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**The Difficulties of Teaching and Learning English for Computer  
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## **Dedications**

I dedicate this work to:

My dear parents who were an inexhaustible source of affection, support and encouragement,

My sister Rezika and brother Rezak

My binomial Lamia.

***Kahina OUAMROUCHE***

I dedicate this work to:

My parents without whom nothing could be achieved and who have always stood by my side during all my studies,

My two brothers and my sister,

My binomial Kahina.

***Lamia MERABET***

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## **Abstract**

The present dissertation is concerned with the difficulties of teaching and learning English for computer science in three (03) vocational training institutes in the region of Tizi Ouzou , namely (I.N.S.F.P) Med Arezki of Tizi Ouzou( town), (I.N.S.F.P) of Draa Ben Khedda and (I.N.S.F.P) Hadni Said in Oued Aissi. More precisely, it seeks to identify the major problems that fourth (4<sup>th</sup>) semester learners and their teachers in these institutes encounter in their teaching and learning processes, and it suggests some solutions and strategies on how to alleviate these problems and difficulties. To achieve our aims, we have relied essentially on some aspects and principles about how to improve teaching and learning English for computer science, borrowed from Patridge. B and Starfield. S edited book *The Handbook of English for Specific Purpose* (2013), Ashurova Zevar Bobirovna edited book *Young Scientist* (2016) as well as Dikilitas.K and Kirkigoz.Y edited book *Key Issues in English for Specific Purposes in Higher Education* (2018). This research adopts a mixed methods research, combining both quantitative and qualitative standards. Thus, a questionnaire is distributed to nine (09) ECS teachers from the three centres. A structured interview is also conducted with three (03) trainees from each centre as well as twenty (20) classroom observation sessions were conducted in the two (02) first centres. The rule of three is used for statistical data analysis while Qualitative Content Analysis serves to interpret the results of the interview and the open ended questions of the questionnaire. The results obtained have revealed that teachers are not trained in the subject matter; they are not handed with a syllabus design as well as the problem of texts adaptation and selection. Also, trainees in these three concerned centres find difficulties performing in their language skills (reading, writing, listening and speaking) and even in technical vocabulary. Finally, we have suggested some solutions to overcome the cited problems.

**Key words:** ESP, English for Science and Technology, Computer Science, vocational training.

## **List of Abbreviations**

- ❖ EAP English for Academic Purposes
- ❖ ECS English for Computer Science
- ❖ EOP English for Occupational Purposes
- ❖ ESP English for Specific Purposes
- ❖ EST English for Science and Technology
- ❖ EVP English for Vocational Purposes
- ❖ GE General English
- ❖ I.N.S.F.P Institut National Spécialisé en Formation Professionnelle
- ❖ P.S.E.P Professeur Spécialisé en Enseignement Professionnel
- ❖ QCA Qualitative Content Analysis

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## **Statement of the problem**

Algeria has sought to spread education and training since independence. A lot of effort has been devoted to education in order to mainstream it and achieve high rates schools. Besides, the State has given importance to the sector of vocational training and has tried over successive periods to make it. The former vocational training sector was a sector that included dropouts of the education system; however, today's vocational training has become an important and a second pillar in addition to higher education since it includes students and even employees to get higher degree.

Vocational training in Algeria has attracted a lot of people wishing to obtain professional certificates that qualify them to enter the labour market. This sector offers several specialties such as computer science, tourism, accounting and international trade which are identified according to the needs of the labour market and technological evolution.

The study of these technical fields in vocational training institutes has allowed the trainees to study English and focus on one aspect of this language which is English for Specific Purposes. ESP is seen as an approach to language teaching which is related to specific needs of the learners. Moreover, ESP is required in circumstances in which English is linked to a particular career. It means adult learners have different needs and learn language for different reasons like finding high quality jobs, communicating with the international world and assessing scientific and academic resources in students' major fields like science and technology.

Teaching and learning ESP in vocational training institutes in Algeria is of significance in various domains, as the case of Computer Science (CS) where the need of special English is required in different software and programmes. Basturkmen (1998) has stated that English is of a particular importance for computer science students because it is the language of science and

communication. Therefore, learning CS requires special English and competences in the field of computing.

In the situation where English is seen as a necessity in teaching and learning technical fields, particularly CS, both trainers and trainees in vocational training institutes face considerable difficulties in English for computer science (ECS). Significant researches have been investigated on this issue at universities, for instance, the dissertation entitled “*A Teacher's Action Research on ESP Learners' Vocabularies: The Case Of Computer Students*” submitted by Naghizadeh and Hassan Tahirian, it is a work that deals with the computer students' difficulty dealing with their English book and texts through an action research. In addition, the article “*Difficulties in Teaching English for Specific Purposes: Empirical Study at Vietnam University*” submitted by Hoa and Mai, it tries also to identify the major difficulties that teachers and learners face in ESP. However, concerning the issue of teaching and learning ESP in vocational training institutes remains a fertile area of research that have not been exploited before; at least in the Algerian context.

### **Aims and significance of the study**

The case we work on includes the fourth semester ECS learners and their teachers in the vocational training institutes concerned. What motivated us to conduct this research is the fact that few studies have been conducted on the issue of teaching and learning ECS at universities. Also, none study has been conducted on this issue in vocational training institutes. Therefore, the present study aims to identify the difficulties of teaching and learning ECS in these vocational training institutes, which are (I.N.S.F.P) of Tizi-ouzou ( Imerzouken Med Arezki), (I.N.S.F.P) of Draa Ben Kheda and (I.N.S.F.P) of Hadni Said in Oued Aissi. This work achieves three main objectives. First, is to identify the difficulties of teaching ECS. Second, is to find out the language problems that learners encounter in learning ECS. Third, it is an attempt to suggest

some recommendations to overcome these problems and to improve the teaching and learning processes.

## **Research Questions and Hypotheses**

This current study is an attempt to provide answers to the following questions in order to achieve our objectives.

**Q1:** Do learners encounter language problems in learning ECS in vocational training institutes (I.N.S.F.P) of Imerzouken Med Arezki, (I.N.S.F.P) of Draa Ben Kheda and (I.N.S.F.P) of Hadni Said? If so, what type of language problems do they face?

**Q2:** Do teachers meet difficulties in teaching ECS in vocational training institutes (I.N.S.F.P) of Imerzouken Med Arezki, (I.N.S.F.P) of Draa Ben Kheda and (I.N.S.F.P) of Hadni Said? If so, what kind of problems do they face?

**Q3:** What are the solutions that can be suggested to overcome learners' and teachers' problems?

To answer these questions, we advance the following hypotheses:

**H1:** Learners encounter difficulties in learning ECS.

**H2:** Teachers experience problems in teaching ECS.

## **Research Techniques and Methodology**

This study adopts the mixed research method, which means, it is based on both quantitative and qualitative methods for data collection and analysis. The research data are gathered using three main instruments: a questionnaire for teachers, classroom observations and a structured interview for learners. These tools are appropriate, since the questionnaire allows us to collect data about teachers' and learners' difficulties while teaching and learning ECS in vocational training institutes and classroom observations permit us to detect the data in its real context. In

addition, a structured interview with learners to add more detailed and reliable information. The participants are learners of fourth (04<sup>th</sup>) semester and their teachers in vocational training institutes (I.N.S.F.P) of Imerzouken Med Arezki, (I.N.S.F.P) of Draa Ben Kheda and (I.N.S.F.P) of Hadni Said. In order to analyse the data gathered we use the rule of three and Qualitative Content Analysis (QCA).

## **Structure of the Dissertation**

The structure of this dissertation follows the traditional simple structure which is composed of a General Introduction, four chapters and a General Conclusion. The General Introduction includes a general overview of the topic, the reasons behind choosing the issue of the research, the aims and significance and the organization of the dissertation. The first chapter is named Review of the Literature, in which we review previous works and the main theoretical concepts related to the topic. The second chapter consists of the description of the Research Design in which we provide information about the participants and research tools used for gathering and analysing data. The third chapter is about the Presentation of Findings in which we demonstrate the results from the research tools. The last chapter is the Discussion of the Findings and it is devoted to the analysis of the results obtained from the investigation and trying to answer the questions as well as confirm or refute hypotheses.

## **Introduction**

This chapter aims at reviewing the literature related to the difficulties of teaching and learning ESP the field of CS. It is composed of four main parts. First, we introduce ESP through its definitions, origins and typology; we have cited ESP because ECS is involved in the area of English for Science and Technology (EST), which is derived from ESP (Djaileb, 2012). Then, we provide the definition of the main concepts, English for Science and Technology, Computer Science and its register and vocational training. Third, we present the need of English in the field of CS. Then, we account to review the major works related to our research. The fifth part presents the main challenges of teaching and learning ECS in relation to ESP with some suggested solutions and strategies to overcome these difficulties.

### **1. English for Specific Purposes (ESP)**

#### **1.1 Definitions**

According to some scholars as Hutchinson and waters, English for Specific Purposes is the teaching of English for any purpose that could be specified. It does not study general English but extends to special vocabulary use where learners may face many problems when learning. However, others describe it as the teaching of English for academic studies or the teaching of English for vocational or occupational purposes. For Mackay and Mountford,

ESP is generally used to refer to the teaching of English for clearly utilitarian purpose, this purpose is usually defined with reference to some occupational requirement (e.g. for international telephone operators)...or vocational training programmes (e.g. For hotel and catering staff)...or some academic or professional study,(e.g. Engineering). (1987:2)

It means that, ESP is related to a particular function where the need of this language is defined according to the requirements of this selected job. It is the learners' needs which define the purpose and the content of ESP curriculum. They may be academic, occupational or scientific needs.

Robinson and Coleman have described ESP as a type of English Language Teaching (ELT) and define it as: "*Goal-oriented language learning*". (1989:398). This means, a student has specific aims and objectives that should be attained; it is according to the aim of the learners that ESP is selected.

For Richard and Platt (1992), the term is used as any type of English language that is related with specific profession or academic needs of learners who have known the specific vocabulary and understand certain language related terms to their domain.

## **1.2. Origins of ESP**

Hutchinson and Waters (1987) look back to the causes resulting in the emergence of ESP: For them, since the end of the Second World War, the world has seen the massive growth of international business, science and technology. This has required an international language and English took the role due to the economic and political power of English-spoken countries, as the USA. Another reason is the revolution in linguistics also has affected the development of ESP. While the traditional linguistics sets out to describe the features of language, revolution in linguistics focuses on the way in which language is used in real communication. Also, new development in educational psychology has contributed in the growth of ESP by emphasizing the central role of learners, their motivations and needs for the language course.

## **1.3. Typology of ESP**

The focus of ESP is on the learners' needs. According to Kennedy and Bolitho (1984), some learners need it for their studies; whereas, others for their work and profession. The former is called English for Academic Purposes (EAP) and the latter is referred to English for Occupational Purposes (EOP) or English for Vocational Purposes. EAP and EOP are the main parts that can be subsumed under the field of ESP.

### **1.3.1. English for Academic Purposes (EAP)**

Jordan (1997) has stated that the term ‘English for academic purposes’ appears in 1974. EAP is also called English for Educational Purposes (EEP). Hyland has argued that

EAP is a field open to self-scrutiny and change, and for these reasons it offers language teachers an ethical, reflective, and fruitful field of research and professional practice and offers students a way of understanding their chosen courses and disciplines.(2006:5)

It means that EAP is generally used in educational setting to help students to succeed in their studies and academic performance when they intend to be specialized. Also, it provides an opportunity to students to better conceive their needed courses. EAP course is designed to help learners to develop necessary skills required for academic success, as well as to to develop specific academic skills such as note taking, academic writing and reading.

### **1.3.2. English for Occupational Purposes (EOP)**

According to Dudley Evans et al, the term EOP refers to “*English that is not for academic purposes, it includes professional purposes in the administration, medicine law and business and vocational purposes for non- professionals in work or pre-study work*” (1998:7).In other words, EOP is taught for learners whose need is related to their occupation. They need English to talk and respond in their domains and to read technical manuals. EOP is helpful for learners to function in English in their job.

## **2. Key Concepts**

### **2.1. English for Science and Technology**

EST is derived from ESP and ECS is involved in EST (Djaileb, 2012). It is concerned with studying science matters. In Oxford Dictionary, science is defined as “*knowledge about the structure and behaviour of the natural and the physical world, based on facts that you can*

*prove...*” (2018). This branch is based mainly on the study of mathematics, physics, engineering, and computer science.

## **2.2. Computer Science**

This term is included in the definition of the concepts because our investigation deals with the field computer science.

First, according to the Cambridge Dictionary, Computer Science is *“the study of computers and how they can be used”* (2016). Moreover, Spraul defines Computer science as

Most generally, computer science is the study of methods for organizing and processing data in computers. The fundamental questions of concern to computer scientists range from foundations of theory to strategies for practical implementation. (2005:109)

In other words, computer science is a technical branch that processes information in a rational way. It is concerned with the study of applications, language programming and design which form the basic knowledge of the field. There are textual objects that comprise a Computing Science Text. According to Djaileb (2012), The features that characterise the Computing Science text are first, the content of more nouns than verbs and compound nouns (data processing, memory card ...etc) or other words such as (algorithm, data, software...etc).Second, the use of discourse markers (moreover, whereas, generally...etc), which are used to generalise and clarify ideas.

