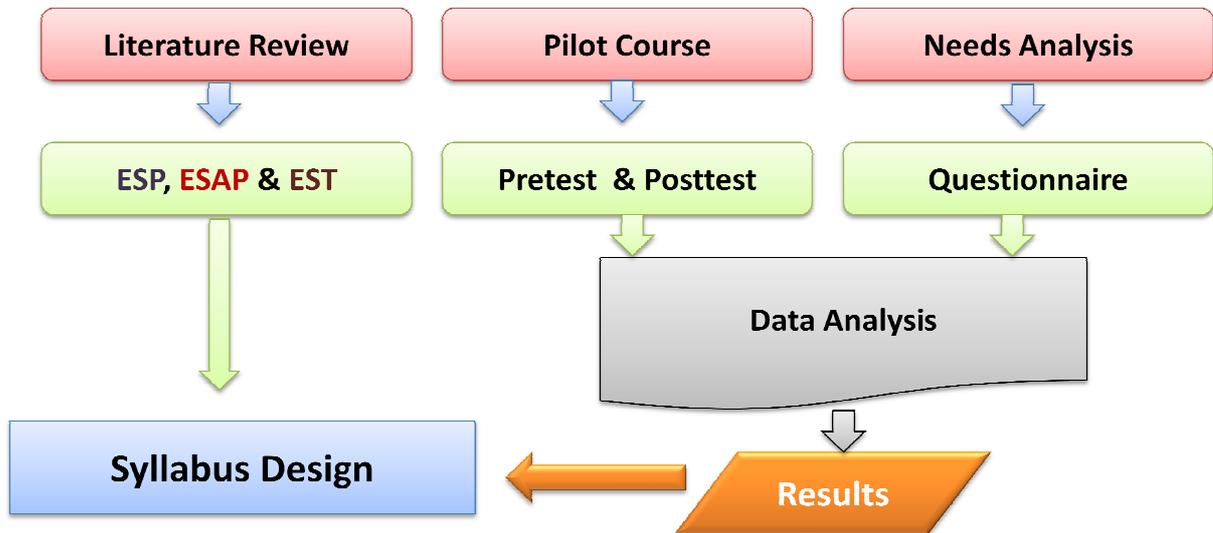
Figure 1.1: Flow chart representing the study description.

In our case study, 'the target population' are 57 students of the first year Master (M1). In fact, the choice of this class as a study sample was not made randomly, but was chosen because the level of M1 is, firstly, considered as the last year of the learning period of technical English. Secondly, it also represents a selection of the best students of the first graduation. This choice is also motivated by the fact that through the 'feedback' of M1 students, one can measure the level of learning/teaching that was given to them in the 2nd and 3rd year license.

In this chapter, we intend to describe the methodology used to assess the needs of M1 students in learning technical English. To this end, it was implemented a pilot course, where

the degree of assimilation (attainment) has been tested by both formative and summative assessments. Data was collected through questionnaires to analyze students needs.

1.1. Pilot Course
1.1.1. Course Plan

After consulting the M1 hydraulic students study programme and some resources related to ESP and teaching technical English to hydraulic students (Koch,1984; Hutchinson & Waters, 1987), a pilot course was designed (our hypothesis). This course was taught for a semester of study, in 14 hours, instead of 20 hours scheduled. This is due to students' strike that lasted 4 weeks. Three lessons in the field of hydraulics were taught to students, with three themes. These were : Civil Engineering, Dams and Water Resources. Each lesson required an hourly volume of 4.5 hours (ie. 3 sessions of study). The lesson is based on some paragraphs or a dialogue for which four activities were carried out: Text Reading, Writing/Terminology Explanation, Check-up and Elements of Grammar (or else).

a. Text Reading

The first step was to provide students with a handout of a text on a particular theme of hydraulics. The students were asked to take turns reading paragraphs of the text. Next it was the turn of the teacher to read the text, explaining, in English of course, all new technical terms.

b. Writing/Terminology Explanation

Before presenting the definitions of technical terms in the data show screen, the teacher asks the students, as a second step, to try to define in their own ways the proposed technical terms. The definitions were then displayed on screen and the students were asked to write them down.

c. Check-up

The third step was to provide the students with exercises on the subject, such as 'Fill in the blanks', wherein it is matter to understand the text and fill in the gaps by the appropriate technical terms.

d. Elements of grammar

In this final stage, the teacher explained to students some basic grammar lessons, such as: the 8 parts of speech, sentence patterns, verb tenses, writing a paragraph,... All the studied examples in this activity were related to the topic of the relevant text.

1.1.2. Evaluation

During the semester of study, formative and summative assessments were conducted. The first evaluation consisted of a pretest and posttest; the second one consisted of a final exam. Actually, the first test (pretest) was given to students before starting their English course. The same test was given to the students after completing their course. Then, a final exam is given to students as summative evaluation.

1.2. Needs Analysis

According to Brown (1995) needs analysis is very important for curriculum development. It is "the systematic collection and analysis of all subjective and objective information necessary to define and validate defensible curriculum purposes that satisfy the language learning requirements of students within the context of particular institutions that influence the learning and teaching situation" (p. 36). After giving a pilot course, as a hypothesis, the needs of students were analysed, through the collection of data by the means of questionnaire. The goal was to design three syllabi respectively for the students of 2nd year license, 3rd year license, and 1st year M1.

1.2.1. Data Collection

Data were collected through of questionnaire, which was distributed to 57 M1 students. The used questions were mostly closed-ended, multiple-response, yes/no, ranking, and Likert-scale questions. Some open-ended questions are asked to give students room to express their opinions freely. Twenty-four (24) main questions divided in four (04) themes were considered. In the first theme, students had to provide data concerning their personal profile: name, age, gender, nationality, native language and university level. In the second theme, gathered data concerned students' general background in English language. In this part students have to answer the following questions:

- How many years have you been studying English language?
- Have you obtained any certificate in English language?
- How do you judge your level in English language?
- Classify the four English skills according to your degree of proficiency.

In the third theme, the students were asked to give their perceptions of the teaching/learning of English language. They had to answer the following questions:

- How do you judge your level in English language until the present time?

In a scale from 1 to 4, wherein 1 is Very Good and 4 is Bad, students had to show their level in Technical English, Reading, Speaking, Writing, Listening, Grammar and Pronunciation.

- What does the syllabus of the English language course contain in License and M1?
- Whether or not the teacher explains the course only in English, or in other languages. (In License and in M1)
- Whether or not the contents of English courses are linked to student's field of studies. (in License and in M1)
- Do you think one session a week is sufficient to learn English? (in License and in M1)
- Do you like the method used by your teacher? (in License and in M1)
- Do you prefer to introduce audio/visual tools in your English courses?
- Does the teaching method consist on the translation of technical terms only? (In License and in M1)
- Does your study include appropriate texts in hydraulics? (In License and in M1)
- Does your study of the course is followed by practice in hydraulics? (In License and in M1)
- What are the reasons of the failure of the current experience of teaching technical English (ESAP/EST) to hydraulics students?

The students had to tick whether or not the reasons of the failure of the current experience of teaching technical English to hydraulics students are 'Administrative selflessness', 'Teachers' wrong choice', 'Lack of teaching quality' or 'Inadequacy of the methods used and the low level of language learners'. At last an open-ended answer was also possible.

In the last theme, the students were asked to give their attitudes towards English language. In this part, they had to answer if they agreed or disagreed with the following opinions:

- Technical English would be useful in my future job.
- The session of Technical English is important in my curriculum.
- Using English causes a threat to my native language.

Conclusion

      The approach, used to evaluate the needs of hydraulic M1 students in learning technical English, is essentially based on two tasks. The first task, which is one of our research hypotheses, was to carry out a pilot course for one (01) semester of study. The latter was preceded by a pretest, and followed by a posttest. Finally, it ended with an exam. The second task dealt with the distribution of questionnaires to students, in order to collect data to it use thereafter in the student's needs analysis. Overall, 57 students had answered 24 questions.

Chapter Two : Results and Discussion

Introduction

In order to analyse M1 hydraulics students' needs, and hence that of the whole learning period of technical English in the Department of Civil and Hydraulics Engineering, quantitative and qualitative analysis of the collected data were performed. The analysis concerned, firstly, the quantitative assessment of students' level progress through the scores of the pretest, posttest and the final examination. Secondly, the qualitative analysis was about the answers to the questions administered to students. Using statistical software SPSS19, twenty-four (24) questions were coded in variables.

In this chapter, we will describe the steps to analyse the collected data, by means of SPSS19 statistical software. The results will be interpreted afterwards.

2.1. Data Analysis

2.1.1. Quantitative Data

Data are considered quantitative when they are presented under numerical forms. In this case, data are objective and measurable. As it is shown above, a preliminary teaching method to students of M1 hydraulics was used. In this case, a quasi-experimental research was conducted, with non-randomized sampling. For sure, 57 students had been taught English and evaluated through pretest, posttest and exam. For the sake of reliability, the pretest which was given before starting the course was the same one given at the end of the course. Evidently, the students answered in the sheet in order not to keep copy of the test. The test assessed exactly what the students had learnt during the semester.

2.1.2. Qualitative Data

Data are considered qualitative when they are presented in the form of words, which represent values and attitudes of people. In this case, data are subjective. Twenty-four (24) questions were coded in terms of variables. These had resulted in 51 variables and 57 responses for each item. As noted above, the used questions are mostly closed-ended, multiple- response, yes/no, ranking and Likert-scale questions. Some open-ended questions were asked to assign students room to express freely their opinions about the subject. Three level of measurement were proposed according to the nature of the data treated, namely: Nominal, Ordinal and Interval/Ratio Scale. Nominal scales are mutually exclusive and cannot be ordered. In the ordinal scale the order of values is important. Interval / ratio scale concerns

numeric scales, wherein the order and the differences between the values are known. In addition, 'ratio scale' considers the zero value.

2.2. Results and Discussion

2.2.1. Achievement Evaluation

In order to measure the degree of achievement of the students of M1 in hydraulics, three tests were carried out. The first test (pretest), commonly called a mock test, was developed before starting the English course. The same test was developed after the course (Posttest) and a final exam (curriculum washback), which encompasses all the lessons was carried out at last. Table 2.1 and Figure 2.1 summarise the obtained results.

Table 2.1: Student's grades evaluation.

	Pretest	Posttest	Exam
Number of Grades below 5/20	37	3	0
Number of Grades between 5/20 and 9/20	3	20	14
Number of Grades above 9/20	2	34	41
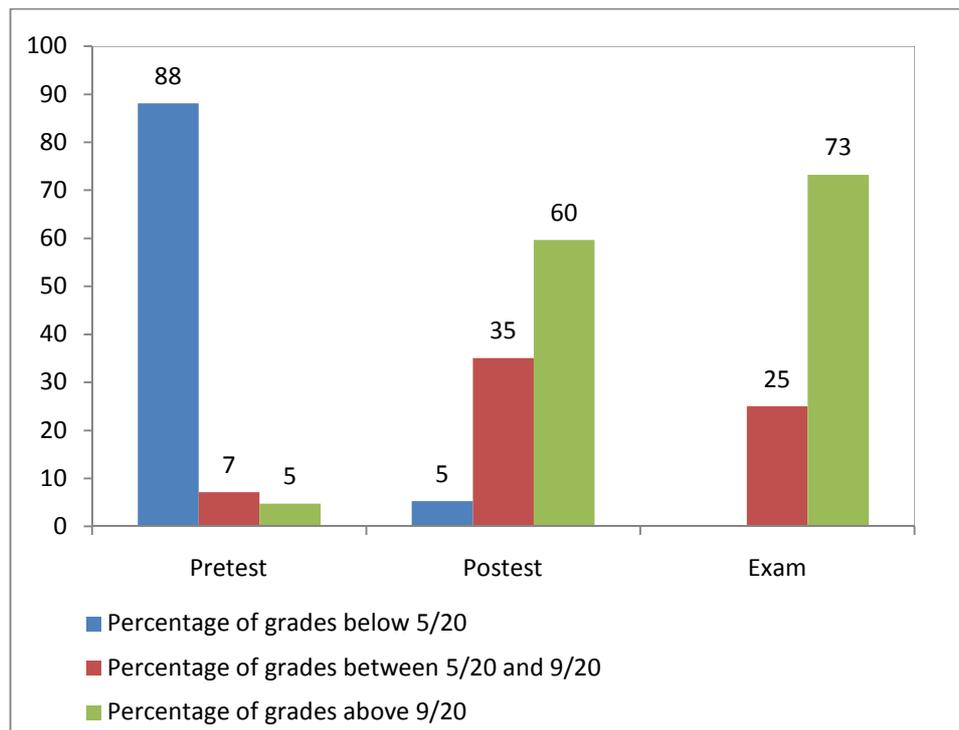
Figure 2.1: Student's grades evaluation

As seen in Figure 2.1, bar charts represent the evolution of students' achievement. It is observed in the Pretest that 88% (37 students) of the students obtained grades below 5 out of 20, and only 5% (2 students) obtained grades above 9 out of 20. However, in this case 18, zero (0) were obtained and the mean of grades is 1.93. In the Posttest, a clear progress of the

students is perceived. Indeed, 60% (34 students) of the students obtained above 9 out of 20, only 5% (3 students) obtained below 5 out of 20, and only two zero (0) were obtained. The mean of grades in this case is 10.19. Therefore, a clear evolution of students' scores is recommended in the last Examination. Certainly, 73% (41 students) achieved above 9 out of 20 and with no zero (0) obtained. The mean of grades in this case is 10.74. The result is statistically significant. Accordingly, one of our alternative hypotheses is confirmed.