## **2.3. Vocational training in Algeria**

According to the article published by Roy Sevion (2018) *“Vocational training can be described as a training that emphasizes knowledge and skills needed for specific trade, craft or job function”*

In reference to the brochure “La Formation et l’Enseignement Professionnels Missions et Structures”, in Algeria, vocational education and training is a strategic sector in the economic and social development of the country. It takes place in training institutions (national specialised institutes in vocational training, vocational training and apprenticeship centres, vocational training centres and specialised apprenticeships for persons with physical disabilities. Training is provided from level one (1) to four (4) (technician diploma to senior technician certificate), in the form of initial or continuous training. It consists of two cycles of two years. Vocational training institutes aim at:

- Ensuring the training of a qualified workforce, meeting the requirements and needs of the labour market, particularly through residential training and apprenticeship training.
- Ensuring equal access to professional qualifications.
- Promoting the particular categories of the population, with a view to their insertion into working.

The same article indicates that national institutes specialised in vocational training (I.N.E.S.F.P) are located in almost all the Algerian provinces. Each institute has annexes and detached sections. They are specialized in the professional field and are responsible, in particular, in the training of senior technicians, as our case study (I.N.E.S.F.P) Imerzouk Med Arezki in tizi ousou , (I.N.E.S.F.P) in Draa Ben Khedda and (I.N.S.F.P) of Hadni Said in Oued Aissi, shows.

### **3. The Need for English for ECS**

Learners of computer science need to be familiar with the use of English and should hold the English language competence for their occupational and academic life. Irfan-Chand-Mian (2010) has stated that for CS learners, who are not native speakers, it is important to master English not only for their academic performance but also for their future career. CS students should own the

English language competence because most of the computer engineering graphs are marked in English. Therefore, the English language has a great impact on Computer Science learners in their academic and professional performance. Irfan-Chand-Mian (2010) has cited some points where the importance of English lies in CS:

- Effective communication in meetings and negotiations;
- Presentation skills, making proposals and ways of presenting technical information;
- If you are computing engineer, you have to write report that other people can understand;
- Improving conversations with clients;
- Moving and responding to voice messages;
- Opening and closing meetings, giving clear instructions, cross –cultural communication;

#### **4. Background and Related Works**

There are few studies that have been conducted on the difficulties of teaching and learning ECS at the national level like “*Authentic materials in ESP: An Evaluation Proposal at the Department of Computer Science within LMD System*”, a doctoral thesis submitted by Dr Djaileb Farida. This research attempts to show the importance and the significance of authentic materials in ESP at the department of Computer Science at university of science and technology, Oran Algeria. And the main results of this thesis are: materials should be in line with the discourse of computer science, furthermore, the selection of language materials should be relevant to their future work and to further research. However, this study is limited only to one aspect which is the relevance of authentic materials to ESP teaching.

At the international level, “*A Teacher's Action Research on ESP Learners' Vocabularies: The Case Of Computer Students*” submitted by Naghizadeh and Hassan Tahririan, it is a dissertation that seeks to tackle the computer students' difficulty dealing with their English book and texts

through an action research, but the results are limited to just the students of the computer, since some strategies used in the plan might be appropriate just for those students.

Furthermore, *“Difficulties Facing Students in Learning Computer Programming Skills at Tabuk University” (Kingdom of Saudi Arabia)* submitted by Mahmoud and Alakeel. This doctoral thesis is about the problems faced by computer programming students at the University of Tabuk. It tends to make a comparison between the difficulties of students at Tabuk University and those of the world in learning computer programming. Also, the study has shed light on the impact of socio-cultural and environmental factors on learning computer programming skills. And some results of this study are: the students lack the ability to problem solving and design at its different stages, and general programming topics. Moreover, most of students lack skills even to analyse a short piece of code.

On the other hand, considerable studies have been dealt with the obstacles of ESP. Some of them are cited in the following lines:

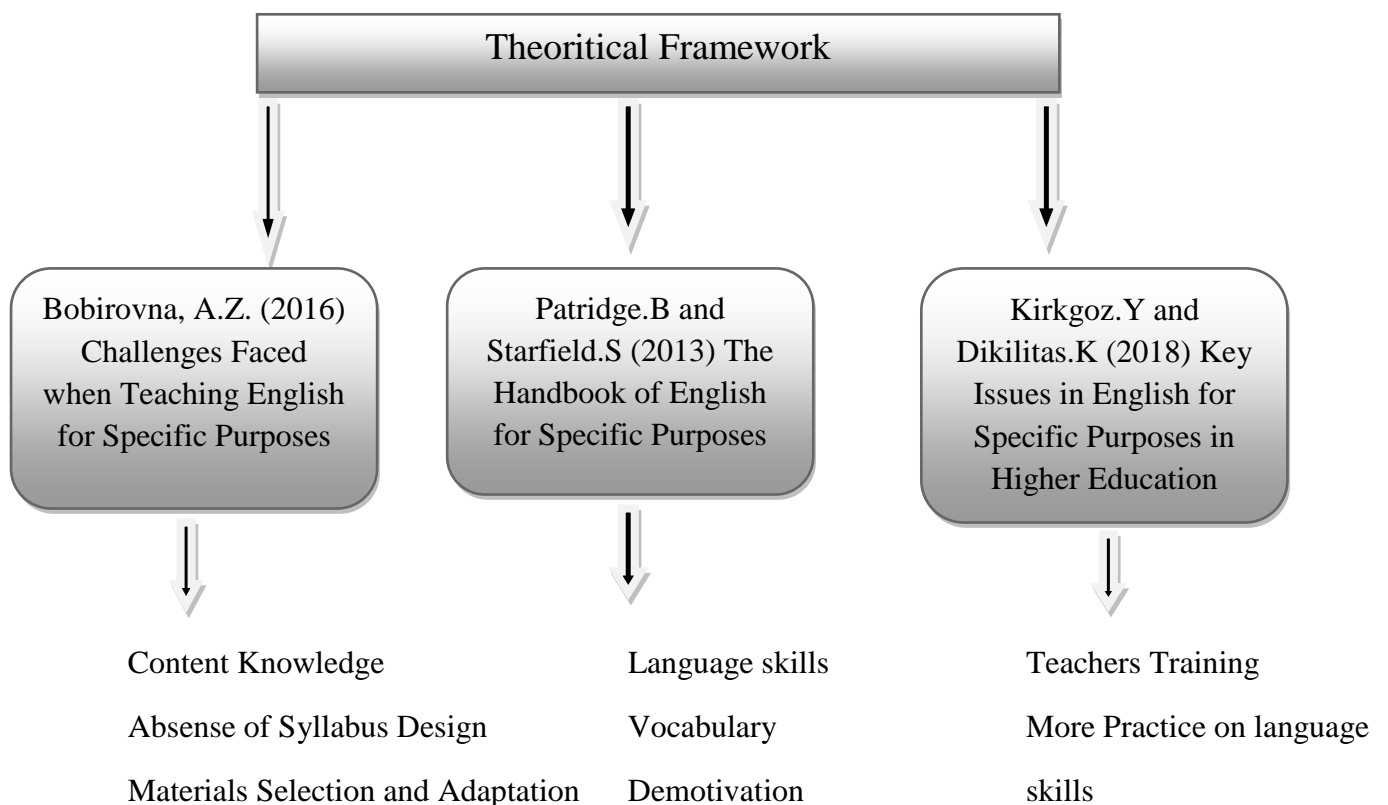
*“Difficulties in Teaching English for Specific Purposes: Empirical Study at Vietnam University”* submitted by Hoa and Mai. This article is descriptive where they listed the main difficulties that are related to both teaching and learning ESP.

Also, *“A Qualitative Inquiry into the Dilemmas and Challenges Perceived by Teachers in ESP Instruction”* submitted by Chang this work explores some teachers’ experiences of ESP instruction in order to better understand the nature of the professional knowledge needed in this field and to solve the ESP teaching problems through improving it.

However, these studies mainly tend to describe the difficulties and expose the problems of ESP instructors without dealing with learners difficulties.

In our department, few works have been investigated on the ESP context, but none of them has dealt with English for computer science, neither at university, nor in vocational training institutes. Therefore, this lack leads us to investigate teaching and learning English for Computer Science in vocational training institutes in Tizi Ouzou.

## 5. Theoretical Framework



Based on Bobirovna, A.Z (2016), Patridge.B and Starfield.S (2013) and Kirkgoz.Y and Dikilitas.K (2018).

ESP is a sub-field of English language education, it has emerged to meet learners' need in specific areas such as professional or vocational. However, the ability of these institutes to ensure an effective ESP course has often been called into question (Servet Celik et al. 2018:243).With critics indicating that insufficient materials, absence of syllabus design and content knowledge for teachers, language skills and demotivation for learners result in inadequate ESP teaching and learning. With these concerns in mind, we have carried out this

present study to identify teaching and learning difficulties in ECS in relation to ESP. To conduct our investigation, we have relied on some aspects of Ashurova Zevar Bobirovna in his book *Young Scientist* (2016) published in the Russian language except the part *Challenges Faced When Teaching English For Specific Purposes* written in English, where he has explained the various difficulties that teachers meet during the teaching process. Moreover, to reveal the challenges that learners encounter during learning ECS in vocational training institutes, we have relied on some aspects of Patridge Brian and Starfield Sue book *the handbook of English for Specific Purposes* (2013) in which they have devoted a part "ESP and Language Skills" where they have exposed the challenges of language skills. Also, to remedy teaching ECS difficulties we have relied on some suggestions and strategies of Kirkgoz Yasmine and Dikilitas Kennan edited book *Key Issues in English for Specific purposes in Higher Education* (2018) Furthermore, to overcome the learning ECS problems we have relied on some suggestions of *the handbook of English for Specific Purposes* in which they proposed a set of solutions to overcome the difficulties.

## **5.1. Difficulties Related to Teachers of ECS**

### **5.1.1. Content Knowledge**

Bobirovna, A.Z. (2016) thinks that the primary problem that teachers encounter in teaching ESP is the lack of content knowledge in the subject matter. This issue is further complicated in ESP settings where teachers might not be able to ensure their responsibilities successfully in the field. This problem is due to the inadequate teachers training and lack of meaningful professional development opportunities in ESP institutions. Among specific English principles, a course should include special language related to a specific domain, for example, concerning English for computer science where learners learn to inspect definitions and to establish the equivalence of alternative definitions for a given concept like algorithms, data structure and so on. However,

in the majority of situations, the designer is not a specialist of the field that is why having content knowledge of the field is not an easy task. Therefore, the instructor has not to be proficient only on the pedagogical knowledge and practical skills of the English language, but also in working knowledge of the subject matter.

### **5.1.2. Absence of a syllabus design**

Among ESP teachers' role, the teacher happens to be the syllabus designer. For him/her, designing a syllabus is not an easy task to do. They assume that the absence and inappropriate syllabus design in some situations prevent them to teach successfully in the subject matter. Therefore, not being a specialist in ESP context is the major problem that teachers meet since they cannot decide by themselves whether the selecting topics are appropriate and suitable to the area of specialization. In other words, when the designer is not specialist in the specific area, it will be difficult for him/her to include or exclude themes in the domain and order them (which topic is the first and which one is the next). (Bobirovna,2016)

### **5.1.3. Material selection and adaptation**

Successful teaching of English relies on the validity of appropriate teaching materials; it means appropriate materials help the teachers to perform well. However, teaching materials in a specific subject area such as text for a specific field can be not easy to find in many ESP contexts. Bobirovna, A.Z (2016:1143) has stated that *“Another problem is the text selection and adaptation. Not being a specialist in the specific area, the ESP teacher cannot decide by himself/herself how to adapt the text that the most important information in terms of subject matter will remain”*. Differently said, when the teacher is not a specialist in the field, he/ she cannot determine whether the adapted text is appropriate and fits the needs of the learners or not. It means that the teacher does not know exactly the information that would be included and the information that would be excluded.

## 5.2. Difficulties Related to Trainees of ECS

- **Language Skills**

- **Reading**

In ECS, reading is an important subject because it can help learners to improve their knowledge especially in their field of study. It can also help them to update knowledge in their specific areas and have better understanding of their subject matter.

Although most of students consider that reading skill is the least complicated compared to other skills, they still meet some problems as Jordan has stated *«even if many students rank reading as the least difficult of the skills, this does not mean that students have no problems with reading at all»* (1997:51). As cited in *the handbook of English for specific purposes*, learners encounter two key issues in ESP reading; how students should read, what they have to read and comprehend, Love (1991:19) asserts that the difficulties that students encounter in reading comprehension are due to their already existing schema for reading which is inappropriate to the comprehension of specialised texts. She also believes that *“This seems likely to be a particular problem for students encountering their first textbook in a new subject, since they may have little background knowledge to draw on”* (1991: 91). In addition, Myers has paid attention to the limitations of textbooks, he has explained that

To mention some practical issues, textbooks will not show students how pronouns or hedges might be used in their writing, because textbooks do not represent the sort of interaction in which these modifications are necessary, and textbooks will not show how references or illustrations are used rhetorically, because textbooks use them pedagogically. (1992:13)

It means, textbooks are limited in the information they contain, for example, they do not show learners how to use pronouns or hedges in their writing and the reading level of the textbook maybe too difficult to the learners. Thus, the challenges of reading that learners meet are due to the limitations of textbooks and the learners' little background knowledge.

## ➤ **Writing**

Hyland (2013) has stated that “*Writing is perhaps the central activity of institutions. Complex social activities like educated students, keeping records, engaging with customers, selling products, demonstrating learning and disseminating ideas largely depend on it*”(2013:95). It means writing is of a particular interest and an essential skill in activities performed by the members of a given community.

Generally, learners of ECS, as part of ESP, consider writing skill as a difficult activity to master since it needs time for reflection and revision. Writing represent a challenge to students; especially to those who are writing in a second language and this is not only because of different languages structures and different ways of ordering ideas, but also because of students’ anterior writing experiences which do not prepare them for the literacy expectations of their needs. In other words, when learners have little background knowledge, their writing may be unsatisfactory as in grammar, syntax and so on. The author has argued that the difficulties that students meet in writing skill are not often due to technical aspects of grammar, but also to learners’ little prior writing experiences (ibid.).

## ➤ **Listening**

In the context of ESP, the case of Computer Science, listening serves not only as a means for developing communication but also being aware of the whole subject matter .However, a lot of learners, especially technical students, find that listening is one of the most difficult skills of English since it involves not only correctly interpreting incoming speech but also responding appropriately. In *the handbook of English for specific purposes*, Christine C. M. Goh (2013:58) has stated that” *In some English for occupational purposes (EOP) contexts, the basic listening proficiency of learners may be even weaker than that of those studying in tertiary institutions*”. In other words, the listening skill is considered as a difficulty in professional area of workers comparing to learners. Despite the fact that few of workers compare studies have been

investigated on the issue of listening and ESP, she has pointed out that the reasons of these issues have the same origin as those of general English “*Research suggests that the listening problems encountered by learners in both general English and ESP contexts are similar and are linked mainly to factors that influence fundamental cognitive processes*” (ibid.). It means that the weakness is due to the language (phonology, syntax, and vocabulary), or language use (discourse and pragmatic), or context, facts and experiences (prior or background knowledge, or “schema”).

### ➤ **Speaking**

Christine B. Feak (2013) has claimed that in the field of ESP, learning English as a second language can be controversial, especially in particular domains where the language is seen as a means of debate. Learners who cannot speak English properly are suffering from inadequate general language skills and perhaps even more for their teachers’ disability. In other words, learners find the use of general English in ESP context as an obstruction that prevents them from moving forward in their learning process. Moreover, the institutions hesitate to assess the language ability more particularly the speaking skill of their instructors. In addition, an issue that prevents communication in ESP is “*the perceived threat to cultural identity* (Colman2006:6), it means English as a foreign language or as a second language is not well considered and not well seen the learners’ eyes.

### ➤ **Vocabulary**

Vocabulary plays an important role in ECS since it is an essential skill for learning to read, speak, write and listen. Without sufficient vocabulary, learners cannot communicate and express their needs in their workplace both in form of spoken and written effectively. Learners need special language to show understanding, “*make meaning and engage with disciplinary knowledge*” (Woodward - Kron 2008: 246). In other words, trainees tend to become integrated members of a particular discipline. However, learning special language can bring disapproving results to learners of ESP in general. “*One difficulty with identifying vocabulary for ESP is what*

*to do with everyday words that take on a particular meaning in a specialized context*". These everyday words with specialised meaning could present some difficulties for learners to learn new meanings and concepts for words that are already established in their lexicon in a particular way. Also, the process of learning huge number of words creates a certain confusion and disorder in the learners' mind. In addition, Camiciottoli (2007: 138) has said that specialized vocabulary "*evolves and renews itself according to changing interests within communities of practice*". This reveals that the meaning of special vocabulary can vary according to the context. For instance, 'mouse' which is an element in the hardware of a computer has another meaning which an animal. These different definitions may create a certain confusion in the learners' mind.

- **Demotivation**

Demotivation is defined in the oxford dictionary as "to make (someone less eager to work or study. In other words, learners are not interested to study. The main reason for learners demotivation is their psychological part; as their first impression of learning English which is not a good one as well as their classroom atmosphere in not attractive. In the majority of cases students of ESP are disagreeable to learn English; it is seen as a load in their learning process rather than an opportunity (Hoa, 2016). ESP learners are not exciting to the learning of English because they often lack basic English skills and are simply not ready for language instruction in their subject matter. Therefore, the weakness of English language learners, in general, contributes negatively on the learners' performance, learners' environment and learner's attitudes towards the language.

## **6. Solutions and Strategies to Improve ESP Teaching and Learning**

To awaken a great motivation and a positive attitude in the learners towards ECS, reading and writing, listening and speaking should be improved. Thus, we rely on some suggestions from

Patridge. B and Starfield. S edited book *The Handbook of English for Specific Purpose* (2013). Beginning with writing skill, Hyland.K. (2013) has stated that ESP is research-based language education and is in need of more potential developments in the coming years, first of all, he has claimed that studies in new professional fields should carry on because there are several genres that learners know little about and the others are emergent ones. Then, he has proclaimed that ESP conceptions of literacy and written instructions need developments such as helping learners to develop their professional communicative competence. Afterwards, he has added that ESP writing instructions need to pay greater attention to the contexts of professional writings as the ways in which writers collaborate to produce corporate documents of different kinds. For the improvement of reading skill, Camiciottli (2003:37) has concluded in her research that meta-discourse can have an approving impact on comprehension, for instance, it is more easy for the learners to understand what they read when their teacher provides them with the attitude of the author toward the text. In addition to that, the use of carefully selected pre-reading materials as Huang et al. have explored

The use of carefully selected pre-reading materials (taken from longer discipline - specific texts students will read later) to prime students' reading skills in a reading course, including general purposes reading skills that have already been built. Cited in *the handbook of English for Specific Purposes* (2006:52)

Pre-reading materials help learners to get more ideas about the text, for instance, before beginning to read the teacher introduce the text by asking questions, discussing it, giving examples.

Afterwards, Pritchard and Nasr (2004) have identified that using textual and contextual clues and exposing them to authentic texts in their discipline have a positive influence on learners' training. Moreover, Hall et al. (1986:152) have created a "course approach", which focuses on: macro-cohesion (links between content in the texts and outside the texts) and micro-cohesion (discourse connections between sentences).

In speaking, Christine B. Feak has claimed that Three Minute Thesis (3MT), as its name indicates, the students have three minutes to present their written document orally, they are judged in term of communication style and comprehension. Therefore, it is expanded in several universities all over the world to reduce students stress and anxiety during their oral presentation. Be aware of cultural diversity in classrooms and its implementation in different sciences is a necessity that cannot be denied In listening, Christine C. M. Goh (2013) has stated that solving the problem of inadequate English proficiency which causes troubles in the learners comprehension and remembering information and integrating audio input in ESP classes can improve the listening skill of learners in the subject matter.

To overcome teaching ESP challenges, we rely on some suggestions of Kırkgöz.Y and Dikilitaş.K edited book *Key Issues in English for Specific Purposes in Higher Education*. They have claimed that ESP teachers should be provided with specialized training from ESP experts in a given specific area. This may be through providing them with workshops or supporting them to join professional organizations and collaborating with ESP instructors in order to find out strategies for solving problems sharing resources and so on. The assurance of an effective teachers' training leads to overcome the lack of content knowledge, material selection and adaptation as well as the absence of a syllabus design.

## **Conclusion**

This chapter has reviewed the main difficulties of teaching and learning ECS in relation to ESP. It comprises the definition of ESP, its origins and typology as well as definitions of the key concepts relating to ESP such as computer science vocational training. Then, it has considered the most important previous works related to our subject. In addition, we have dealt with a theoretical framework related to the difficulties of teaching and learning ECS in relation to ESP. Finally, we have concluded this chapter with some suggested solutions to overcome these problems.

## **Introduction**

The present chapter is methodological. It outlines the research design used in investigating the present issue which is to identify the difficulties of teaching and learning English for Computer Science in vocational training institutes ( I.N.S.F.P) Imarzouken Med Arezki in Tizi Ouzou,(I.N.S.F.P) of Draa Ben Kheda and ( I.N.S.F.P) of Hadni Said in Oued Aissi. This chapter consists of two parts .The first one is named “Procedures of Data Collection”and it mainly describes and explains the methods used in this work, the setting and the participants of our investigation and the instruments of data collection. The second part is called “Procedures of Data Analysis”. It deals with the explanation of the data analysis procedures which are: a statistical method labelled the rule of three and Qualitative Content Analysis (QCA).

## **1. Procedures of Data Collection**

### **1.1. Research Method**

In order to carry out our study, we have opted for the use of a mixed research method for both data collection and analysis. The use of quantitative method has permitted us to gather data which are then calculated by the use of the rule of three. The use of qualitative method has allowed us to analyse the qualitative data gathered from open-ended questions and are analysed by the use of qualitative content analysis (QCA) by categorizing the learners’ answers and putting the similar ones in the same context.

### **1.2. Setting and Participants of the Research**

The investigation is carried out in Vocational Training institutes (I.N.S.F.P) Imarzouken Med Arezki in Tizi-Ouzou, (I.N.S.F.P) of Draa Ben Kheda and (I.N.S.F.P) of Hadni Said in Oued Aissi. The participants involved in our study are teachers of English for Computer Science (4<sup>th</sup> semester of ECS) whose total number is nine (09). They are females and males, their working experience varies from being novice to experienced teachers. Fifty five (55) trainees from the

three institutes; twenty two (22) learners from (I.N.S.F.P) Imarzouken Med Arezki in Tizi Ouzou, seventeen (17) from (I.N.S.F.P) of Draa Ben Kheda and sixteen (16) from (I.N.S.F.P) of Hadni Said in Oued Aissi. These learners are adults and teenagers females and males. Their age varies between nineteen (19) and thirty (30). The choice of 4<sup>th</sup> semester classes is not done randomly. In other words, learners in this level are supposed to master the English language since it is the end of the last cycle where trainees need to be ready for their professional career; although, they encounter considerable difficulties in their learning process.

### **1.3. Instruments of Data Collection**

In order to collect data, we have used three (03) main research tools. We have administered a questionnaire to teachers of 4<sup>th</sup> semester ECS and have attended twenty (20) classroom observation sessions, as well as an interview conducted with nine (09) learners.

#### **1.3.1 Teachers' Questionnaire**

In this study, a questionnaire is used in order to collect data about the difficulties of teaching and learning ECS .It is a set of questions to elicit information upon a subject, or sequence subject, from an informant. Brown (2001:49) defines a questionnaire as *“any written instrument which contains a series of questions and statements, which the respondents can answer, either by using their own words or selecting answers from those they are provided with”*.

Our questionnaire is composed of sixteen (16) questions of two types: close-ended and open-ended questions. It is divided into three sections; the first one is identification of teachers' profile, the second section is about teachers' difficulties in teaching English for Computer Science and contains ten (10) questions. The last section comprises issues of learning ECS and consists of six (06) questions. Nine (09) questionnaires were distributed to nine (09) teachers on May 20<sup>th</sup>, 21<sup>st</sup> 2018 but before that, we have tested the validity of the questionnaire using smaller

sample; three (03) teachers from nine (09). In handing back the questionnaires, all the participants who are nine (09) have handed them.

### **1.3.2 Classroom Observation**

Classroom observation is the second tool that we have used in our research. It has allowed us to have access to data in its real context. In our investigation, we have used a checklist with **Yes** or **No** questions which consists of eleven (11) items to be observed. They are related to teaching and learning difficulties in English for computer science. These observation sessions were attained with teachers of 4<sup>th</sup> semester ECS whose number are six (06), and the observation sessions took place from March 05<sup>th</sup>, 2018 till May 07<sup>th</sup>, 2018. We have attended twenty (20) sessions; ten (10) sessions in ( I.N.S.F.P) Imarzouken Med Arezki in Tizi Ouzou with twenty two (22) trainees and ten (10) sessions in (I.N.S.F.P) of Draa Ben Kheda with seventeen (17) learners.

### **1.3.3 Learners' interview**

The interview is the third tool that we have used in our investigation. It has permitted us to gather data about the difficulties that learners meet in learning English for Computer Science in vocational training institutes. We have used a structured interview of seven (07) questions with nine (09) from fifty five (55) ECS learners from the three vocational training institutes; from each institute, we have interviewed three (03) learners selected randomly (males and females). The interview has been conducted in French since the participants are not in the ability to understand the questions and answer them in English. For this reason, their answers have been recorded with a means of a mobile phone and translated to the English language.

## **2. Procedures of Data Analysis**

### **2.1. Descriptive Statistical Method**

We have opted for the quantitative methods to analyse the data collected from the questionnaire because of the different questions we have: closed-ended and open-ended questions.