2.2.2. Personal Profile

The targeted population in the investigation is 57 students of first year Master of hydraulics field, made up of 9 females and 48 males, where the average age is 23 years old, between 21 and 25 years. All the students are of Algerian nationality. All of them speak Arabic as their first language. We can consider this population as homogeneous.

2.2.3. Students General Background in English Language

All the students studied for four (04) years in the middle school, three (03) years in secondary school and three (03) years in University. No one has studied English in private school. In this task of the questionnaire, a question was asked about how students judge their level in English language, grading from a scale of 1 to 4, where 1 is "Excellent" and 4 is "Bad". (Table 2.2)

Table 2.2 : Students' level in English Language.

	Frequency	Percentage
Excellent	0	0.0
Very Good	1	1.8
Good	17	30.4
Bad	38	67.9
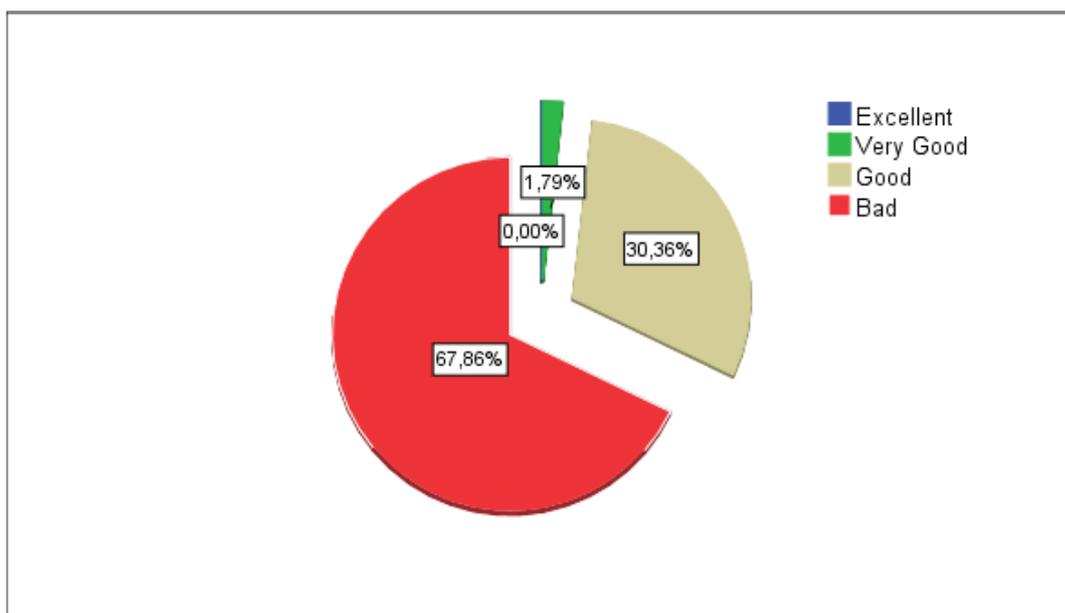
Figure 2.2 : Students' level in English Language

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As seen in Figure 2.2, 68% of students judged their level in English Language as bad, and only 1.8 % considered their level very good. Indeed, these results justify the obtained grades in the pretest (Figure 2.1), where 88% of the students had obtained grades below 5/20. Another question urged the students to classify from 1st to 4th the four English macro skills according to their degree of proficiency. The obtained results are presented in Table 2.3.

Table 2.3: Students' Degree of Proficiency towards the four English Skills

	Writing Skill		Reading Skill		Speaking Skill		Listening Skill	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
First	19	37.25	11	21.57	13	26.00	15	28.85
Second	13	25.49	26	50.98	14	28.00	17	32.69
Third	10	19.61	12	2353	10	20.00	13	25.00
Fourth	9	17.65	2	3.92	13	26.00	7	13.46
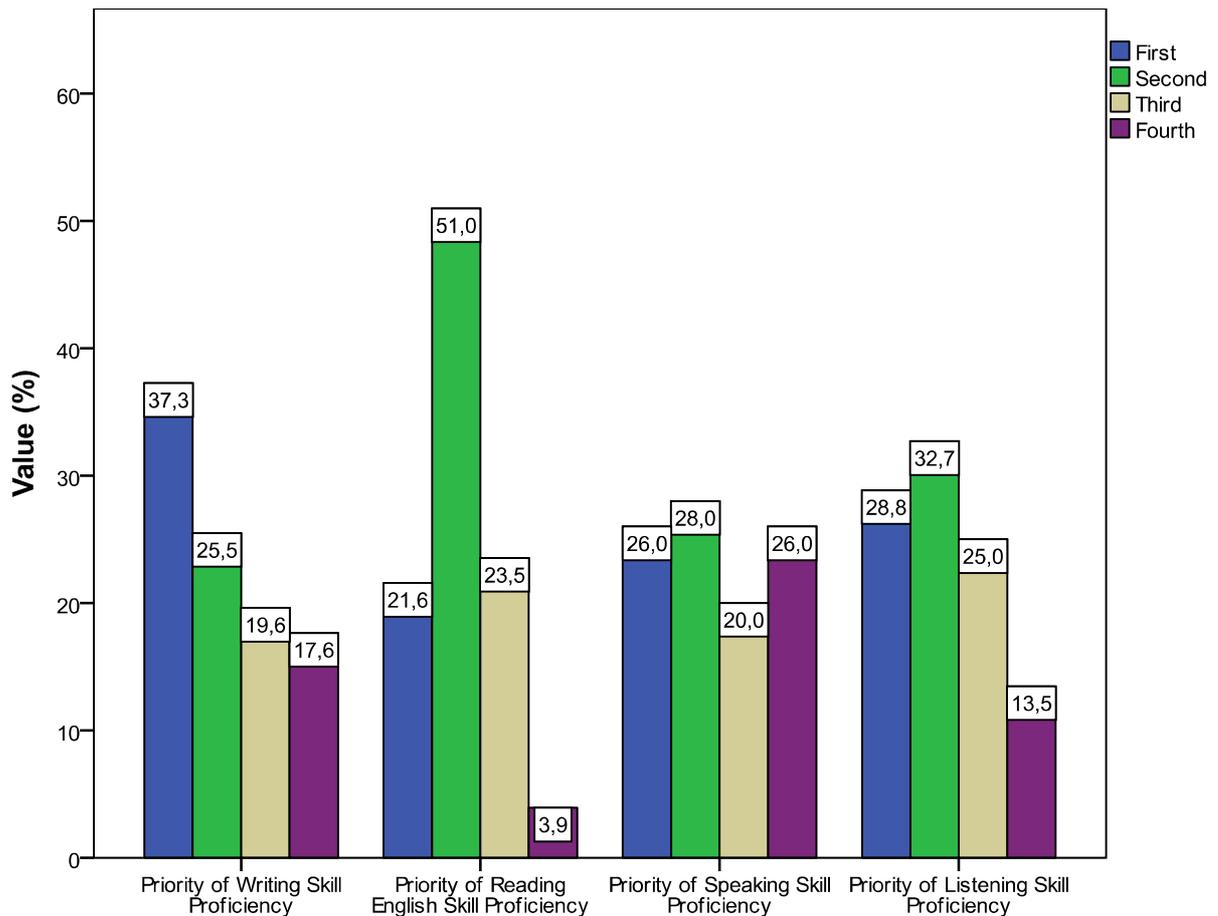
Figure 2.3 : Priority of the English Skills according to students' degree of proficiency

In Figure 2.3, 37% of the students thought that the writing skill is a first priority against 25% who thought that it is a second priority. However, reading, speaking and listening skills are considered a secondary priority with the respective percentages of 60, 28 and 33. Thus, most students considered the writing skill as a first priority and the three other skills as a secondary priority.

2.2.4. Students' Perceptions of the Teaching/Learning of English Language

In this part of the questionnaire, students were asked to evaluate their level in English language until the present time. In a scale from 1 to 4, where 1 is Very Good and 4 is Bad, the students had to display their level in Technical English, reading, speaking, writing, listening, grammar and pronunciation. The gathered data are presented in Tables 2.4, 2.5 and 2.6.

Table 2.4 : Self-evaluation of students' level in English language.

	Technical Vocabulary		Reading		Speaking	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Very Good	0	0.00	1	1.79	0	0.00
Good	8	19.51	14	25.00	8	14.55
Average	17	41.46	28	50.00	23	41.82
Bad	16	39.02	13	23.21	24	43.63

Table 2.5: Self-evaluation of students' level in English language.

	Writing		Listening	
	Frequency	Percenatge	Frequency	Percenatge
Very Good	3	5.36	2	3.71
Good	9	16.07	17	31.48
Average	27	48.21	18	33.33
Bad	17	30.36	17	31.48

Table 2.6: Self-evaluation of students' level in English language.

	Grammar		Pronounciation	
	Frequency	Percenatge	Frequency	Percenatge
Very Good	0	0.00	1	1.82
Good	5	8.93	8	14.56
Average	19	33.93	25	45.44
Bad	32	57.14	21	38.18
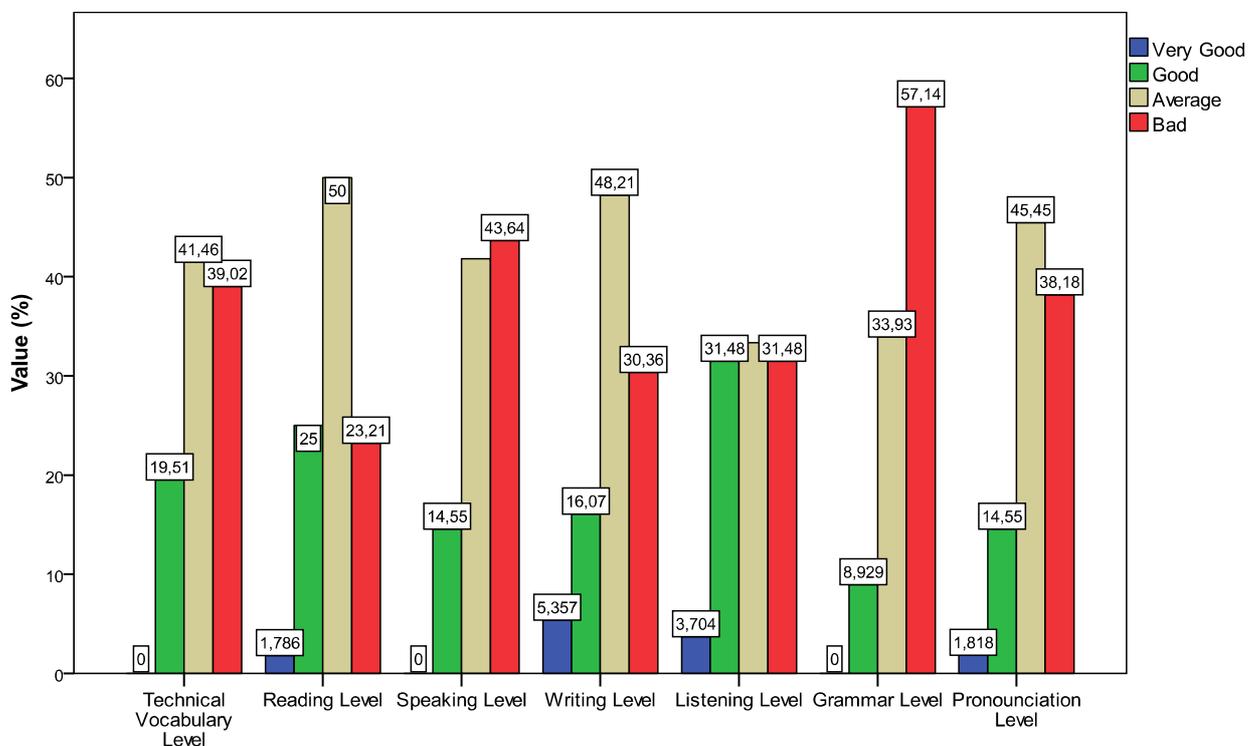
Figure 2.4: Self-evaluation of students' English level.

As seen in Figure 2.4, 80% of the students believed they are either average or bad in technical vocabulary. Only 20% of the students considered themselves good in this skill. About the reading skill, 50% of the students evaluated their levels as average, 25% of the students believed they are good and only 1% considered their level very good. The remaining students believed they are bad in reading. However, almost 85% of the students judged their level in speaking either average or bad. Only 15% believed they are good in speaking. About the writing skill, almost 50% of the students saw they are average, against 30% who believed they are bad. The remaining students were divided between good (16%) and very good (5%). In the listening skill, only 4% of the students believed they are very good. Almost 96% of the students' answers were divided equally between good, average and bad. Therefore, 57% of students considered themselves bad in grammar, against 9% who believed they are good. The last considered skill is 'pronunciation'. In this case, most students' evaluation is divided between Average (45%) and Bad (38%). Only 16% believed they are good in this skill. As a result, it has become obvious that most students considered their level, in the seven above mentioned skills, either Average or Bad. However, the skill where the students performed the worst is grammar.

In order to know the causes of the above results, another question was asked to the students. This is as follows: What does the syllabus of the English language course contain in License and Master one?

Table 2.7: Syllabus of the English language course contains in License and in M1.

	Technical English - in Licence Syllabus		Technical English - in Master Syllabus	
	Frequency	Percentage	Frequency	Percentage
No	53	94.6	15	27.3
Yes	3	5.4	40	72.7

Table 2.7: Syllabus of the English language course contains in License and in M1.

	Reading - in Licence Syllabus		Reading - in Master Syllabus	
	Frequency	Percentage	Frequency	Percentage
No	27	48.2	12	21.4
Yes	29	51.8	44	78.6

Table 2.8: Syllabus of the English language course contains in License and in M1.

	Speaking - in Licence Syllabus		Speaking - in Master Syllabus	
	Frequency	Percentage	Frequency	Percentage
No	42	75.0	22	39.3
Yes	14	25.0	22	60.7

Table 2.9: Syllabus of the English language course contains in License and in M1.

	Writing - in Licence Syllabus		Writing - in Master Syllabus	
	Frequency	Percentage	Frequency	Percentage
No	33	58.9	27	48.2
Yes	23	41.1	29	51.8

Table 2.10: Self-evaluation of students' level in English.

	Grammar - in Licence Syllabus		Grammar - in Master Syllabus	
	Frequency	Percentage	Frequency	Percentage
No	31	55.4	15	26.8
Yes	25	44.6	41	73.2

Table 2.11: Syllabus of the English language course contains in License and in M1.

	Pronounciation - in Licence Syllabus		Pronounciation - in Master Syllabus	
	Frequency	Percentage	Frequency	Percentage
No	34	60.7	32	57.1
Yes	22	39.3	32	42.9

As shown in Figure 2.5, most students confirmed that these tasks are taught more in Master one than in License degree, and especially Technical English where 95% of the students considered they had not done this task at all in License degree. However, according to the students' answers, Grammar, Reading and Listening tasks are more considered in Master one syllabus than in License, while writing and pronunciation are less considered in both syllabi.
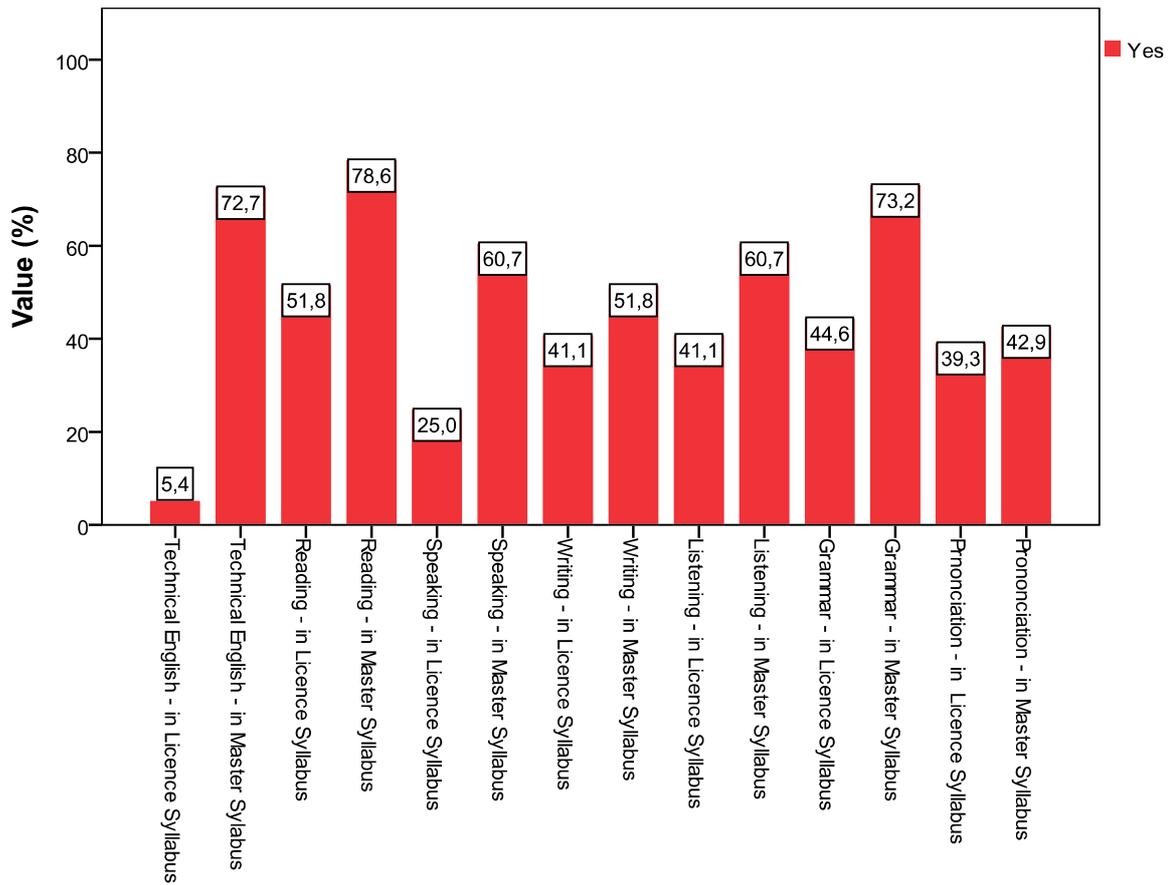
Figure 2.5: The syllabus of the English language course in License and in M1.

Besides, data analysis of questions related to whether or not the teacher explains the course only in English language or in other languages, in both License and M1 level, sh owed that 73% of the students thought that the teacher explains English language course, in License level, in other languages. However, almost 60% of students answered by the teacher explains English course, in M1, only in English. Master one course is taught exclusively in English, but in some occasions a brief explanation in Arabic or French language is provided to help students shift between their first language and the target language.

Table 2.12: Classroom methodology of teaching in License and in M1.

	in Licence		in Master	
	Frequency	Percentage	Frequency	Percentage
Teacher Explains the Course Only in English	10	18.2	33	57.9
Teacher Explains the Course by Using Arabic or French Language	40	72.7	19	33.3
Both	5	9.1	5	8.8
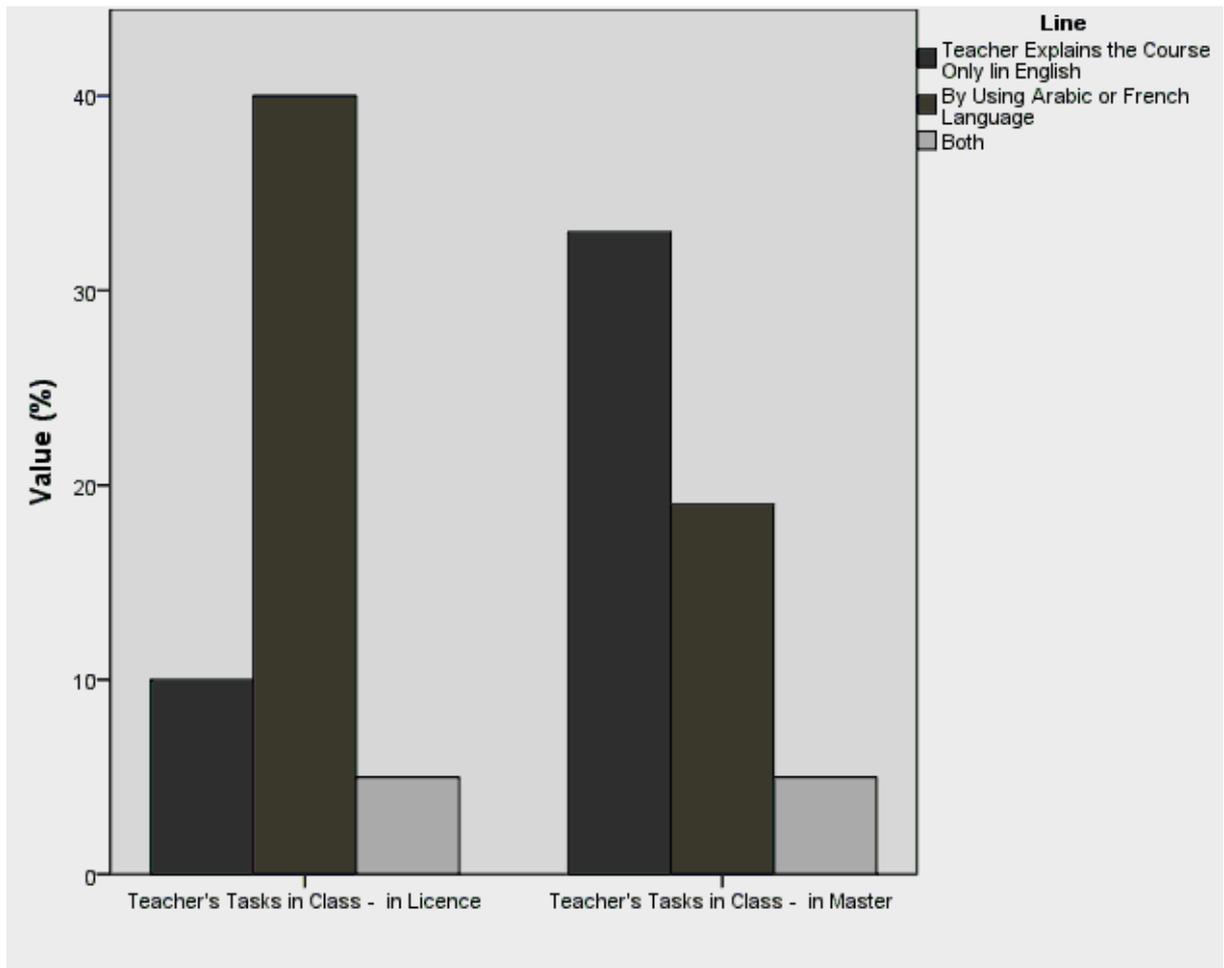
Figure 2.6: Classroom methodology of teaching in License and in M1.

Therefore, a question about whether or not the contents of English courses are linked to student's field of study in both License and Master one. As seen in Figure 2.7, 86% of students said the contents of English language courses are linked to their field of study in Master one, against 14% who answered that the content of English language courses are linked to their field of study in License.