Quantitative data are elicited from the results of classroom observation checklist and the closed-ended questions. For better readability, the results are highlighted by means of percentages for classroom observation checklist; pie chart, bar chart and tables for the questionnaire which make visible their related percentages.

We have proceeded in the calculation of the percentage using the rule of three.

The rule of three is applied as follows:

$$x = \frac{Z*100}{Y}$$

X is the calculated percentage, Z is the value of the similar answers and Y is the total number of the participants

### **2.2. Qualitative Content Analysis (QCA)**

For the sake of analysing the data collected from the interview and the open-ended questions of the questionnaire, we have relied on content analysis with reference to the analytical framework of Patridge and Starfield, Bobirovna, Dikilitash and Kirkoz book. Qualitative content analysis has been broadly defined as a systematic technique for transforming many words of texts into less content based on an organized set of rules. According to Stone et al (1996), *“Content analysis is any research technique for making inferences by systematically and objectively identifying specified characteristics within the text”* (cited in McNamara,2005: 02).

## **Conclusion**

To sum up, this chapter has highlighted the research design and methodology used in this investigation. First, it has presented the data collection tools which consist of a questionnaire, classroom observation and a structured interview. Then, it has mentioned the methods used for the analysis of the gathered data. Indeed, the rule of three is used as a statistical technique to supply a percentage of the data gathered from the questionnaire; however, qualitative content analysis (QCA) is used to interpret the open-ended questions of the questionnaire, as well as the data obtained from the interview.

## Introduction

This chapter is empirical. It presents the results obtained from the questionnaire administered to nine (09) ECS teachers in three vocational training institutes in Tizi ousou, (I.N.S.F.P) of Imerzouken Med Arezki, (I.N.S.F.P) of Draa Ben Kheda and (I.N.S.F.P) of Hadni Said. In addition, it reports the results obtained from the classroom observation done in two institutes (I.N.S.F.P) of Imerzouken Med Arezki and (I.N.S.F.P) of Draa Ben Kheda as well as from the interview conducted with nine (09) ECS trainees. The aim of this chapter is to identify the difficulties of teaching and learning ECS in vocational training institutes. The results are presented in percentages and displayed in bar charts, pie charts and tables. This chapter is composed of three sections. The first one is devoted to the presentation of the results of the questionnaire, the second section deals with the presentation of the findings of the classroom observations. The third one reports the results of the interview.

### 1. The Results of Teachers' Questionnaire

In our research, trainers of 4<sup>th</sup> semester ECS are handed a questionnaire to answer. Their number is nine (09). The results we have obtained are as follows:

#### 1.1 Section one: Identification of Teachers' Profile

The results of teachers' work experience are arranged from two (2) years to eighteen (18) years.

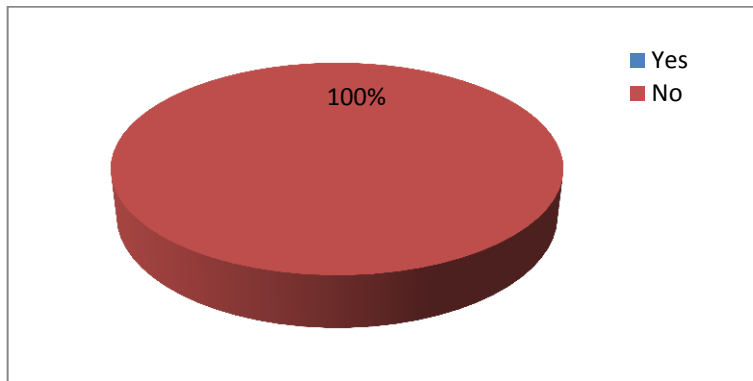
The results of teachers' grade "Professeur Spécialisé en Formation et Enseignement Professionnel"(PSFEP) are arranged from grade one (1) to grade two (2)

Number of teachers	2	1	1	1	2	1	1
Years of experience	2	3	5	9	10	15	18
Teachers' grade	1	1	2	1	2	1	2

**Table 01: Teachers' Work Experience and Grade**

## 1.2 Section 02: Teachers' Difficulties in Teaching English for Computer Science.

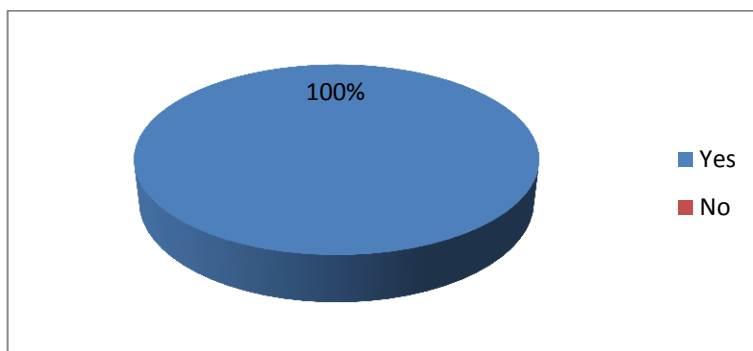
**Q1) -“Are you trained in English for Specific Purposes (ESP)?**



**Diagram 01: Teachers' Training in ESP**

As highlighted in Diagram1, the entire participants (100%) have confirmed that they are not trained in English for Specific Purposes.

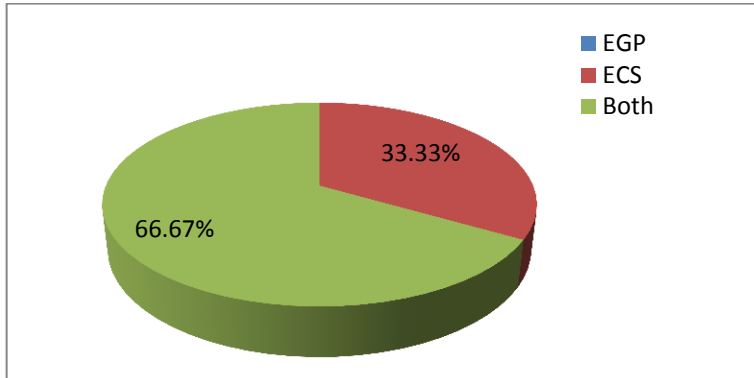
**Q2)-Is English primordial in learning computer science (CS)? If yes why?**



**Diagram2: The Importance of English in Learning Computer Science.**

As Diagram 2 shows, the totality of teachers (100%) has confirmed the importance of English in learning CS. When they were asked about the reason, some of them said English is the language of science and technology, others stated that all software programmes are written in English; therefore, students should master English to use their hardware and software programs efficiently.

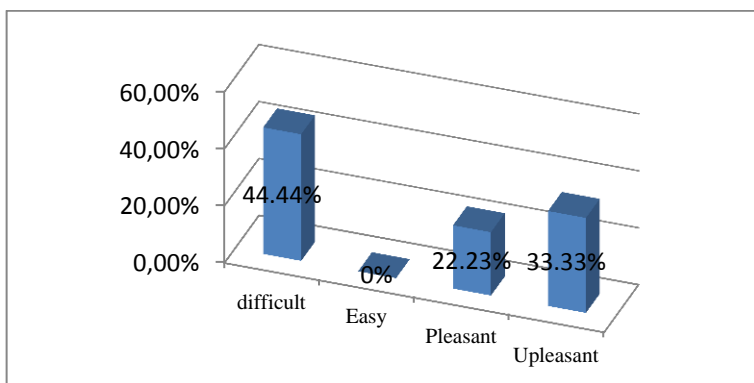
**Q3)-Do You Teach English for General Purposes (EGP) or English for Computer Science (ECS)?**



**Diagram 03: Teachers' Use of ESP, EGP or Both**

As underscored in the pie chart above, the majority of teachers which are six (06) of them teach both ESP and EGP, they represent (66.67%) of the respondents. (33.33%) of them teach just ESP. whereas, none (00%) teaches EGP in ECS classroom.

**Q4)-How difficult is teaching English for computer science (ECS)?**

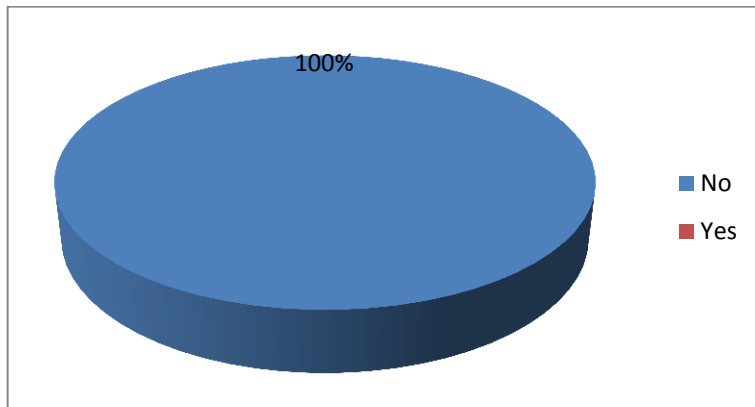


**Diagram4: The Difficulty of Teaching ECS**

The results gathered in question (4) show that four (04) teachers which stand for (44.44%) assess teaching ECS as a difficult task, (33.33%) assess it as very difficult and (22.22%) consider

teaching ECS as average. However, none of the respondents (00%) has said that teaching ECS is easy.

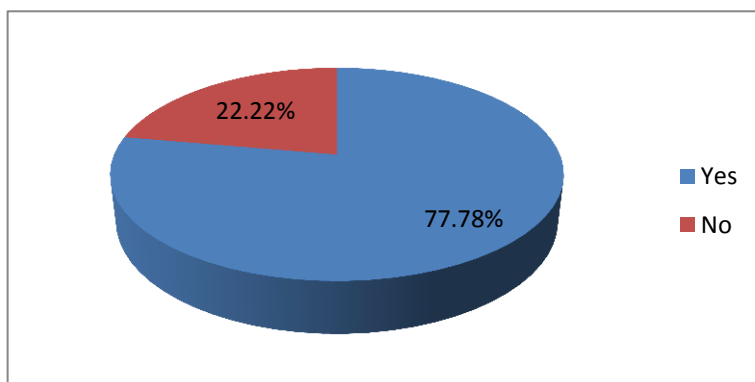
**Q5)-Is there any program designed for teaching ECS?**



**Diagram 05: The availability of a program in ECS**

As diagram 06 shows, the whole participants (100%) have answered that they do not have any program designed for teaching ECS.

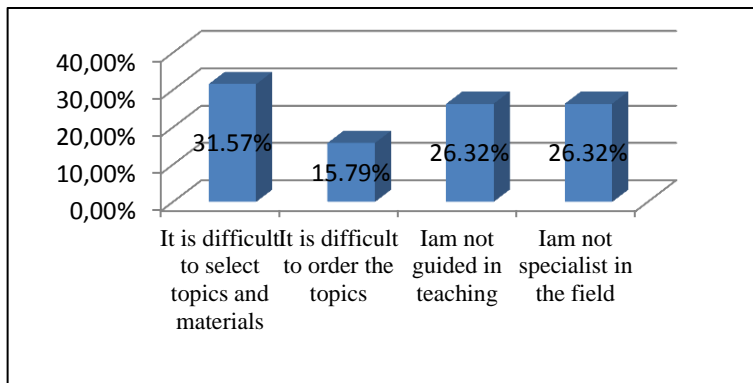
**Q6) -Do you find the absence of a program an obstacle to teach ECS?If yes why?**



**Diagram 06: The Absence of a Program as an Obstacle to Teach ECS**

The pie chart illustrates that (77.78%) of teachers find the absence of a designed program an obstacle for teaching ECS, whereas the rest of the participants (22.22%) do not find it as a hindrance for teaching ECS.

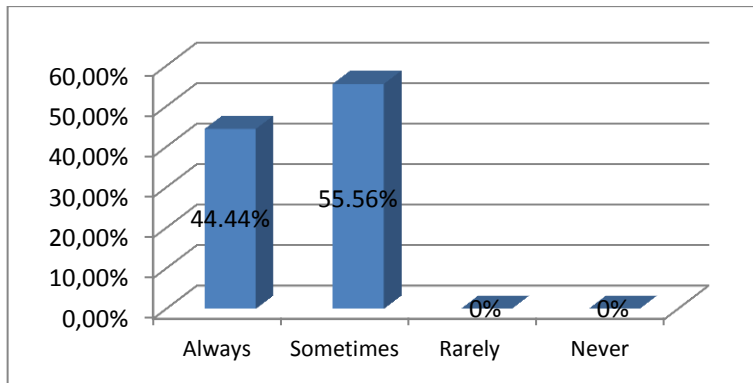
**Because,**



**Diagram 07: The Reasons of the Absence of a Program as an Obstacle**

From diagram 08, we notice that six (06) of the participants who stand for (31.57%) have answered that they find the absence of a program designed for ECS as an obstacle because of the difficulty to select topics and materials. Additionally, (26.31%) of them have stated that it is an obstacle because of either not being guided in teaching, or not being a specialist in the field. In contrast, (15.78%) of them have answered that the cause is the difficulty to order the topics.

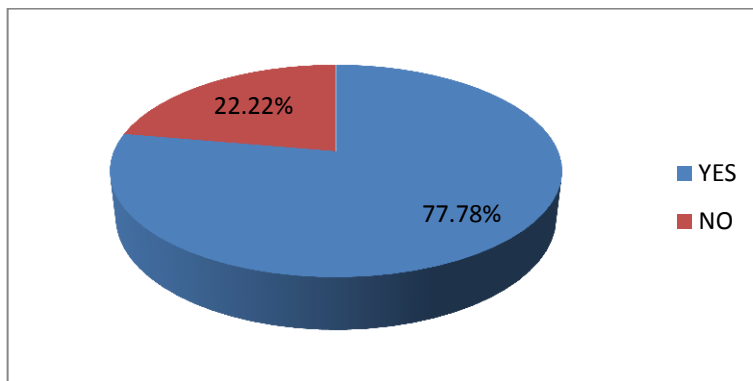
**Q7)-How often do you face difficulties concerning content knowledge of Computer Science?**



**Diagram08: Frequency of Teachers’ Difficulties in ECS Content Knowledge.**

Relying on the gathered data, the proportion of teachers’ difficulties in ECS content knowledge “sometimes” is shown to be higher than the other choices. That is to say, (55.56%) of teachers have stated that they “sometimes” meet difficulties in ECS content knowledge. In contrast, (44.44%) of teachers “always” face problems in ECS content Knowledge .However, none of the participants have ticked out “often” and “never” as answers.

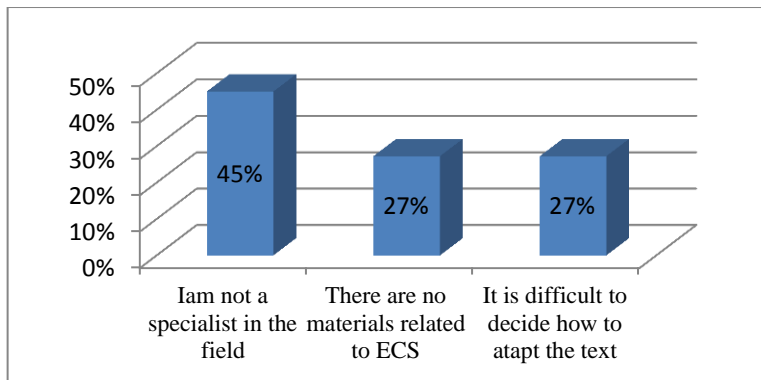
**Q8)-Is it difficult to select appropriate materials to teach ECS?**



**Diagram 9: Teachers’ Difficulties in Selecting Appropriate Materials for Teaching ECS**

The results presented in diagram 10 show that the majority of teachers (77.78%) have answered that it is difficult to select appropriate materials; whereas, (22.22%) of teachers do not consider selecting materials a problem.

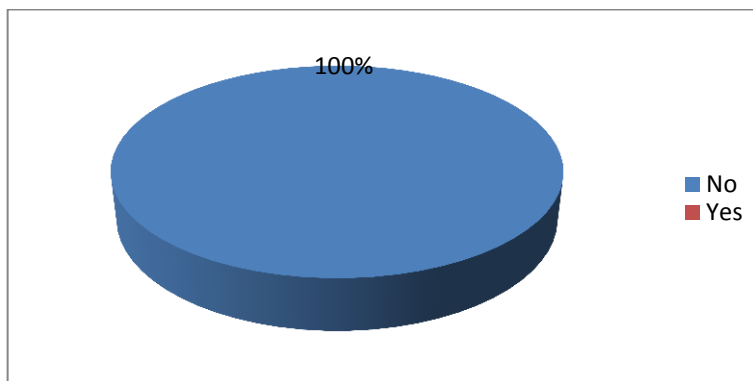
### If yes, because



**Diagram10: The Reasons of Selecting Appropriate Materials as Being an Obstacle**

As demonstrated in the above diagram, (45.45%) of teachers have responded that they meet problems in selecting appropriate materials because they are not specialist in the field. In contrast with this, (27.27%) % of the participants have stated that this obstacle is due to either the absence of materials related to ECS context or the difficulty to decide how to adapt the text.

### Q9)-Does your institution provide you and your learners with necessary tools such as Textbooks and Dictionaries in ECS?



**Diagram 11: The Provision of Materials for Teaching and Learning**

As indicated in diagram 11, the entire participants (100%) have confirmed that their institution does not provide them with necessary tools related to teaching and learning ECS.

**Q10)-In addition to the difficulties mentioned above, what other obstacles do you encounter?**

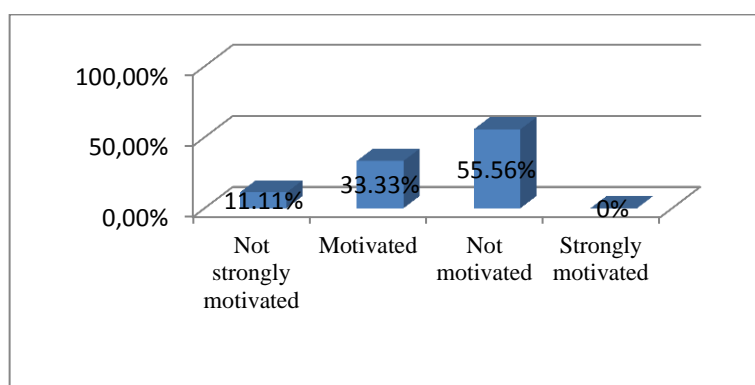
Additional Obstacles	Answers	Percentages
Teaching English as a second language	2	22.23%
Mixed level of students	4	44.44%
Insufficient time	2	22.22%
Large classes	1	11.11%
<b>Total</b>	<b>9</b>	<b>100%</b>

**Table 02: Additional Teaching Difficulties Mentioned By Teachers**

The aim of this question is to identify other additional difficulties. Different answers were provided; (44.44%) of the respondents find that mixed level of students is the additional problem. (22.22%) have argued that insufficient time in teaching ECS is another major obstacle. The rest (11.11%) have declared large classes as another obstacle in teaching ECS in vocational training centers.

### 1.3 Section 03: Learners' Difficulties in Learning ECS

**Q11)-Are learners motivated to learn English for Computer Science?**

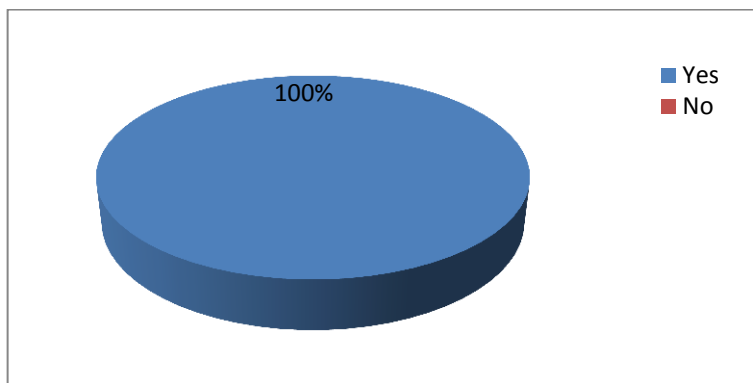


**Diagram12: Learners' Motivation in Learning ECS**

The results gathered in question 12 show that the majority of teachers (55.56%) have confirmed that learners are not motivated in learning ECS. Followed by (33.33%) of the

respondents who have said that learners are motivated, whereas, (11.11%) of the teachers have answered that the learners are not strongly motivated. But no one (00%) has answered that the learners are strongly motivated.

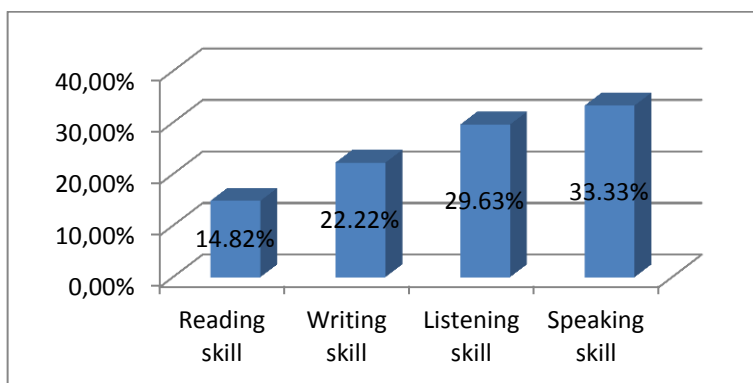
## 12)-Do your learners find English for Specific Purposes difficult?



**Diagram 13: Learners' Difficulty in ESP**

The results mentioned in the diagram above demonstrate that the entire participants (100%) have confirmed that their learners find English for specific purposes difficult.

### If yes, the difficulty lies in

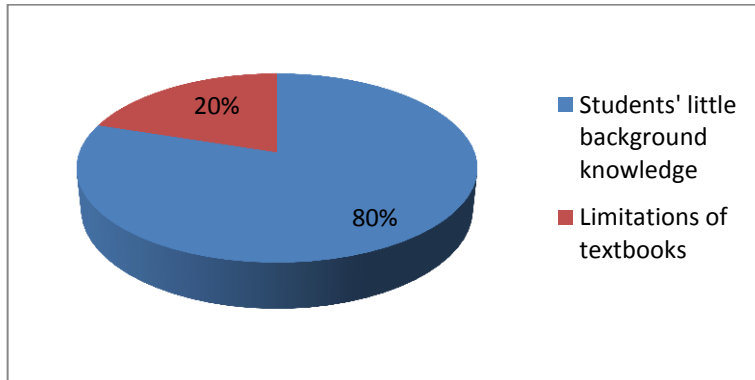


**Diagram 14: The Location of the Difficulty**

As indicated in the diagram, (33.33%) of the teachers have responded that the failure in using ESP lies in speaking skill, some others (29.63%) have answered listening skill and (22.22%)

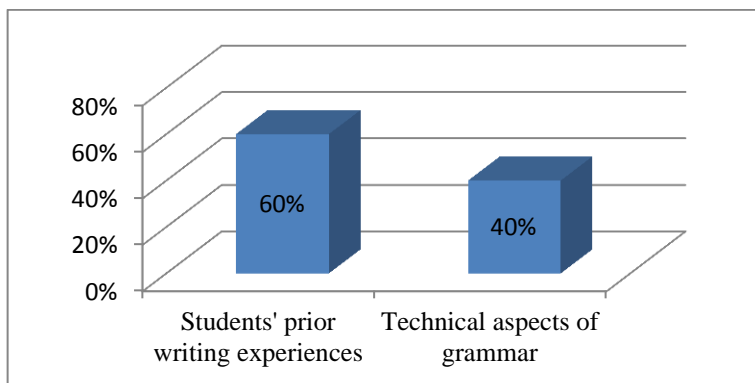
have responded that the difficulty lies in writing skill . Nevertheless, (14.82%) have answered reading skill.

**Q13)-In your opinion, why do trainees meet such obstacles?**



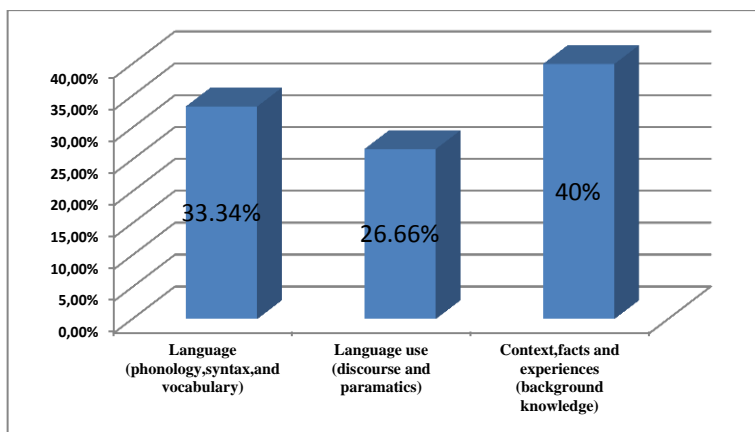
**Diagram 15: Reasons of Learners’ Difficulty in Reading Skill**

This pie chart represents the reasons of learners’ difficulty in reading skill. It shows that 80% of teachers have answered that learners find difficulties in ESP because of little background knowledge; whereas, (20%) have responded it is because of the limitations of textbooks.



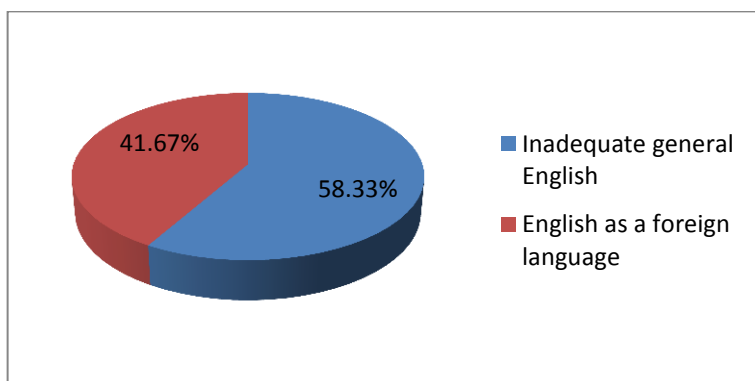
**Diagram 16: Reasons of Learners’ Difficulty in Writing Skill**

As it is demonstrated in this diagram, (60%) of the teachers have responded that learners find difficulty in writing skill because of their little prior writing experiences. However, (40%) have said it is because of technical aspects of grammar.