Table 2.13: Teaching appreciation.

	in Licence		in Master	
	Frequency	Percentage	Frequency	Percentage
Is the content of English courses linked to your field of studies?	8	13.56	51	86.44
Do you think one session a week is not sufficient to learn English?	51	86.44	37	69.80
Do you like the method used by your teacher?	6	12.24	43	87.76
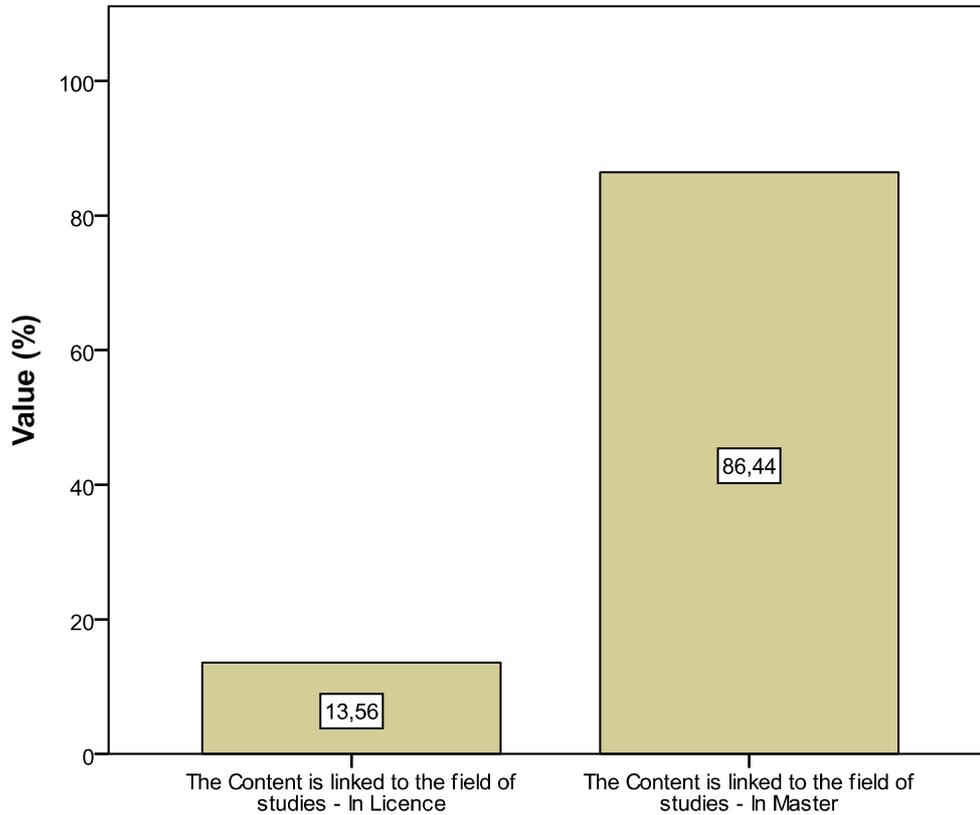
Figure 2.7: The content of the course and the field of studies.

Besides, we were satisfied to know that 86% of the students liked the teaching method we used in M1, against 14% who like the one performed in License. This observation is justified by the evolution of students' achievement presented in Figure 2.1. Although, almost 90% of the students thought that one session per week is not sufficient in both License and M1 level. Else, about teaching techniques, 95% of students preferred introducing audio-visual tools in English language courses.

As seen in Figure 2.8, 56% of the students consider the course given in License consisted of the translation of technical terms only. However, almost 80% of the students considered that the course of M1 doesn't consists of translation only. Else, 91% of the students confirmed they studied appropriate texts in hydraulics in M1 course. However, 11% only believed they studied appropriate texts in hydraulics in License courses.

Table 2.14: The use of translation of technical term only in classroom.

	Translation of Technical Terms Only - in Licence		Translation of Technical Terms Only - in Master	
	Frequency	Percentage	Frequency	Percentage
No	24	43.6	43	78.2
Yes	31	56.4	12	21.8

Table 2.15: The use of translation of technical term only in classroom.

	Study of appropriate texts in hydraulics - in License		Study of appropriate texts in hydraulics - in Master	
	Frequency	Percentage	Frequency	Percentage
No	40	88.9	4	8.9
Yes	5	11.1	41	91.1
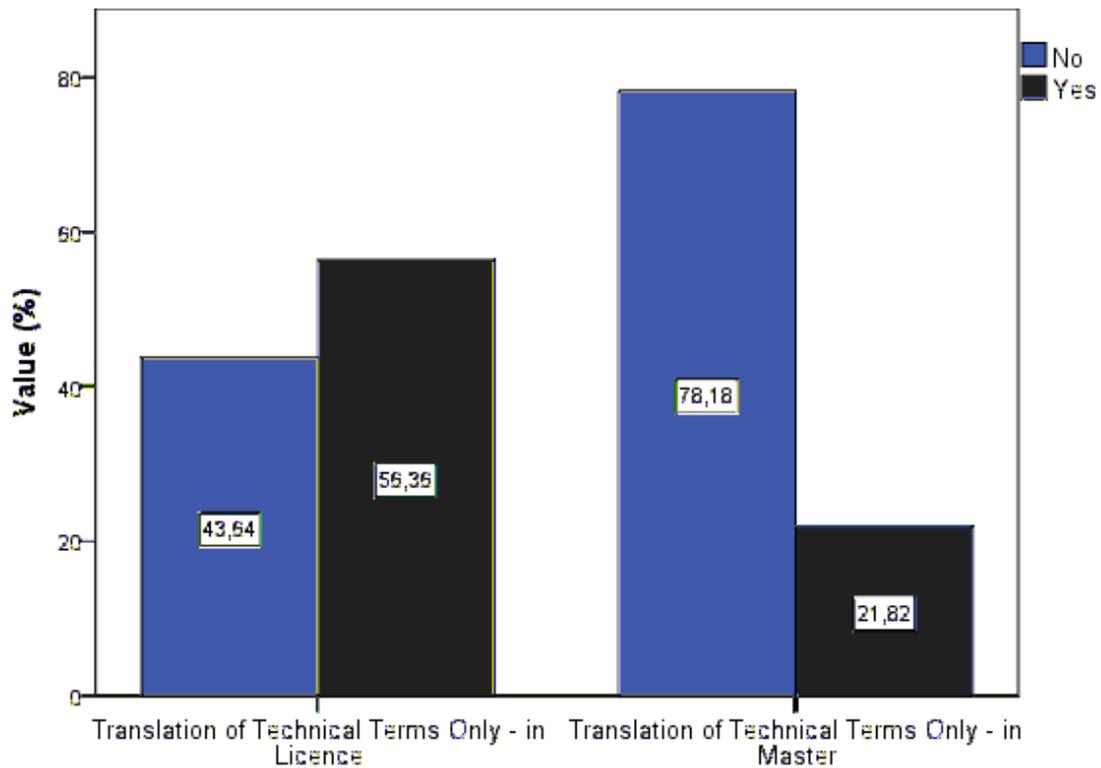
Figure 2.8: Students' opinions about the use of translation of technical terms in class.

Table 2.16: Reasons of the failure of the current experience of ESAP

	Administrative Selflessness	Wrong Choice of Teachers	Teachnig Quality	Methods Used	Other
No	46.4	47.4	26.3	5.3	66.7
Yes	53.6	52.6	73.7	94.7	33.3

In Table 2.16 and Figure 2.9, it is seen that more than 50% of the students thought that the reasons of the failure of the current experience of teaching technical English (ESAP/EST) to hydraulics students is due to the following reasons: administrative selflessness, wrong choice of teachers, teaching quality. However, 95% of the students attributed this failure to the used teaching method.
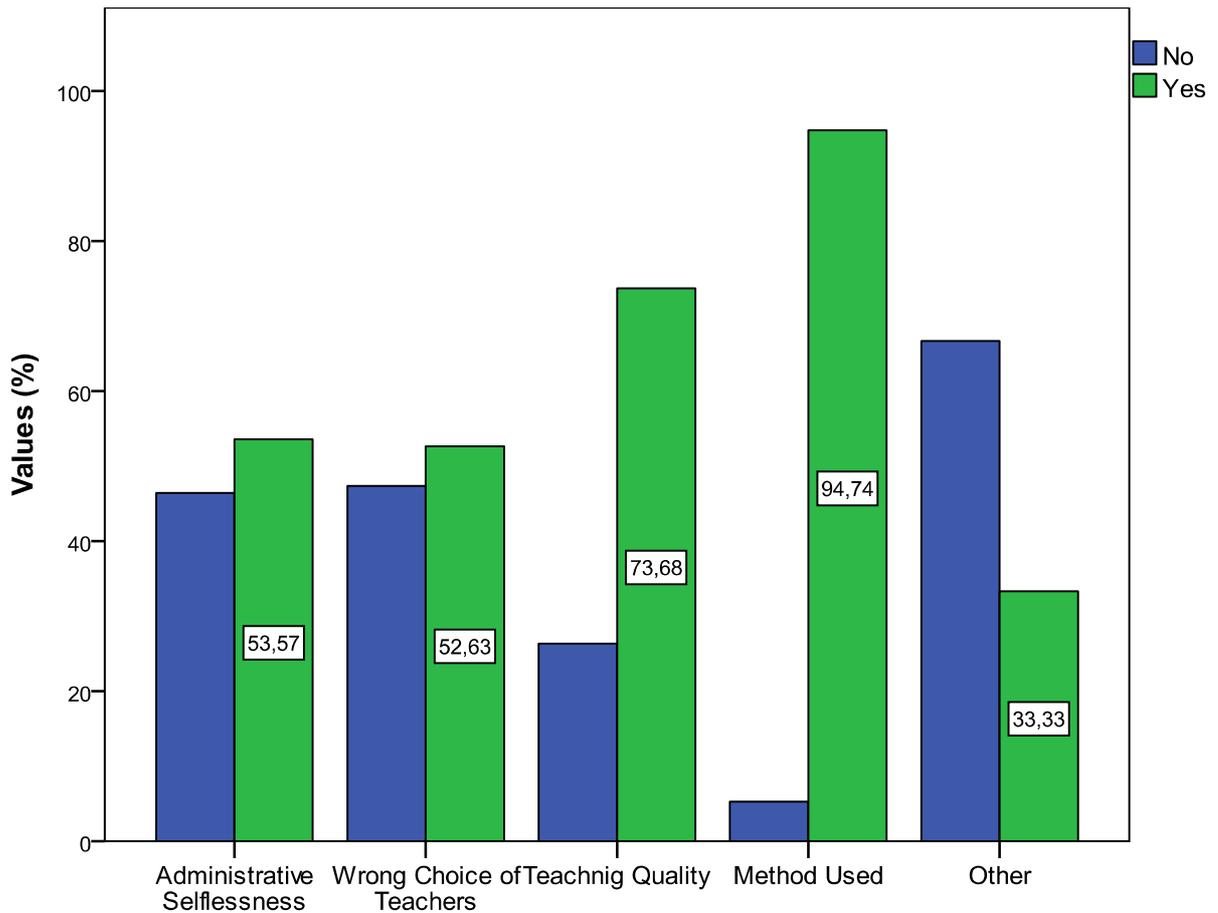
Figure 2.9: The reasons of the failure of the current experience
of teaching technical English language.

2.2.5. Attitudes of the Students towards English Language

The developed last theme in the questionnaire was about the attitudes of the students towards English Language. Indeed, according to Figure 11, 95% of the students believed that technical English would be useful in their future job and thought also that technical English is Important in their curriculum. Besides, about the question whether or not English causes a threat to their native language, 95% of the students disagreed.

Table 2.17: Attitudes of students towards English Language.

	Technical English Would be Useful in my Future Job		Technical English is Important in my Curriculum		Using English Poses a Threat to my Native Language	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Agree	54	94.7	54	94.7	3	5.6
Desagree	3	5.3	3	5.3	51	94.4
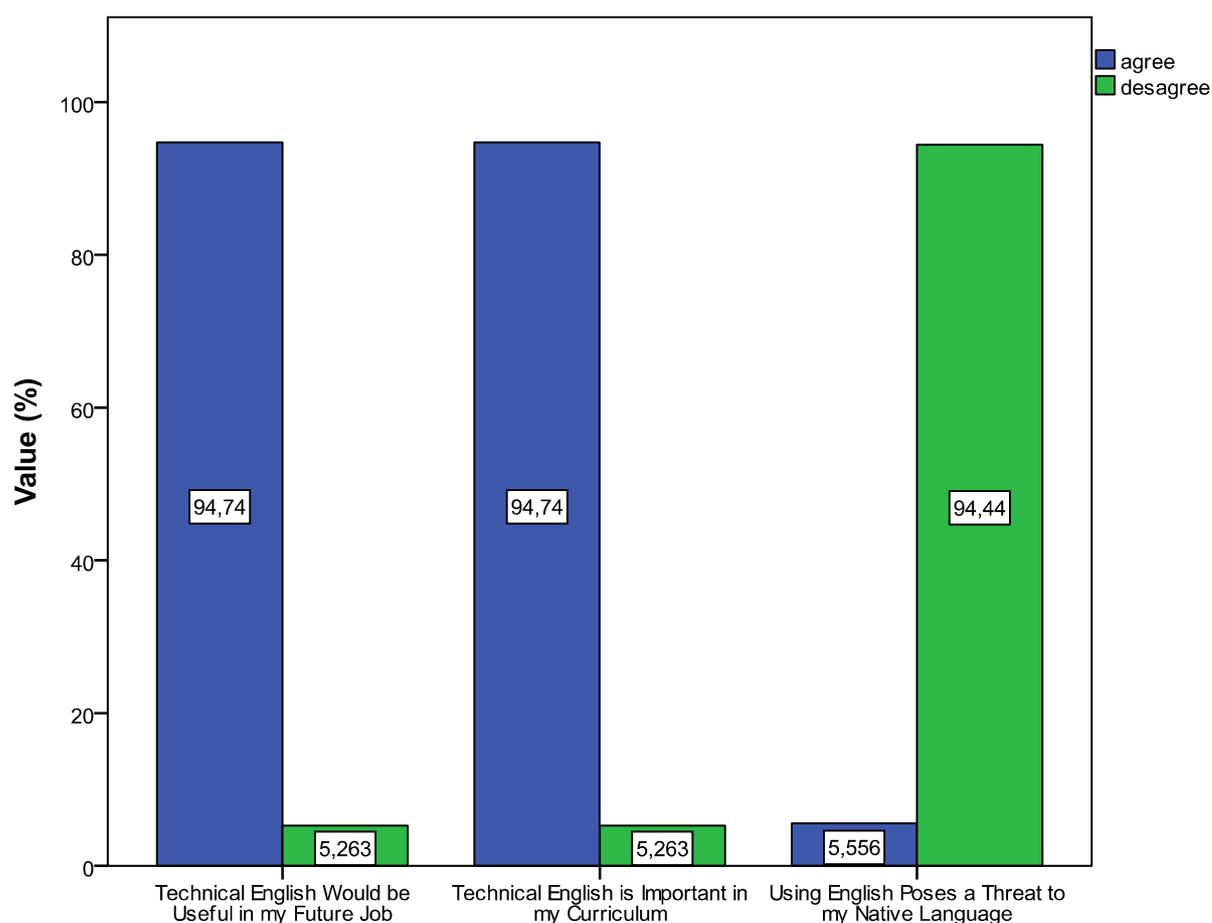
Figure 2.10 : Attitudes of the students towards English Language.