**Diagram 17: Reasons of Learners' Difficulty in Listening Skill**

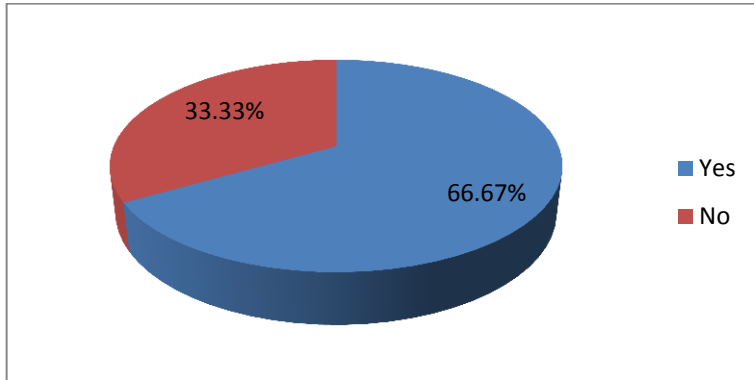
As understood in the diagram above, (40%) of the participants have justified their answers by saying that the difficulty is due to context, facts and experiences (background knowledge), some others (33.34%) by saying that the difficulty is due to language (phonology, syntax, and vocabulary). Nevertheless, the rest (26.66%) have justified their answers by saying that the reason of this difficulty is language (discourse and pragmatics) which means the use of language in performing situations.



**Diagram 18: Reasons of Learners' Difficulty in Speaking Skill**

The results gathered in question 13, show that (58%) of the respondents have justified their answers by saying that the difficulty is due to inadequate general language skills and the others (41.67%) have answered by saying that it is because of English as a foreign language.

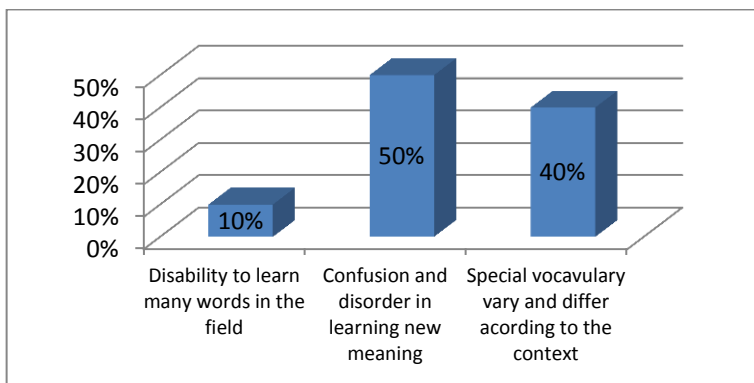
**Q14)-Do you think that your learners have problems of vocabulary, especially technical terms in the field of Computer Science?**



**Diagram 19: Learners' Vocabulary Problems in ECS**

The results mentioned in this diagram indicate that the majority of the participants (66.67%) have responded that their students meet difficulties in ECS vocabulary, but the others (33.33%) have answered that their students do not have problems of vocabulary.

**If yes, because of**



**Diagram 20: Reasons of Learners' Difficulties in Vocabulary**

This bar chart shows that (50%) of the respondents have justified their answers by saying that learners' problems in vocabulary are due to the confusion and disorder in learning new meaning, the others (40%) have stated that it is due to special vocabulary vary and differ according to the

context. The rest of the respondents (10%) have justified their answers by saying that it is because of the disability to learn many words in the field.

**Q15)-in addition to the difficulties mentioned above, what other difficulties do learners face?**

<b>Additional Obstacles</b>	<b>Answers</b>	<b>Percentages</b>
Deficiency in using general English	<b>4</b>	<b>44.45%</b>
Large classes	<b>1</b>	<b>11.11%</b>
Mixed levels	<b>2</b>	<b>22.22%</b>
Learning English as a second language	<b>2</b>	<b>22.22%</b>
<b>Total</b>	<b>9</b>	<b>100</b>

**Table 03: Additional Learning Difficulties**

The statistics of table 03 show the additional learning difficulties, the majority of the teachers (44.45%) have added " *deficiency in using general English*" as an additional learning difficulty.(22.22%) " *consider mixed level of students*" as another obstacle. The same percentage of the respondents (22.22%) have answered that " *learning English as a second language*" in another difficulty that learners face. Nevertheless, (11.11%) have responded " *large classes*".

**Q16)-As being a teacher of ESP, what do you suggest to overcome these difficulties?**

<b>Some suggestions to overcome the difficulties</b>	<b>Answers</b>	<b>Percentages</b>
Training ESP teachers	<b>3</b>	<b>(33.34%)</b>
Providing appropriate materials and syllabus design	<b>4</b>	<b>(44.44%)</b>
Learning English at an early Age	<b>2</b>	<b>(22.22%)</b>
<b>total</b>	<b>9</b>	<b>(100%)</b>

**Table 04: Teachers' Suggestions to Overcome ECS Difficulties**

The participants give various suggestions that they think they could improve teaching and learning ECS in vocational training centre. (33.34%) of the participants have suggested that '*training ESP teachers*' can contribute to the improvement of teaching and learning ECS. Others (44.44%) have proposed "*providing appropriate materials and syllabus design*", while the rest (22.22%) of the participants have suggested "*learning English at an early age*" to overcome the problems.

## **2. Results of the Classroom Observation**

The second research tool that we have used in our investigation was the classroom observation. After getting teachers' approval, a total of twenty (20) attendances have been assured with six (06) teachers of ECS at ( I.N.S.F.P) of Imerzouken Med Arezki in Tizi Ouzou and( I.N.S.F.P) Draa Ben Khedda. The observation period took from March 05<sup>th</sup>, 2018 to May 07<sup>th</sup>, 2018 and is described in a checklist carried in the form of table. These items have been observed in terms of frequency by using the **Yes / NO** checklist. The latter contains ten (10) items. The results of the checklist show that teachers and learners face difficulties in ECS sessions. (80%) of learners find difficulties in language skills; furthermore, (80%) of them are not interested in learning ECS. About teachers problems, (5%) of teachers vary in selecting materials whereas (95%) do not. Besides, none of teachers (00%) follow a program in teaching ECS. Moreover, (20%) of teachers do not have ECS content knowledge.

**Adapted from Hutchinson and Waters' Checklist (1987)**

<b>Items being Observed</b>	<b>Yes</b>	<b>No</b>
Learners are motivated in learning English for computer science (CS).	(20%)	(80%)
Learners are able to use ESP.	(20%)	(80%)
Learners meet difficulties in reading skill.	(60%)	(40%)
Learners meet difficulties in writing skill.	(85%)	(15%)
Learners meet difficulties in listening skill.	(90%)	(10%)
Learners meet difficulties in speaking skill.	(95%)	(5%)
Learners have sufficient technical vocabulary of ECS.	(45%)	(55%)
Learners have the same level of the English language.	(70%)	(30%)
Teachers have the content knowledge	(80%)	(20%)
Teachers vary in selecting materials.	(5%)	(95%)
Teachers follow a program in teaching ECS	(00%)	(100%)

**Classroom Observation Checklist**

### **3.Results of the Interview**

The analysis of this section is based on the data obtained through interviews conducted with nine (09) trainees from vocational training institutes of TiziOuzou ( I.N.S.F.P) of Imarzouken Med Arezki in Tizi-Ouzou, (I.N.S.F.P) of Draa Ben Kheda and ( I.N.S.F.P) of Hadni Said in Oued Aissi. The interviewees, in fact, are audio recorded by means of a mobile phone which are converted and transcribed by hand into texts and translated from French language to English. Indeed, the analysis is made by using qualitative content analysis and aims at finding out the difficulties that learners meet in learning English for Computer Science in vocational institutes of Tizi Ouzou. The results shown below are derived from the transcripts of the interviews.

#### **3.1. Participants**

The nine (09) participants selected for the interview are learners at vocational training institutes of TiziOuzou ( I.N.S.F.P) of Imarzouken Med Arezki in Tizi Ouzou, (I.N.S.F.P) of Draa Ben Kheda and ( I.N.S.F.P) of Hadni Said in Oued Aissi.. All of them study English for computer science and they are selected randomly.

#### **Are you interested in learning English for computer science?**

To answer this question, the majority of learners have agreed upon one point, that is, they are almost not stimulated and interested in learning English. They have claimed that the difficulty is related to language not to the field of Computer Science.

#### **What is your attitude toward your teacher's selected materials?**

In fact, the majority of the interviewees have mainly expressed their dissatisfaction toward the selection of materials. According to them, the teachers do not vary in selecting materials. In other words, they rely in most of the time on texts that are related to the field of CS.

**Do you find difficulties in learning the four skills (reading and writing, listening and speaking)? Why?**

When it comes to the obstacles that learners meet in the four skills, all the interviewees have agreed upon the same point and answered by ‘yes’. Although learners have confessed that learning language skills give them opportunities to develop their abilities in their field of study, they argue that the origin of these obstacles comes from their first experience with the English language.

**What are your English weaknesses in learning ECS?**

When the respondents are asked about their ECS weaknesses, their answers are mainly similar. They have all claimed about their difficulties in using general English. According to them, it happens to understand the concept but not the other components of the sentence.

**Do you have problems with ECS vocabulary introduced in English by your teacher?**

Questioned about the use ECS vocabulary in English, a lot of the participants have defended the point, that is, it is not a big deal since they are specialized in the field of computer science. However, others have claimed about their misunderstanding, one of them has stated “In French, it is not a problem but in English, it is a big deal”.

**Do your teachers struggle with ECS content knowledge? What do you think about it?**

Despite the fact that some of the interviewees have responded that their teachers do not face difficulties in all situations, others have stated that their teachers struggle with ECS content knowledge.

## **What do you suggest to overcome these obstacles?**

When the interviewees are asked about some suggestions to overcome the difficulties, their answers differ from one respondent to another. While some of them have asserted that “providing appropriate materials can improve the learning process, others think that ‘mastery of general English and ‘form teachers of ESP’” can overcome the problem.

## **Conclusion**

This chapter has presented the findings we obtained from the two research tools that we used, which are; the questionnaire directed to teachers, the structured interview as well as the classroom observations that we have conducted. The findings are exhibited in graphs and tables. The research tools that we have used allowed us to gather a considerable amount of data that we will explain and discuss in the following chapter.

## **Introduction**

This chapter discusses and interprets the results obtained from the three research instruments used in the current study. The results are then interpreted according to the Review of the Literature. The aim is to respond to the research questions and confirming or refuting the hypotheses. This chapter contains three major parts. The first discusses the results obtained concerning teachers' difficulties in teaching ECS. It then, discusses learners' difficulties in learning ECS. Finally, the last part addresses the suggested solutions and strategies to overcome the problems of teaching and learning ECS.

### **1. Teachers' experience and position**

The purpose of asking teachers about their experience and position is to identify the extent to which teachers of vocational training institutes are aware of their job performance. The results of the respondents' identification and the results of classroom observation show that the experience of these teachers varies from two (02) years to eighteen (18) years. These numbers can indicate different perspectives, the first is that the experienced teachers are expected to be more aware of their subject matter; that is, they face little difficulties compared to the inexperienced or novice instructors. Second, when it comes to the selection and adaptation of materials, the tutor who has taught ESP for ten (10) years, for instance, tends to have more prospects and chances to select and adapt materials appropriately because he/she has a lot of information about the trainees' psychological, intellectual and pedagogical side. Furthermore, teachers' experience permits them to self-evaluate and update the designed lessons over the years by taking into consideration the trainees' weaknesses and trying to figure out them as time goes on.

## **2. Teachers' Difficulties in Teaching ECS**

### **2.1 The importance of English**

Taking into account the question asked in the questionnaire Is English primordial in learning computer science (CS)? It seems that teachers in vocational training institutes are aware of the importance of this language despite their teaching difficulties. The obtained answers have indicated its importance in modern life. The instructors have maintained that English is not just important in the field of computer science but its significance appears in all technical spheres. Besides, when we are aware of the English language, one of the teachers has affirmed, *"we are able to become confident with computer programming use i.e. everything that includes software and hardware."* It is in this sense that Basturkmen (1998) has stated that English is of a particular importance for computer science students because it is the language of science and communication. Furthermore, the trainers have all agreed that English is the language of science and technology where students should extend their practice and skill to international environments. In addition to the results of the questionnaire, the answers of the interview have also made reference to the high position of the English language in the global sphere. In fact, when the trainees were interviewed whether the field of ECS is really in need of English, they have answered that they realize the necessity to keep struggling against the difficulties in learning English which is an international language.