Conclusion

In this chapter, the interpretation of the obtained results was carried out, after analysing the collected data by means of SPSS statistical software ver.19. The analysis concerned two important aspects in this study. The first aspect dealt with the formative and summative evaluation of changes in the level of students, through the scores of the pretest, posttest and final examination. In this respect, it was observed that a remarkable change in the level of students was obtained. Indeed, the average student grades increased from 1.93/20 (with 18 zeros) in Pretest to 10.75/20 (no zero) in the final exam. This result is considered as significant because it means that our hypothesis (Pilot Course) was confirmed. The second aspect of this chapter was about the interpretation of the results obtained from the analysis of the answers to the questions handed to students. We attempted to find out students' general background in English Language, their perceptions of the Teaching/Learning of English Language and their attitudes towards English Language. As a result, most students judge their level in English language as bad. According to their degree of proficiency, most students considered the writing skill a first priority and the three other skills come in the secondary priority.

On the other side, the students were asked to evaluate their level in technical vocabulary, reading, speaking, writing, listening, grammar and pronunciation. Most students considered their level, in the seven above mentioned skills, either Average or Bad. However, the skill where the students perform the worst is grammar. A great majority confirmed they had not studied technical vocabulary task at all in the license degree. However, according to these students, all the above tasks are better considered in M1 syllabus than in License, while writing and pronunciation remain less considered in both syllabi. Most students also considered that in M1, the teacher explains the course only in English language. The opposite is in the license, where the course is explained in the first language. Besides, we are satisfied to know that a great majority of the students liked the teaching method we adopted in M1. Certainly, this observation is justified by the evolution of students' achievement in formative and summative assessments. In addition, most students confirmed they studied, in M1 course, appropriate texts in hydraulics, contrary to the License course which consisted of translation of technical terms only. Moreover, the students thought that the reasons of the failure of the current experience of teaching technical English (ESAP/EST) to hydraulics students is due to the following reasons: administrative selflessness, wrong choice of teachers, teaching quality, meanwhile, they believed that the main reason of this failure is due to the used teaching method.

Besides, it is interesting to know that almost all students believed technical English is important in their curriculum and would be useful in their future job. They also believed that English language does not cause any threat of their native language.

Chapter Three: Syllabus Design

Introduction

Generally adults use English language only when associated with an occupational, vocational, academic or professional requirement (Mackay and Mountford, 1978). When needs are clear (necessities, lacks and wants), learning aim can be defined in terms of specific purposes under which the language content are fixed. However, as students have no clear sight about what they need, and their interest for English is not yet obvious at this level, it is important that teacher gives courses in a fun environment and acts as a facilitator. In EFL the learning targets may consist of two main areas: the knowledge area and the skills areas (Talberg, 2006).

To enable students of hydraulics branches to master the four English macro skills (reading, listening, speaking and writing) and English micro skills (grammatical structure, spelling, vocabulary, pronunciation, …), it would be appropriate to propose a syllabus distributed over the six semesters of the English learning period, corresponding to second and third year of License and first year of Master.

3.1. Teaching Method

According to Talberg (2006) "the syllabus, the learning targets, choice of learning material and didactic approaches should be relevant for the students' area of engineering" (p. 2). In addition, learner needs are approached from two sides: target needs and learning needs. Target needs are defined as "what the learner needs to do in the target situation" (Hutchinson & Waters, 1987, p. 54). However, learning is "an internal process, which is crucially dependent upon the knowledge the learners already have and their ability and motivation to use it." (Hutchinson & Waters, 1987, p. 72). Indeed, at the end of their curriculum, students would be able to read books in English easily, speak in their study field in English, write a report in English and finally understand English speaker when speaking at least in their study field. In other words, students should achieve communicative competence.

Thus, it is imperative that students learn firstly to write a correct sentence, accordingly, it would be obvious to propose a grammar and written expression module in the third semester (corresponding to the first year of English). In this module, the students will learn the parts of speech, the parts of sentences, phrases, clauses and types of sentences. Of course, the vocabulary used in the examples will be drawn from the speciality study field. Two additional activities are proposed: real life situation lessons and listening to native speaker's speech through chosen texts. These two activities have to be proposed in each semester. In

this semester the teaching method used is a combination between Grammar translation method and notional/functional method.

After 14 weeks of grammar study in the third semester, the student is ready to begin the fourth semester, during which he/she will learn to write a paragraph. According to Zamel (1983, p. 147), "writing is a process through which students can explore their thoughts". At the end of the semester, the student would be able to master the writing process: planning, writing a draft, revising and editing. He would also be able to write a paragraph unified, coherent and according to a specific strategy of the chosen topic. During the writing process, the students write, revise and edit the documents several times. However, all the proposed topics will be inherent to hydraulics field. In this semester, the writing approach used is the combination between *product approach*, *process approach* and *genre approach*.

The fifth semester is dedicated to a variety of activities associated to the studied modules of the specialty of the current year. "It is a question of planning, structuring and integrating various activities for the purpose of enhancing the students' learning." (Talberg , 2013, p. 3). Thus, the course will be presented in written, audio or video. In this semester students would be activated in their domain with adequate texts, material, exercises and assignments in the classroom. However, organizing students in groups of two, three or four students is the most efficient method to activate all students as much as possible. Indeed, during this semester topics of all the modules of the current year will be chosen in order to allow students to read, write, discuss, answer questions, listen and sometimes translate.

During the fifth semester, students will learn to write different types of essays. Topics will always be chosen relatively to the modules of specialty. In addition to this, they are exposed to an authentic video lecture related to hydraulics, and they are asked to take notes and summarize the main idea of this video sequence.

The sixth semester will be a continuity of the fifth semester with regard to the third year hydraulic modules. Vinod (2005) argues that "teacher can plan more activities to train the students in different skills with the help of technology developed" (p. 394). According to Alex (2012), there are topics that most kinds of engineers need to be able to understand, such as: Abbreviations, adjectives, consequences, dimensions, units of measurement like pressure and temperature, Directions, equipments and tools, manuals, materials, reports, shapes, talking about machines, and so on. In this third year of License, the teaching method used is the *task based learning approach*. In this approach, "activities are centered upon practical tasks for students to perform that can be weighted to emphasize oral communication"

(Murphy, 1991, p. 53). According to Nunan, 2006, "tasks involve communicative language use in which the user's attention is focused on meaning rather than grammatical form"

The first semester of Master one will be devoted to seminars. Indeed, in this semester the student will be required to present orally a little research in his/her field of specialty.

Moreover, education must be provided by permanent teachers with post graduation level, oriented ESP. This type of instructor is able to provide the necessary knowledge not only in grammar, but also in technological and pedagogical aspects.

Thus, to conceive a specific content of ESAP for each semester of study, a rational combination of advanced methods is used. This methodical combination attempts to promote the transmission of knowledge inherent to each content.

3.2. The Proposed Syllabus

Accordingly, we propose in this section, technical English programmes for second year license, third year License, and M1 hydraulics students.

Table 3.1 : The Proposed syllabus for hydraulics students

	Objective of the Course	Prior Knowledge	Content of the Course
2ⁿᵈ year License Semester : 3 Time Allocation:21h	The objective of this course is to remind students of the basic knowledge of English grammar.	Secondary school background.	Unit 1: Parts of speech Unit 2: Phrases and Clauses Unit 3: Types of sentences Unit 4: Real life situation and native speaker's speech
3ʳᵈ year License Semester : 4 Time Allocation: 21h	During this semester, students will learn to write a paragraph. At the end, the students would be able to master the writing process.	Knowing the basic elements of grammar.	Unit 1: Writing process 1.1 Planning 1.2 Writing a draft 1.3 Revising 1.4 Editing Unit 2: Paragraph 2.1. Unity 2.2. Development 2.3. Coherence 2.4. Creating beginning and ending paragraphs Unit 3: Real life situation and native speaker's speech

Table 3.2 : The Proposed syllabus for hydraulics students (follow-up)

	Objective of the Course	Prior Knowledge	Content of the Course
Third year License Semester : 5 Time Allocation: 21h	The objective of this semester is dedicated to a variety of activities associated to the studied modules of the specialty of the current year. Students would be activated in their domain with adequate texts, material, exercises and assignments in the classroom. Variety of activities : written, audio and video about third year modules	Knowing the basic elements of grammar and some knowledge in hydraulics.	Unit 1. Civil Engineering Unit 2. Hydraulics Unit 3: Dam Unit 4: Real life situation and native speaker's speech
Third year License Semester : 6 Time Allocation: 21h	The sixth semester is a continuity of the fifth semester with regard to the third year hydraulic modules. Variety of activities : written, audio and video about third year modules	Knowing the basic elements of grammar and some knowledge in hydraulics.	Unit 1: Water supply Unit 2: Sewage and sewerage Unit 3: Wastewater treatment plants Unit 4: Real life situation and native speaker's speech
First year Master Semester : 1 Time Allocation: 21h	This semester is dedicated to seminars. In this semester the student are required to present orally a little research in his/her field of specialty.	Knowing the basic elements of grammar, knowledge in hydraulics and writing skills.	Unit 1: How to writing a the research paper 1.1. Determine a thesis and organizing evidence 1.2. Avoiding plagiarism 1.3. Integrating quotations, paraphrases and summarizes into the text Unit 2: Seminars

3.3.1. Course explanation

The lesson is based on some paragraphs or a dialogue for which six activities are carried out: text reading, writing terminology and explanation, exercises, elements of grammar, real life situation and/or native speaker's speech.

a. Text Reading

The first step is to provide students with a handout of a text on a particular theme of hydraulics. Students are asked to take turns reading paragraphs of the text. Then it is the turn of the teacher to read the text, explaining, in English of course, all new technical terms.

- **Course Sample (semester 5, Unit 1: Civil Engineering)**

Reading Task

Student: What is Civil Engineering?

Engineer: Civil engineering includes many   specialities, such as construction engineering, structural engineering, hydraulics, hydrology, sanitary engineering, road building, and soil mechanics.

Student: What is the difference between a construction engineer and a structural engineer?

Engineer: A construction engineer supervises the building of infrastructures such as bridges, factories, highways, airports, pipelines and dams, while a structural engineer design, plan, and research structural components and structural systems to achieve design goals and ensure the safety of the structure. Structural engineer have to consider stress and strain on beams and on other structural elements.

Student: What about engineering that deals with water control?

Engineer: Hydraulics and hydrology are branches of civil engineering that deals with problems of water supply and control, such as those of water conveyance, distribution and irrigtion. They deal also with problems of sewage and industrial waste and urban problems in general

Student: Road building must be another important engineer problem.

Engineer: Yes it is. It deals also with underground tunnels. In this case geotechnical engineer should determine the properties and behavior of the soil through which the tunnel passes.

Koch (1984)

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b. Writing Terminology and Explanation

Before presenting the definitions of technical terms in the data show screen, the teacher asks the students, as a second step, to try to define in their ways the proposed technical terms. The definitions are then displayed on screen and it is asked to students to write them down.

- **Course Sample (semester 5, Unit 1: Civil Engineering)**

Writing terminology and explanation Task

Beam: A rigid structural member used in building construction, supported at each end, designed to resist stress.

Dam: A barrier built across a stream of water, it will cause the water to back up and form lack.

Hydraulics: It is a branch of civil engineering that Studies water conveyance, water distribution, irrigtion. It deals also with problems of sewage and industrial waste.