### **2.2 Teaching EGP or ESP**

According to the questionnaire's findings, the majority (66.67%) of teachers teach both ESP and EGP in ECS classrooms. The indicated results can have one main explanation; they confirm that learners in vocational training institutes always need to make reference to general English rules. In other words, learners are not able to develop their English abilities in technical studies

without being reminded of the generality of English. As Li Jing asserts that when teaching ESP, the teacher should refer to the teaching of EGP.

The indicated percentage has revealed the efforts that the instructors make in these institutes with the intention of making a balance between the ESP and EGP lessons in relation to their needs. As it is demonstrated in the finding, only 33.33% of the teachers have mentioned that teaching English in vocational training institutes is related to their field of study (ECS).

### **2.3 The difficulty and unpleasantness of teaching ECS**

From the results displayed in the previous chapter, it seems that ECS courses are highly not enjoyable. Teachers in vocational training institute face considerable problems, this is confirmed by the teachers' responses in which (44.44%) and (33.33%) of teachers view teaching ECS as being difficult and unpleasant (see diagram 04. P.28). This is due to the teachers' lack of training in ESP that (100%) of the respondents having confirmed. Swales (1984: 214) has asserted that in the evaluation of ESP, one of the constraining factors is the lack of "specialised teacher-training" which remains an issue in this field. Going into the details, the majority (77.78%) of teachers find that the absence of a program designed for teaching ECS is an obstacle, as it is stated in the Review of the Literature; Bobirovna, A. Z has asserted that the absence of a syllabus design in some situations prevent teachers from teaching successfully in the subject matter. Most teachers have justified their answers by selecting several suggestions but much more "*it is difficult to select topics and materials*". Therefore, we notice that the teaching process depends on syllabus design which has a significant value and serves as a teaching guide. As the results show in the questionnaire (see diagram 08) and classroom observations, (100%) of teachers need to be guided in their teaching. According to the observation sessions conducted in two vocational training institutes, we have noticed that the instructors do not feel at ease at presenting their lessons since they were not sure about the selected topics; they always doubt about whether these

selected topics fit the learners' needs or not. Moreover, we have noted that as long as teachers are not guided in teaching when they present their lessons in the same level but in different classes, they mix up the topics, their order and even their contents, which leads to inequality between the classes of the same level.

## **2.4 Content knowledge difficulties**

As regards teachers' content knowledge difficulties, the participants have responded that they "sometimes" face difficulties in CS. Others have answered by "always", but none of them has mentioned that they "never" or "rarely" face difficulties in content knowledge. These results indicate that these teachers are mainly not satisfied with the way of teaching CS. Bobirovna. A. Z has claimed that "...the primary issue in ESP teaching is the struggle to master language and subject matter". (2016:1442). Besides, the results of the classroom observation reveal that (80%) of teachers struggle with CS content knowledge. It is not easy to teach a language in a field that is not mastered. First, because the teacher is not trained in his/her field of study and what he/she teaches are two different domains (linguistics and technical area). Moreover, when we have interviewed some learners Do your teachers struggle with regard to CS content knowledge? What do you think about it? Their answers are, their teachers face difficulties concerning content knowledge. Even though the learners do not master English, they were able to deduce that their teachers have significant problems in CS content knowledge.

## **2.5 Material selection and adaptation**

The results of this study demonstrate that the majority (77.78%) of teachers have problems in selecting appropriate materials in teaching ECS; this reveals that selecting materials is not an easy task. Relying on classroom observation sessions, (95%) of the teachers do not vary in selecting materials for their learners, that is to say, they generally provide them with texts as they are presented in the original source, without paying attention to the process of adaptation. This is

reflected in the majority of texts which are taken from the internet and have been distributed to the learners without being adapted or simplified. For instance, “Computer Worms” and “the Internet Security” are two texts taken from the internet as they are and are presented to the trainees without any change. This lack is justified by the majority of the teachers (see diagram 11) by saying that they are not specialists in the field, others by saying that there are no materials related to ECS context, and it is difficult to decide how to adapt the text .Thus, we conclude that teachers’ training is primordial in the teaching process since it avoids to put them in embarrassing and hesitant situations. In addition, the lack of necessary tools (manuals, textbooks, guidebooks and so on) in the institutions, as the entire participants (100%) confirm, worsens the teaching and learning process. To confirm this idea, when we have interviewed students about their attitudes in selecting materials, the majority of them have shown their displeasure and disappointment. The trainees have complained much more about the lack of these materials and consider this lack as the major reason of their English deficiency.

## **2.6 Additional difficulties**

In addition to the difficulties cited in the questionnaire, we have asked the teachers if there are any additional obstacles they have met. Different answers have been provided, (44.44%) of the participants have claimed about “*the mixed level of students*” is another problem. That is, one class takes in different English levels of students; low, pre-intermediate and intermediate level, thus the teacher cannot satisfy each level of the learners. In this case, the instructor takes the pre-intermediate level as a reference in preparing his/her lesson, consequently, the low level learners do not understand and the intermediate level get bored and are demotivated in class.

Other participants (22.23%) have claimed that “*teaching English as a second language*”. is generally a problem encountered in non-native countries ...This issue is mainly due to the absence of studying English in elementary schools (studying English at an early age).Also, there are adult learners (25-30years) who have not studied English for a long time and when they join

those vocational training institutes, it is difficult for them to remember what they have learnt before. Moving to the other answers, (22.22%) of the respondents have complained about “*insufficient time*” however, only (11.11%) have mentioned difficulties with “*large classes*”. In their programme, they have just two (02) hours a week which is insufficient either for the teacher to provide his/her trainees with the needed information, or for the learners to grasp the needed knowledge. Concerning large classes, some teachers are not able to control a large number of trainees in order to know whether they have understood the lesson or not and to manage their noise.

### **3. Learners’ Difficulties in Learning ECS**

#### **3.1 Lack of motivation**

One of the findings of the questionnaire, demonstrates that the majority of the learners (55.55%) are “*not motivated*” to learn ECS. This shows that the learners are not interested in ECS, and this prevents them from improving their English. Only (33.33%) which represents three learners are motivated to learn ECS, thus we conclude that the learners have different stimulants concerning their motivation. Also in classroom observation sessions that we have conducted, we have noticed that a high number of the trainees are not motivated, they do not take the English lectures seriously and even sometimes some learners prefer not to attend them. As one of the learners confirms in the interview when responding to the question are you interested in learning ECS, he has said “*No, I am not, English sessions are so boring and difficult to learn. Furthermore, I do not master GE, so how am I supposed to master ESP!*” Hoa and Mai have claimed “*Often, they may feel that there is little chance they will ever use their language skills outside of the classroom; and thus, language-related courses may be seen as a burden, rather than an opportunity.*” (2016:245). Hence, the three tools that we have used to gather the results confirm that the learners are not stimulated to learn ECS.

### **3.2 Failure in using ESP**

When it comes to the trainees' failure in using ESP, all teachers (100%) in responding to the questionnaire, have stated that they do, even in classroom observation sessions, we have noticed that they are not strong in using the four skills. Going into the details, (33.33%) of teachers have claimed that the failure lies in the speaking skill, others (29.63%) in the listening skill, and (22.22%) in writing skill, whereas (14.82%) of the teachers have declared that the non-fulfilment in ESP lies in the reading skill. The entire number of the interviewees who have answered the question, do you meet difficulties in learning (reading, writing, listening and speaking) have confirmed the difficulty of the cited language skills. One of the interviewees asserts, *“yes, personally, I meet huge obstacles in learning these skills, I find more difficulties in writing, listening and speaking skills and this is because we do not practice during the lessons”*

#### **➤ In reading**

As it can be seen from further analysis of the questionnaire, the question why do students meet obstacles in the four skills, teachers have stated different reasons. In reading skill, the majority of the teachers (80%) think that students have difficulties in reading because of “students' little background knowledge” which is mostly the common reason why learners fail in ESP. In vocational training institutes, trainees do not possess the basic English skills and competences that are sufficient to meet the demands of the learning situation. Moreover, the reading of general texts is not the same as the reading of specialized texts, as Love (1991:19) has asserted *“difficulties that students encounter in reading comprehension are due to their already existing schema for reading which is inappropriate to the comprehension of specialised texts”*.

The rest of the participants (20%) have stated that it is because of “the limitations of textbooks”. It means, textbooks are limited especially when the teacher over-relies only on it and does not consider other aids materials for the classroom. Textbooks are inherently limited in the information they contain, for instance, they do not show learners how to use pronouns or hedges

in their writing, and the reading level of textbooks may be too difficult for the learners to read or to understand their important concepts. As it is noticed in the classroom observation sessions, learners, in some situations, cannot read a sentence correctly without making mistakes of pronunciation; they read English words with French pronunciation and accent, for example, the pronunciation of the word “virus” /vaɪrəs / the learners pronounce it like in French /virus/. In reading comprehension, teachers have to translate texts from English to French so that learners understand the meaning. We have also noticed that the trainees are not really motivated, and do not give a lot of attention to the reading skill.

➤ **In writing**

In the writing skill, (60%) of the respondents which represents 5 teachers have responded that learners fail because of their *little prior writing experiences*. It means, that the knowledge that stems from previous experience in writing does not prepare them for their expectations and demands. As mentioned previously in the Literature Review, Hyland (2013) has asserted that writing represents a challenge to students, especially to those who are writing in a second language and this is not only because different languages have different structures and different ways of ordering ideas, but also because of students’ anterior writing experiences which do not prepare them for the literacy expectations of their needs. When learners have little background knowledge, their writing may be unsatisfactory in multiple ways from poor grammar and syntax to unclear organization.

In classroom observation sessions, we have also noticed learners make mistakes, for example, spelling mistakes (spelling the word “tranise” instead of “trainees” which is a common problem among the learners. Moreover, learners may have learned bad habits before that they need to avoid, for instance, some trainees were taught in high school to avoid the first person in formal writing, and thus they use incorrect grammatical constructions to avoid it, for example “it is prefer” instead of “it is preferable” . Therefore, teachers are in hesitant situations whether to

introduce directly ESP lessons or to begin first with EGP lessons. Likewise, (40%) of the teachers have claimed that trainees meet obstacles in the writing skill because of “technical aspects of grammar”, which is an important component of the writing skill. The trainees in vocational training institutes do not master English grammar, as we have observed in classroom observation sessions; learners make a lot of grammatical mistakes in writing, for instance, when the teacher asks someone to write the answer on the board, they do not know how to spell the words, then it is the teacher who spells the word letter by letter.

➤ **In listening**

As it is stated in the Review of the Literature, Christine. C.M Goh has asserted that learners find that listening is among the difficult skills in their learning faced process not only for the trouble of understanding and interpretation but also for the trouble of performing and acting in the classroom. In fact, the classroom observation sessions have allowed us to be in a position to detect the reality of the situation. Inside the classroom, first, almost all the trainees (90%) complain about their misunderstanding when their teachers speak. For instance, when the teacher asks his/her learners the question “fill in the gap” with the appropriate words in a given activity, the trainees look each other as a sign of misunderstanding. Also, students have a tendency to complain about their misapprehension while reading ECS text. In this case, for example, their instructor is always in obligation to interpret the sentences from English to French or Arabic to clarify the intended meaning “a worm can be designed to do any number of things...”, this means “un ver peut être conçu pour faire un certain nombre de choses”.

The results of the questionnaire have also demonstrated the problem of listening that the trainees meet where almost half of the participants (40%) have justified the students’ failure in listening skill by their experience ( background knowledge) contexts and facts. This means that the trainees are unsuccessful because they have a bad experience with English since their beginning of study. In addition, the fact that English is a foreign language in Algeria; it is seen as

a difficult language to deal with and has allowed the trainees to be not tolerant while learning it. (33.34%) of the respondents have shown their dissatisfaction with English listening through the inability of language (phonology, syntax and vocabulary). It indicates that the deficiency that the learners have in vocabulary, syntax and so on has prevented them from developing their listening skills and making sense of what they hear in their English lessons. However, (26.66%) of the teachers have asserted that learners' listening deficiency is due to the language use (discourse and pragmatics); that is, trainees do not use English as a means of communication to perform their needs and desires in real situations. In the interview, students have maintained that listening is among their English weaknesses, indeed, it prevents them from understanding and developing their oral abilities.

➤ **speaking**

The results of the study reveal that trainees in vocational training institutes are in a great need to improve their oral competences in English. Relying on the questionnaire's findings, more than half of the population (58.33%) have shown their dissatisfaction with their English performance. This is due to the inadequate general language skills. Said differently, the trainees do not really have abilities in English that permit them to interact between them, and the members of the school community. Furthermore, (41.67%) of the respondents have justified their English speaking difficulties as being a foreign language. The reason is that they are not familiar with its use since it is not used outside of school as is the case with French and Arabic. During the classroom observation sessions, the speaking difficulty is clearly identified (95%); that is, trainees are not able to manage their oral instructions and sessions. For instance, in reading sessions, the learners are asked about their reading comprehension, when they respond, they cannot make a complete sentence in English. In this case, they make reference to the process of "code switching" where they introduce the given word of the sentence in English and then shifting to a French word and so on e.g. "try to..emm.. télécharger (download) the system ...".