Hydrology: Hydrology is the science that encompasses the occurrence, distribution, movement and properties of the waters of the earth and their relationship with the environment within each phase of the hydrologic cycle.

Industrial waste: material left over from industrial production. Industrial wastes from chemical plants often pollute the air.

Irrigation: The artificial watering of farmland. The engineer designs the pipes for the irrigation projects.

Sewage: Waste water/matter usually disposed by drains

Strain: The change in shape or size of a body through the action of a force.

Stress: The intensity of force per unit area that develops inside and on the surface of a body subjected to external force. We need a beam capable of withstanding that amount of stress.

Structure: An organized complex of material elements put together for a purpose.

Tunnels: An underground passageway. A tunnel connects often two highways.

c. Exercises

The third step is to provide students with exercises on the subject, such as 'Fill in the blanks', where it is a matter to understand the text and fill in the gaps by the appropriate technical terms.

Exercise Task

Fill in the blanks with the proper terms from the list.

beams - irrigation – dam – strain – industrial wastes – stress – consultant engineer

1. This firm needs advice on a new project. They are hiring a ………….

2. This field deals with the disposal of sewage. It is called …………..

3. The building didn't have enough horizontal support. The ……….were not strong enough.

4. That part of the country is quit dry. An ……..system would make much of it usable for agriculture.

5. They want to control the flow of water in that river. They are going to built a …………

6. The weight has changed the shape of this iron bar. It has undergone a lot of ……..

7. The factories have made the river impure. It's full of …………

8. The ………. is too great; the mechanical device will break.

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d. Elements of grammar

In this stage, the teacher explains to the students some basic grammar lessons, such as: the 8 parts of speech, sentence patterns, verb tenses, writing a paragraph,... All the examples studied in this activity are related to the topic of the relevant text.

e. Native Speaker's Speech and Real Life Situation

- Native Speaker's Speech

In this task, the teacher presents to the students an audio/video sequence about native speaker's speech, generally in their field of study. A fast speech is displayed first, and the students are asked to note what have they understand. A slow speech is displayed after, and the students are asked again to complete their understanding about the subject.

- Real Life Situation

In this additional task, the teacher explains to the students how to converse in English language in a daily life situation, in a particular place such as: in the workshop, in the airport, in the street, etc. Of course, audio visual tools are necessary to better transmit the information.

Conclusion

The syllabus designed is distributed over the six semesters of the English learning period, corresponding to second and third year of License, and first year of Master. Thus, in the third semester of hydraulics (corresponding to the first year of English), a grammar and written expression course is proposed. In this course, the students will learn the parts of speech, the parts of sentences, phrases, clauses and types of sentences. Of course, the vocabulary used in the examples will be drawn from the speciality study field. Two additional activities are proposed: real life situation lessons and listening to native speaker's speech through chosen texts. These two activities have to be proposed in each semester. In this semester the teaching method used is a combination between Grammar translation method and notional/functional method. In the fourth semester, the student will learn the writing process: planning, writing a draft, revising and editing. However, all the proposed topics will be inherent to hydraulics field. In this semester, the writing approach used is the combination between *product approach*, *process approach* and *genre approach*. The fifth semester is dedicated to a variety of activities associated to the studied courses of the specialty of the current year. Thus, the course will be presented in written, audio or video. In this semester students would be activated in their domain with adequate texts, material, exercises and assignments in the classroom. In addition to this, they are exposed to an authentic video lecture related to hydraulics, and they are asked to take notes and summarize the main idea of this video sequence. The sixth semester will be a continuity of the fifth semester with regard to the third year hydraulic modules. In this third year of License, the teaching method used is the *task based learning approach*. The first semester of M1 will be devoted to seminars. Indeed, in this semester the student will be required to present orally a little research in his/her field of specialty.

Moreover, education must be provided by permanent teachers with post graduation level, oriented ESP.

General Conclusion

The Department of Civil and Hydraulics Engineering in the university of Biskra encounters problems related to teaching/learning English language in technical fields, while ESP has witnessed a considerable development since the 1960's. It is conspicuous that no specific teaching methods or techniques are suggested. Language teaching seems only limited to the translation of technical terminologies or providing students with some grammatical items that cannot release students from their linguistic weaknesses. As a Professor of hydraulics in Biskra University, the prevailing situation urged me to research this actual problem.

In fact, ESP incorporates English for Occupational Purposes (EOP) and English for Academic purposes (EAP). English for Academic purpose is also called English for Specific Academic Purpose (ESAP). In order not to confuse it with English for General Academic Purpose (EGAP), the concept of ESAP is thought of to be appropriate for teaching English to students of Sciences and Technology, Business, and many other fields of knowledge. It is this concept which is considered in the current dissertation.

Furthermore, the process employed to evaluate the needs of hydraulic M1 students in learning technical English is essentially based on two tasks. The first task, which is one of our research hypotheses, was to carry out a pilot course for one (01) semester of study. The latter was preceded by a pretest, and followed by a posttest. Finally, it ended with an examination. The second task dealt with the distribution of questionnaires to students in order to collect data to use thereafter in the students' needs analysis.

The data analysis concerned two important aspects in this dissertation. The first aspect dealt with the formative and summative evaluation of changes in the level of students, through the scores of the pretest, posttest and final examination. In this respect, it was observed that a significant change in the level of students was obtained. Indeed, the average student grades increased from 1.93/20 (with 18 zeros) in Pretest to 10.75/20 (no zero) in the final exam. This result means that our hypothesis (Pilot Course) was confirmed. The second aspect concerned by the data analysis was about the interpretation of the results obtained from the analysis of the answers to the questions handed to students. We attempted to find out students' general background in English Language, their perceptions of the Teaching/Learning of English Language , and their attitudes towards English Language. As a result, most students judged their level in English language as weak. According to their degree of proficiency, most

students considered the writing skill a first priority, and the three other skills come in the secondary priority.

On the other side, the students were asked to evaluate their level in technical vocabulary, reading, speaking, writing, listening, grammar and pronunciation. Most students considered their level, in the seven above mentioned skills, either Average or Bad. However, the skill where the students perform the worst is grammar. A great majority confirmed they had not studied technical vocabulary task at all in the license degree. However, according to these students, all the above tasks are better considered in M1 syllabus than in License, while writing and pronunciation remain less considered in both syllabi. Most students also considered that in M1, the teacher explains the course only in English language. The opposite is in the license, where the course is explained in the first language. Besides, we are satisfied to know that a great majority of the students liked the teaching method we adopted in M1. Certainly, this observation is justified by the evolution of students' achievement in formative and summative assessments. In addition, most students confirmed they studied, in M1 course, appropriate texts in hydraulics, contrary to the License course which consisted of the translation of technical terms only. Moreover, the students thought that the reasons of the failure of the current experience of teaching technical English (ESAP/EST) to hydraulics students is due to the following reasons: administrative selflessness, wrong choice of teachers, teaching quality, meanwhile, they believed that the main reason of this failure is due to the used teaching method.

Based on the above results, and by considering necessity, lacks and wants, the student's needs were situated and the course (or syllabus) has been designed. The focus was on skills-centred and learning-centred approach to course design. The syllabus is distributed over the six semesters of the English learning period, corresponding to second and third year of License, and first year of Master. Thus, a grammar and written expression course in the third semester (corresponding to the first year of English) is proposed. In this course, the students will learn the parts of speech, the parts of sentences, phrases, clauses and types of sentences. Of course, the vocabulary used in the examples will be drawn out from the speciality study field. Two additional activities are proposed: real life situation lessons and listening to native speaker's speech through chosen texts. These two activities have to be suggested in each semester. In this semester, the teaching method used is a combination between grammar translation method and notional/functional method. In the fourth semester, the student will learn the writing process: planning, writing a draft, revising and editing.

However, all the proposed topics will be inherent to hydraulics field. In this semester, the writing approach used is the combination between *product approach*, *process approach* and *genre approach*. The fifth semester is dedicated to a variety of activities associated to the studied courses of the specialty of the current year. Thus, the course will be presented in written, audio or video. In this semester students would be activated in their domain with adequate texts, material, exercises and assignments in the classroom. In addition, they are exposed to an authentic video lecture related to hydraulics, and they are asked to take notes and summarize the main idea of this video sequence. The sixth semester will be a continuity of the fifth semester with regard to the third year hydraulic modules. In the third year of License, the teaching method used is the *task based learning approach*. The first semester of M1 will be devoted to seminars. Absolutely, in this semester the student will be required to present orally a little research in his/her field of specialty.

Moreover, education must be provided by permanent teachers with post graduation level, oriented ESP.

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Questionnaire for Students

Dear Student,

The present questionnaire is a part of a Master dissertation research on teaching technical English to hydraulics students at the University of Biskra. I would like to ask you for your opinions on English teaching and learning in the course of English at the Department of Hydraulics. To help me, please fill-in this questionnaire based on your experience. All information given will be anonymous and treated in the strictest confidence. Thank you very much.

عزيزي الطالب،

في إطار تحضير مذكرة الماستر في اللغة انجليزية حول موضوع تدريس انجليزية التقنية لطلبة قسم الري في جامعة محمد خيذر بسكرة، يطيب لي ان اطرح عليكم مجموعة من الأسئلة حول كيفية التعليم و التعلم بالنسبة لدرس اللغة انجليزية في قسم الهندسة المعمارية/الري. لمساعدتي اطلب منكم ملء استمارة انستبيان انطلاقا من خبرتكم. كما أحيطكم علما ان كل المعلومات المقدمة من طرفكم سوف تكون سرية.

Part one: Personal profile(معلومات شخصية) :

1. Name (انسم) [   ]

2. Age (السن) [   ]

3. Gender (الجنس) Male (ذكر) [   ] Female (أنثى) [   ]

4. Nationality(الجنسية) [   ]

5. Native language (اللغة انم) [   ]

6. University level (السنة الدراسية) الأولى(1) [ ] الثانية(2) [ ] الثاثة(3) [ ] ماستر1 [ ] ماستر2 [ ]

Part Two: Students General Background in English Language   (رصيد الطلبة في انجليزية)

Please tick the appropriate answer and provide written answer if necessary

(ضع العلامات على الأجوبة المختارة)

1. How many years have you being studying English language? (كم عدد السنوات التي درست فيها انجليزية؟)

- Middle School (متوسط) [1. 2. 3. 4]

- High school (ثانوي) [1. 2. 3]

- University(الجامعة) [1. 2. 3. 4. 5]

[   ]

- Private school (مدرسة خاصة) 1. 2. 3. 4

2. Have you obtained any Certificate in English language? (هل تحصلت على شهادة ما في انجليزية؟)

yes (نعم) [ ]   No(ن) [ ]

If 'yes' what type of certificate have you obtained (إذا كان الجواب 'نعم' صف نوع الشهادة المتحصل عليها)

....

3. How do you judge your level in English language ما هو المستوى الذي بلغته في انجليزية

Excellent [ ]   Very good [ ]   Good [ ]   Bad [ ]

4. Classify the following English skills according to your degree of proficiency

(رتب المهارات اللغوية التالية حسب درجة الكفاءة)

Writing [1. 2. 3. 4] Reading [1. 2. 3. 4] Speaking [1. 2. 3. 4] Listening [1. 2. 3. 4]

Part Three: Students Perceptions of the Teaching/Learning of English Language
رأي الطلبة في ما يخص تعلم و كيفية تعليم انجليزية

1. How do you judge the level in English language until the present time?

(ما هو المستوى الذي بلغته في انجليزية إلى غاية الوقت الحاضر)

(ضع العلامات على الأجوبة المختارة) Please tick the appropriate answer

	Very Good	Good	Average	Bad
Technical vocabulary related to hydraulics (المفردات التقنية المرتبطة بمجال الري)				
قراءة Reading				
تكلم Speaking				
كتابة Writing				
استماع Listening				
القواعد Grammar				
النطق pronunciation				

2. What does the syllabus of the English language course contains?

(ما هو محتوى برنامج دروس اننجليزية؟)

- Please tick the appropriate answers (ضع العلامات على الأجوبة المختارة)

	In 'License' degree	In Maste1
Technical vocabulary related to hydraulics (المفردات التقنية المرتبطة بمجال الري)		
قراءة Reading		
تكلم Speaking		
كتابة Writing		
استماع Listening		
القواعدGrammar		
النطق pronunciation		

3. How does your teacher do the following tasks in your English class?

كيف يقوم الأستاذ بالنشاطات التالية؟

- Please tick the appropriate answer (ضع العلامات على الأجوبة المختارة)

	In 'License' degree	In Maste1
The teacher explains the course only in English يقوم الأستاذ بشح الدرس بالغة اننجليزية فقط		
The teacher explains the course by using Arabic and/or French language يقوم الأستاذ بشح الدرس بالغة العربية و/أو الفرنسية		

4. How do you evaluate these matters in relation to your English class?

كيف تقيم المواد التالية المرتبطة درس انجليزية؟

- Please answer by 'yes' or 'no' and provide written answer if necessary.

(أجب بـ: 'نعم' أم 'ن' و أضف إجابة إذا تطلب الأمر)

	In 'License' degree		In Maste1	
	Yes	No	Yes	No
Is the content of English courses linked to your field of studies? هل محتوى درس انجليزية له علاقة مع ميدان دراستك؟				
Do you think one session a week is sufficient to learn English? هل تضن أن درس واحد في الأسبوع كاف لتعلم انجليزية؟				
Do you like the method used by your teacher? هل تعجبك الطريق المتبعة من طرف الأستاذ؟				

If the answer is 'No', what do you propose?   إذا كان الجواب 'ن' ماذا تقترح إذا؟

…………………………………….…..

………………………………………………………………………………………………..

…………………………………………………………………………………………….…..

---

5. Do you prefer to introduce audio visual tools in your English courses? هل تحبذ استعمال الآنت السمعية البصرية في دروس انجليزية؟	**Yes :** **No:**

6. How does your teacher fulfill these tasks in your English class?

كيف يقوم أستاذك بالتطرق للنشاطات التالية في قسم انجليزية؟

- Please tick the appropriate answer and provide written answer if necessary

(ضع العلامات على الأجوبة المختارة و أضف إجابة إذا تطلب الأمر)

	In 'License' degree	In Maste1
Teaching method consists on the translation of technical terms only تعتمد طريقة المتبعة في الدرس على الترجمة فقط		
Study of appropriate texts in hydraulics دراسة نصوص معينة في ميدان الري؟		
Study of course with practice in hydraulics دراسة نصوص متبوعة بالتطبيق في ميدان الري؟		
Other answer if there is: ……………………………………………………… ……………………………………………………..		

6. In your point of view, do you think the failure of the current experience of teaching technical English (EAP/EST) to hydraulics students is due to the following reasons?

هل تضن أن سبب فشل التجربة الحالية لتعليم اللغة اننجليزية لطلبة الري هو كالتالي؟

- Please tick the appropriate answer and provide written answer if necessary

(ضع العلامات على الأجوبة المختارة و أضف إجابة إذا تطلب الأمر)

Administrative selflessness تهاون الادارة	
Teachers' wrong choice عدم اختيار الأستاذ المناسب	
Lack of teaching quality نقص في نوعية التدريس	
Inadequacy of the methods used and the low level of language learners عدم تطابق الطريقة المستعملة والمستوى المنخفض للطلبة في اللغة الانجليزية	
Other answer if there is: …………………………………………………………………………………………….. ………………………………………………………………………………………	

Part Four: Attitudes of students towards English Language	رأي الطلبة في اللغة اننجليزية

1. Do you agree with the following opinions?   هل توافق على الآراء التالية ؟

	Agree	Disagree
Technical English would be useful in my future job يمكن أن تكون الانجليزية التقنية مهمة في عملي المستقبلي		
The session of Technical English is important in my curriculum درس الانجليزية التقنية مهم في منهاجي الدراسية		
Using English poses a threat to my native language استعمال الانجليزية هو خطر على لغتي الأم		

Thank you for your cooperation

شكرا جزيلا على المساهمة

Mr Debabeche Mahmoud
Department of Foreign Languages
University of Biskra

Appendix B

MOHAMED KHIDER BISKRA UNIVERSITY
Faculty of Sciences and Technology
Department of Civil and Hydraulics Engineering

ENGLISH LEVEL TEST

Module : Technical English
Level   :Master 1

1. Technical exercises

A. Fill in the blanks with the proper terms from the list below.

channel – gravity dam – seepage – silt – irrigation – stress – spillway– industrial wastes – dam

1. This dam is designed to resist the pressure of the water by its own weight. It is called a ………..……..

2. Around the ends of a dam are two ……………..…..……., which carry away the excess water.

3.   Irrigation water flowed through a …………………...from the powerhouse to the field.

4. Some water also escapes by moving through the small openings in the concrete. This movement, which will weaken the structure, is called ……………….…

5. The bottom of the body of water is covered by …………………..., which has been carried down from upstream and deposited as the velocity of the stream decreased.

6. The building didn't have enough horizontal support. The …………………....were not strong enough.

7. That part of the country is quit dry. An …………………..system would make much of it usable for agriculture.

8. They want to control the flow of water in that river. They are going to built a ………………………

9. The factories have made the river impure. It's full of ………………………………

Appendix B

Department of Civil and Hydraulics Engineering

B. Choose the right terms which fits the following definitions

…………………..: a curve shaped dam.

…………………..: deals with the production of electricity by water power.

.............................: A channel or pipe through which excess water is conducted away from a dam.

…………………..: a sliding piece inside cylinder that is moved by or against fluid pressure.

…………………..: a device that controls the flow of fluids.

…………………….: Waste water/matter usually disposed and thrown away by drains

C. Give a brief definition of the following terms

Hydraulics

……

……

Dam

…………………………………………………………………………………….........................

……….

Water supply

……….

……….

Pump

………..

………..

2. Grammar exercises

1 'Where …………….' 'She's from London.'

A is Amy from? **B** Amy is from? **C** does Amy from?

2 'What……………… ' 'Watching television.'

A the children are doing? **B** are the children doing? **C** doing the children?

3 ……………Rob the guitar very well.

A doesn't play **B** don't play **C** not play **D** no play

4 What time ……………in the morning?

A are you getting up **B** do you usually get up **C** does you get up

5 ……………a good holiday in America?

A You had **B** Did you had **C** Are you have **D** Did you have

6 The taxi …………….

A does not arrive yet **B** has not arrived yet **C** has not arrive yet

7 Sue went to Canada…………… .

A since three years **B** three years ago

8 ……………school in 2004.

A I left **B** I've left

9 There's a good film on TV tonight. ……………

A I watch it. **B** I like watching it. **C** I'm going to watch it.

10 What time ……………go shopping this evening?

A you like to **B** do you like to **C** would you like to

11 ……………anything in the house to eat. I'm going shopping.

A It isn't **B** There aren't **C** There isn't

12 'Do you agree with me?' 'Yes, …………….

A I do **B** I am **C** I have

13 I've been to Australia, but I ……………to New Zealand.

A haven't been **B** didn't go **C** didn't been

14 Why ……………going to the party?

A Diana isn't **B** isn't Diana **C** Diana not **D** didn't Diana

15…………… is the capital of the USA?

A Which **B** Who **C** What

16 Rob ……………me he was ill.

Appendix B

A say **B** told **C** said

17 Would ……………you like tonight?

A to go **B** going **C** go

18 I really ……………to music.

A enjoy listen **B** enjoy listening **C** enjoy to listen **D** enjoying listen

19 I went to the supermarket ……………some coffee.

A buying **B** buy **C** to buy **D** for buying

20 Have you seen my car keys? I can't find ……………anywhere.

A him **B** it **C** them **D** they

21 ……………dog is called Ruby.

A They **B** Their **C** Them **D** Theirs

22 Kate and I don't see ……………very often.

A themselves **B** us **C** ourselves **D** each other

23 Is this your ……………car?

A parents **B** parent's **C** parents'

24 Do you think David Beckham is ……………English football player?

A the best **B** best **C** a best

25 Nina is two years…………….

A older than me **B** more old as me **C** old than me **D** more old than me

26 My car was ……………Peter's.

A not as expensive **B** not as expensive than **C** not as expensive as

27 Is Tokyo ……………city in the world?

A the more expensive **B** most expensive **C** the most expensive

28 I've been waiting for 30 minutes and the bus hasn't arrived …………….

A not yet **B** already **C** yet **D** still

29 I want to ……………a really nice birthday present.

A give Mark **B** give to Mark **C** give it to Mark

30 They have lived in Canada…………… 1994.

A until **B** since **C** to **D** for

31 We stayed ……………my sister's house in Oxford.

A to **B** by **C** at **D** on

32 It was very cold ……………all the windows were open.

A but **B** so **C** because **D** or

Appendix B

33 We ……………the plane if we don't leave now.

A would miss **B** are missing **C** miss **D** will miss

EXAM

Module : English
Level   :Master 1

A. Fill in the blanks with the appropriate words.

1. We decide to build a …….…………….. dam because the rock foundation was not solid enough to anchor an arch dam.

2. Construction engineering, structural engineering, and hydraulics are branches of …………………..

3. ……………….… may causes stability problems on the dam, because of the movement of water under the dam.

4. To ovoid the effects of ………………..…., we have to consider the construction of a stilling basin in the downstream of the dam.

B. Grammar

The sentence below is written in the simple present tense, transform it in the following tenses:

1. simple past 2. past perfect 3. present perfect 4. simple future

The student learns his lesson

1. …………………………………..
2. …………………………………..
3. …………………………………..
4. …………………………………..

C. Pragraph

Write a short paragraph (4 lines) about any topic you want.

Good Luck

Appendix D: A pilot course sample

Unit 1 : Civil Engineering

A. Reading

Student: What is Civil Engineering?
Engineer: Civil engineering includes many specialities, such as construction engineering, structural engineering, hydraulics, hydrology, sanitary engineering, road building, and soil mechanics.

Student: What is the difference between a construction engineer and a structural engineer?
Engineer: A construction engineer supervises the building of infrastructures such as bridges, factories, highways, airports, pipelines and dams, while a structural engineer design, plan, and research structural components and structural systems to achieve design goals and ensure the safety of the structure. Structural engineer have to consider stress and strain on beams and on other structural elements.

Student: What about engineering that deals with water control?
Engineer: Hydraulics and hydrology are branches of civil engineering that deals with problems of water supply and control, such as those of water conveyance, distribution and irrigtion. They deal also with problems of sewage and industrial waste and urban problems in general

Student: Road building must be another important engineer problem.
Engineer: Yes it is. It deals also with underground tunnels. In this case geotechnical engineer should determine the properties and behaviour of the soil through which the tunnel passes.

B. Terminology explanation

Hydraulics: It is a branch of civil engineering that Studies water conveyance, water distribution, irrigation. It deals also with problems of sewage and industrial waste.
Hydrology: Hydrology is the science that encompasses the occurrence, distribution, movement and properties of the waters of the earth and their relationship with the environment within each phase of the hydrologic cycle.
Industrial waste: material left over from industrial production. Industrial wastes from chemical plants often pollute the air.
Irrigation: The artificial watering of farmland. The engineer designs the pipes for the irrigation projects.
Sewage: Waste water/matter usually disposed by drains
Strain: The change in shape or size of a body through the action of a force.
Stress: The intensity of force per unit area that develops inside and on the surface of a body subjected to external force. We need a beam capable of withstanding that amount of stress.
Structure: An organized complex of material elements put together for a purpose.
Tunnels: An underground passageway. A tunnel connects often two highways.

C. Check-up

Fill in the blanks with the proper terms from the list.
beams - irrigation – dam – strain – industrial wastes – stress – consultant engineer - sewage

1. This firm needs advice on a new project. They are hiring a ………….…….
2. This field deals with the disposal of sewage. It is called ……………..…..
3. The building didn't have enough horizontal support. The ……..….were not strong enough.
4. That part of the country is quit dry. An ………….…..system would make much of it usable for agriculture.
5. They want to control the flow of water in that river. They are going to build a ………..……
6. The weight has changed the shape of this iron bar. It has undergone a lot of …………….....
7. The factories have made the river impure. It's full of ………………..………
8. The ………… is too great; the mechanical device will break.

D. Grammar

There are 8 parts of speech in English:
Noun : is the name of a <u>person</u> (John), <u>place</u> (Algiers), <u>thing</u> (pen, car) or <u>idea</u> (freedom, happiness).
Pronoun: It is a word that takes the place of a noun in a sentence. The pronouns are divided as follows:
-   Personnel pronoun: I, you, he she, it, we, they, me, him, her, us, you, they, them.
-   Possessive pronouns: my, mine, your, yours his, her, hers, its, our, ours, your, yours, their, theirs.
-   Demonstrative pronouns: this, these, that, those
-   Indefinite pronouns: all, any, anybody, anyone, both, everybody, everyone,…
-   Relative and Interrogative pronoun: who, whom, whose, which, that, what.
-    Reflexive pronoun: myself, yourself, himself, herself, itself, ourselves, yourselves, themselves.
Verb: It expresses action (play, walk, …) or a state of being (is, become, …).
A complete verb is composed of the main verb and any helping verbs. The most commonly used <u>helping verbs</u> are the nine modals: may, might, shall, will, would, must, should, can, could. Other helping verbs include the forms of: have, be, do, used to, ought to.
Adjective: It modifies or qualifies a noun or pronoun. It tells <u>what kind</u>, <u>how many</u> or <u>which one</u> (white car, Twenty-one, the older). It can be comparative adjective or superlative adjective:
Adverb : It modifies a verb (walk quickly), an adjective (quite tall), or another adverb (walk very quicly). It tells <u>where</u>, <u>when</u>, <u>how</u>, <u>why</u>, <u>under what circumstances</u> and <u>to what extent</u>
**Prepositions:** It comes before a noun or pronoun to create a phrase. (the man is <u>in</u> the car)
Conjunctions: Join together two or more words, phrases or clauses (and, but, because, …)
-   Correlative conjunctions: "both/and," "whether/or,""either/or," "neither/nor," "not/but" and "not only/but also."
-   Subordinating conjunction (lot of). As, if because, although, …
-   Coordinating conjunctions: **f**or, **a**nd, **nor**, **b**ut, **or**, **y**et, **s**o. (funboys)
Interjections: It is a word or phrase used to express emotion or attract attention. (Well!, Oh!, No!)

Terminology Explanation
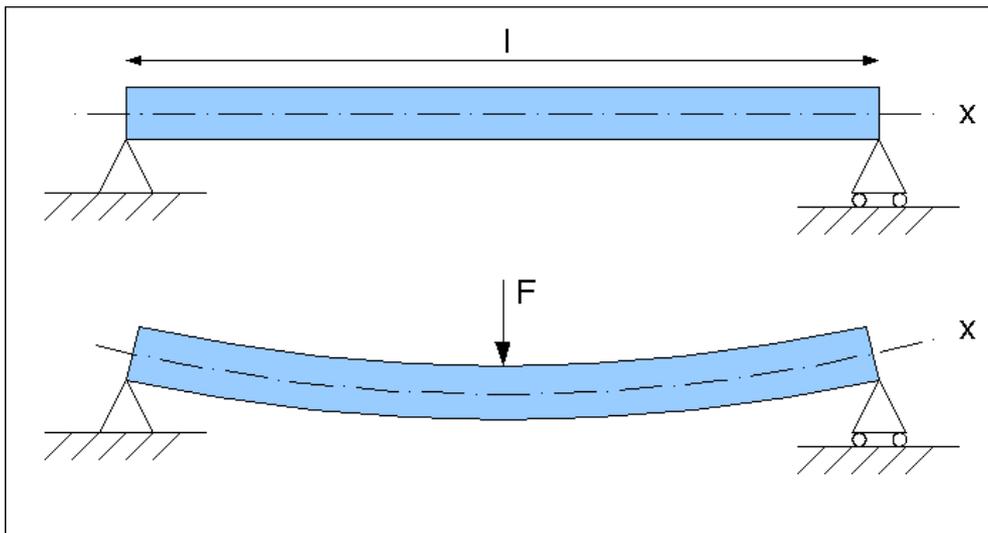

Beam: A rigid structural member used in building construction, supported at each end, designed to resist stress.

Dam: A barrier built across a stream of water, it will cause the water to back up and form lack.

Hydraulics: It is a branch of civil engineering that Studies water conveyance, water distribution, irrigtion. It deals also with problems of sewage and industrial waste.

Hydrologic Cycle

(c) University of Minnesota
Design by: Michelle Dietz & Jeff Strock
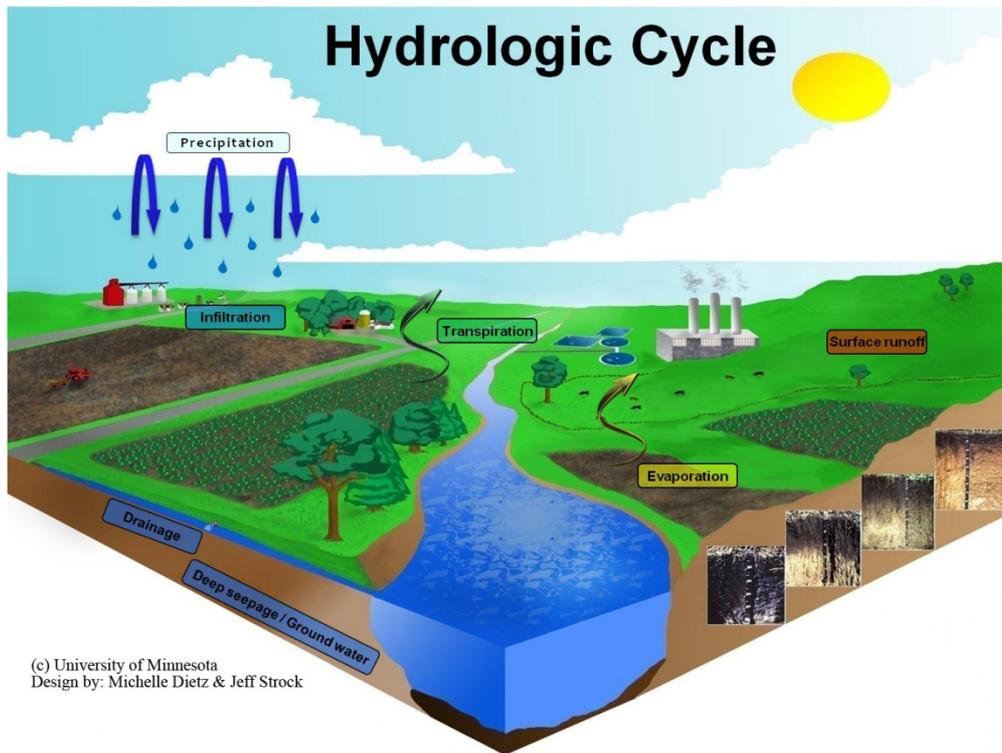
Hydrology: Hydrology is the science that encompasses the presence, distribution, movement and properties of the waters of the earth and their relationship with the environment within each phase of the hydrologic cycle.

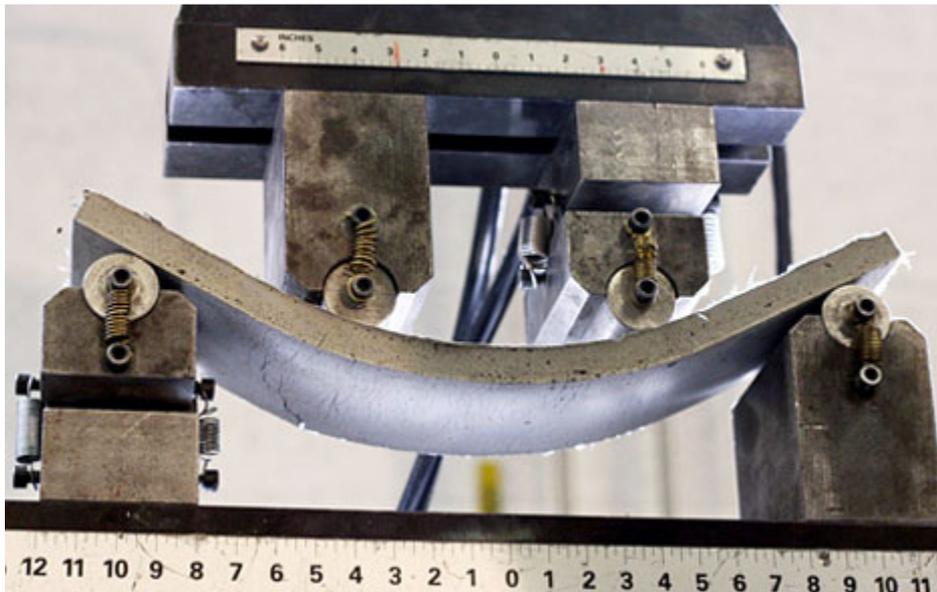INDUSTRIAL WASTE
DAN PEARSON PHOTOGRAPHY 2008

Industrial waste: material left over from industrial production. Industrial wastes from chemical plants often pollute the air.

Irrigation: The artificial watering of farmland. The engineer designs the pipes for the irrigation projects.

Sewage: Waste water or matter usually disposed by drains

Strain: The change in shape or size of a body through the action of a force.

Stress: The intensity of force per unit area that develops inside and on the surface of a body subjected to external force. We need a beam capable of withstanding that amount of stress.

Structure: An organized complex of material elements put together for a purpose.

Tunnels: An underground passageway. A tunnel connects often two highways.

Appendix E: Pretest, posttest and final exam grades

Table a

	Pretest	Posttest	Final Exam
1	0.00	0.00	5.00
2	0.00	0.00	5.00
3	0.00	3.00	5.00
4	0.00	5.00	6.00
5	0.00	6.00	7.00
6	0.00	7.00	7.00
7	0.00	7.00	7.00
8	0.00	7.00	7.00
9	0.00	7.00	7.00
10	0.00	7.00	7.00
11	0.00	7.00	8.00
12	0.00	8.00	8.00
13	0.00	8.00	8.00
14	0.00	8.00	8.00
15	0.00	8.00	10.00
16	0.00	8.00	10.00
17	0.00	9.00	10.00
18	0.00	9.00	10.00
19	0.50	9.00	10.00
20	1.00	9.00	10.00
21	1.00	10.00	10.00
22	1.00	10.00	10.00
23	1.00	10.00	10.00
24	1.00	10.00	10.00
25	1.50	10.00	10.50
26	1.50	10.00	11.00
27	1.50	10.50	11.00

Table b (follow-up)

	Pretest	Posttest	Final Exam
28	2.00	10.50	11.00
29	2.00	10.50	11.00
30	2.00	10.50	11.00
31	2.00	10.50	11.50
32	2.50	11.00	11.50
33	3.00	11.00	11.50
34	3.00	11.50	12.00
35	3.00	11.50	12.00
36	4.50	11.50	12.00
37	4.50	12.00	12.00
38	6.00	12.00	12.00
39	6.00	12.50	12.50
40	8.00	13.00	12.50
41	10.50	13.00	13.00
42	12.00	13.00	13.00
43		13.00	13.00
44		13.00	13.00
45		13.00	13.00
46		13.00	13.50
47		13.50	13.50
48		14.00	13.50
49		14.50	13.50
50		15.00	14.00
51		15.00	14.50
52		16.00	15.00
53		16.50	15.00
54		17.00	16.00
55			17.00

ملخــص

بالرغم من التطورات المعتبرة التي عرفها مجال تعلم و تدريس اللغة الانجليزية لسغراض الخاصة (ESP) الموجه لميدان التكنولوجيا وغيرها من الميادين، منذ الستينات، إلا أن قسم الهندسة المدنية و الري بجامعة بسكرة يعرف مشاكل من هذا القبيل، التي أثرت سلبا على التحصيل العلمي للطلبة. و من أجل تصحيح المسار التدريسي للغة الانجليزية و محاولة إيجاد الحلول الكفيلة لتحسين مستوى طلبة الري في اللغة الانجليزية، جاء هذا البحث ليتناول أولا: تشخيص إشكالية تعليم وتعلم طلبة الري للغة الانجليزية التقنية، لفهمها الفهم الجيد من خلال التعمق في تحديد أسباب فشلها. وثانيا تخطيط رزنامة جديدة لدروس اللغة الإنجليزية لسهداف الأكاديمية الخاصة (ESAP) لطلبة السنة الثانية والثالثة ليسانس إضافة إلى السنة الأولى ماستر في الري. ولهذا الغرض أخذنا ثلاثة عناصر أساسية بعين الاعتبار وهي : دراسة استطلاعية للمراجع، اقتراح درس نموذجي، ودراسة تحليلية لاحتياجات الطلبة. من الناحية المنهجية، وظفت الدراسة خطة بحث مزدوجة كمية ونوعية بنيت على أساس التحقيق الميداني على عينة طلابية غير عشوائية قاربت الستين فردا و على درس نموذجي طيلة سداسي بأكمله، قصد تبيان التحصيل العلمي و اللغوي. و لقد تعلق التحليل، أولا، بالتقييم الكمي لمستوى تحصيل الطلبة، الذي أعطى نتائج جد ايجابية من خلال الفرق الملاحظ بين نتائج التقييمين القبلي و البعدي، ثم الامتحان الشامل. و الذي أفضى إلى تأكيد الفرضية المقدمة في بداية الإشكالية. ولقد اهتم التحليل، ثانيا، بالجانب النوعي وذلك بالنظر لسجوبة عن الأسئلة المطروحة على الطلبة. حيث أكد غالب الطلبة عدم دراستهم للمصطلحات التقنية في طور الليسانس. و من جهة أخرى، سررنا كثيرا لمعرفة أن طريقة التدريس التي انتهجناها في السنة الأولى ماستر نالت إعجاب أغلبية الطلبة. وبكل تأكيد هذه الملاحظة وجدت تبريرها في تحصيل الطلبة من خلال التقييم الجزئي والشامل.