Besides, the instructors generally have the tendency to introduce a dialogue between A and B that contains ECS new terms, aiming at getting the trainees familiar with the new jargon and try to make them speak correctly through repeating the conversation orally or use the new items in a conversation of their own. However, often, the learners fail in pronouncing the words right and cannot communicate in terms of new dialogs. The third research tool that we have used in this investigation has also asserted the previous results. The interview has shown that speaking is the most difficult skill that the learners present because they have not studied English during all their learning process. Besides, some of the interviewees have expressed their negative attitude and non interest toward this language by stating “...simply I do not like it”. On the whole, it has been revealed that communication and interactive competence are disapproving and dissatisfying in vocational institutes where the focus on communication in the subject matter is a necessity that Harding (2007) has insisted on.

### **3.3 Technical vocabulary as a problem**

As it is shown in the questionnaire, (66.67%) of the teachers have responded that the trainees have issues of vocabulary, especially technical terms of CS. As it is mentioned in the Review of the Literature, this problem is due to the confusion and disorder in learning new meaning. Half (50%) of the population have opted for this answer; however, some others (40%) have asserted that special vocabulary varies and differs according to the context. The rest of the population have agreed that learning many words in the field obstructs the process of learning and creates disabilities. It means that learners cannot remember different definition and meaning of different words without being confused. To discuss these findings, the classroom observation can be suitable tool in order to affirm or to refute these results. In fact, the results of this second data collection tool are not really far from those of the questionnaire; (55%) of the trainees do not have sufficient vocabulary in ECS. In fact, learners in vocational training institutes are sometimes confused to learn meanings of the new items; that is, the intended meaning is not

clear or difficult to maintain in the trainees' mind especially when there is no resemblance between the French and the English word e.g. *"a firewall is a device or a program that stops people from seeing or using information on a computer without permission while it is connected to the internet "* (Cambridge Dictionary,2016). In this case, the learner may remember the word "firewall" without keeping in mind its meaning and significance or may be disorder between other items' meanings. Moreover, the trainees have the tendency to confuse between the different meanings of a word, for instance, the word "cookie" has two different meanings. The first meaning is generally the most known "biscuit, wafer", the second is related to the field of computer science *"a small file that is sent by a website to your computer and that contains information about how you use the site..."* (Cambridge Dictionary, 2016). Therefore, learners should be aware of the variations and differences that occur to the specific vocabulary while changing contexts. In addition, when introducing many ECS words, the trainees take the risk of confusing between their meanings e.g. malware, hacker, software and so on. Even in the interview, the majority of students have expressed their anxiety while introducing new items in classrooms because of the misunderstanding and difficulties to remember them appropriately. Hence, the trainees have not communicated their satisfaction to the process of learning English in their institutions. However, Scrivener (2005) has insisted on the necessity to encourage the learners to remember about the lexical items that they have learnt in their subject matter relying on some procedures such as matching words with pictures or with their definition.

### **3.4Additional learners' difficulties**

In addition to the learners' difficulties mentioned previously, teachers have included other problems that learners encounter during their learning process. (44.45%) which represents the number of four (4) teachers have included "deficiency in using general English" as another obstacle. The teachers have claimed that their learners do not possess general English ability which makes the situation harder either for them or for the learners. These results in waste of

time since instead of introducing the ESP lessons, teachers waste time in making reference to EGP. Besides, (22.22%) of teachers have proclaimed that learning English as a second language is the most common cause of the problem faced by a learner. Another problem is the existence of their first language or mother tongue that they are exposed daily. In addition, trainees in vocational training institutes tend to mix between the grammatical structure of the English language and the grammatical structure of French. For example, word order in French, it is noun + adjectives “programmation informatique” but in English adjective+ noun “Computer programming”. Often trainees use the translation method to understand English; for instance, when the teacher asks the students a question, they think of the answer with their mother language first and then form a reply by means of translation. Therefore, the hardest point for a teacher; in this case, is actually how to create a new structure of the English grammar far from the language structure of their mother tongue that exists in their minds. In addition, (22.22%) of teachers have included in the questionnaires “mixed level of students”, one of them have stated that *“no matter how well students are sorted, there will still be differences in how much students know and how quickly they can learn”*. It means that, setting the pace of the class to keep up with the strongest learners will leave the weaker ones behind; it is easy for them to get frustrated in a class of mixed ability. Stronger students may feel held back, and weaker students may feel pressured. Weaker students should not be forgotten in classroom discussions and activities. Furthermore, (11.11%) of teachers believe that having many students in one class can cause some problems that affect students. According to them, there is no communication in large classes and most of the time the class is out of control. It is impossible for the teacher to concentrate on all trainees. Therefore, there is lack of individual attention and difficult to set effective group activities. In classroom observation, we have noticed that noise level of some learners is also considered to be a problematic issue as it produces disturbance and prevents their classmates from learning. Thus, large class sizes influence learners to display learning

behaviours such as not responding to the teacher's question and waiting to the teacher to provide most answers to questions on worksheets and exercises. Thus, quality learning may not be achievable

#### **4. Suggested solutions**

A very basic question that appears in the teachers' mind; what are the future perspectives of ESP courses? This question can be answered thanks to the results of the questionnaire and interview. As far as the findings of the questionnaire are concerned, (44.44%) of trainers have insisted on the necessity to do systematically needs analysis before to begin ESP courses at any level and at any study program. This suggestion can reveal that the results of needs assessments will particularly shape the system of the course, objectives, content, materials and even the methodology of teaching. Teachers in their responses (33.34%) of them are really aware of the necessity to be trained in ESP. Some of them (22.22%) have also called to an attempt for solving the problem of random and haphazard selection of ESP materials. This process provides authentic materials if needed, the choice of appropriate pattern of scientific texts written in standard, adapting them if necessary. As far as the interview is concerned, the majority of trainees have limited their answers by suggesting teachers' training as the best solution to all the ESP problems. That is, there is no specific institution or university which is formally in charge to form ESP teachers. Ali Tahar Bouchema. B (2000) has insisted on the teachers' training; to train general English teachers to become real teachers of scientific and technical English. Also, as it is noticed in the majority of the institutes where the investigation has taken place, the majority of teachers have facing mainly difficulties in the teaching process. These collected data reveal the actual situation and conditions where teachers and learners work and perform in vocational training institutes of Tizi Ouzou.

## **Conclusion**

It has been shown that learners meet considerable obstacles in learning ECS, the obstacles are related to language skills (reading, writing, listening and speaking) and motivation. These obstacles are, generally, explained by the trainees' bad experience with the English language and even inadequacy in learning the language parts (vocabulary, syntax) and language use. Moreover, it has been revealed that tutors in vocational training institutes have problems with teaching ECS like the activity of selecting and adapting materials, difficulties in ECS content knowledge and the absence of a program. Most of teachers were convinced that lack of experience and training has worsened the situation. This led them to propose some suggestions and recommendations to rise above the teaching and learning disabilities. They have called for ESP training and practice and give the trainees all the necessary opportunities to improve their English .This; indeed, reflects their awareness of the importance of English in the field of computer science.

## **General Conclusion**

The present dissertation has investigated the difficulties of teaching and learning English for computer science in three vocational training institutes (I.N.S.F.P) Imarzouken Med Arezki in Tizi ousou, (I.N.S.F.P) of Draa Ben Kheda and (I.N.S.F.P) Hadni said in Oued Aissi. The study has focused mainly on learners' language problems (reading, writing, listening and speaking) and their motivation, as well as, teachers' difficulties in content knowledge, syllabus design and materials selection. In this respect, some solutions have been proposed as the emphasis on teachers' training and providing the learners with sufficient time.

The study has relied on some aspects contained in Patridge. B and Starfield. S edited book for learners' problems as well as the suggested solutions to overcome these obstacles. Furthermore, the research has opted for some aspects contained in Bobirovna, for teachers' problems. To improve the teaching of ECS, we have relied on Kırkgöz, Y. and Dikilitaş, K edited book. We have hypothesized that learners encounter difficulties in learning ECS, another hypothesis is that teachers face problems in teaching ECS. The third one is to emphasize on teaching and learning ECS only as the suggested solutions. The results obtained confirm some of our hypotheses and refute others. The first and second hypotheses are confirmed.

The research has targeted three main objectives. The first objective is to identify ECS teaching difficulties. That is, to investigate and expose the instructors' problems while teaching ECS. The second objective is to figure out trainees' difficulties in learning ECS. In other words, the aim is to explore and exhibit learners' problems. The third objective is to recommend and advocate some solutions to improve teaching and learning ECS in vocational training institutes.

The present study has adopted a mixed methods approach to answer the research questions and test the advanced hypotheses. It combines both quantitative and qualitative methods in the process of collecting and analyzing data. The data used in the present work have been drawn

from three research sources: nine (09) questionnaires addressed to teachers, nine (09) audio recorded interviews with learners who are selected randomly, and classroom observation conducted in two vocational training institutes (I.N.S.F.P) Imarzouken Med Arezki in Tizi ousou and (I.N.S.F.P) of Draa Ben Kheda.

As far as data analysis is concerned, this dissertation has used the rule of three to analyze the quantitative data obtained from close ended questions of the questionnaire and the classroom observation. Qualitative Content Analysis is the method we have used to interpret the qualitative data of the study obtained from the interview and the open ended questions of the questionnaires.

The results obtained from the teachers' questionnaire reveal that teaching ECS in vocational training institutes is not effective for the reason that teachers have a lot of problems that they have enumerated in the questionnaire. The analysis of both close-ended and open-ended questions has revealed that lack of content knowledge, absence of syllabus design and materials selection are the major problems that prevent teachers from effective teaching. According to teachers' answers, the main reason of these difficulties is the lack of training and practice.

As regards, classroom observation that we have conducted with the learners, we have come to the conclusion that trainees encounter difficulties while learning ECS; consequently, this makes learning not enjoyable. During our observation sessions, we have noticed that trainees in vocational training institutes are not motivated to learn ECS. Besides, learners do not possess basic English skills in reading and writing, listening and speaking, as well as in ECS vocabulary. Furthermore, we have noticed that there are different levels of trainees in one class from low level to intermediate level.

As far as the results of the interview are concerned, it has been revealed that mainly all the participant learners are aware of the importance of the English language in computer science. However, their answers have reflected and revealed their negative attitudes toward this language.

Furthermore, it has been indicated that all the respondents have expressed their dissatisfaction with English courses in vocational training institutes because of the major problems encountered there as language skills, vocabulary and demotivation. Otherwise, the learners believe that teachers' training and preparedness are essential to improve the process of learning English in vocational training institutes.

The present study has some limitations. The sample of this research consists of (56) learners randomly chosen and nine teachers (09). Moreover, we have only dealt with ECS learners of fourth (4<sup>th</sup>) semester; that is, we have not investigated other ECS levels as well as other specialties such as Accounting and International Trade. In order to improve teaching and learning ESP, Further studies can be investigated as learning motivation and strategies of ESP in vocational training institutes.

### **Pedagogical recommendations**

In terms of designing ESP in Algeria, in addition to the suggestions cited in the Review of Literature, other recommendations are to be taken into consideration:

- The research unit should examine the teaching of EST, to train language teachers, and to evaluate the effectiveness of this teaching.
- As cited by the participants, the process of needs analysis should necessarily and seriously be done. As result, it will shape the way to the different course components, starting from the aims, the content of the lesson, materials and the methodology of teaching.
- Students need to master the four skills. Therefore, integrated activities would be the best choice. Many think that teaching ESP classrooms entails teaching vocabulary items. It is true that computer science students need to learn vocabulary content, but composing a correct sentence with appropriate vocabulary use and wrong grammar rules is also a big

problem. That is why the focus should occur on both elements (Djaileb. F, 2012-2013: 2014).

- As regards improving communication in English, we suggest that teachers should choose a topic related to a specific field (computer science) and discuss about it orally, as well as incite them very often to speak up by creating an interactive classroom environment.
- Time allocated to English courses is not enough; therefore, it should be more than two hours a week.
- Teachers should prepare their lessons before the presentation time, they should include appropriate materials (authentic materials if needed) that hold interesting activities in order to motivate and stimulate learners (Benmakhlouf, 2013:71).

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## Questionnaire

Dear teachers,

We are presently conducting a research to try to identify teachers' and learners' difficulties in teaching and learning English for computer science and this questionnaire is a part of our research.

We would be very grateful if you could answer these questions by putting a tick (✓) or a cross (✗) to the appropriate answer (s), or provide a full answer where necessary. Your responses will be used for academic purposes only and will remain confidential.

Thank you in advance for your precious cooperation!

### Section 01: Identification of the respondents

Work experience: ..... Degree: .....

### Section 02: Teachers' Difficulties in Teaching English for Computer Science?

1)- Were you trained in English for Specific Purposes (ESP) ?

Yes ( )no ( )

2)-Is English primordial in learning computer science (CS)?

Yes ( ) No ( )

Why?.....  
.....

3)- Do you teach English for General Purposes(EGP) or English for Computer Science(ECS)?

- EGP ( )

- ECS (- Both ( )



### Section 03: Issues of Learning ECS

11)-Are learners motivated to learn English for Computer Science?

Strongly motivated ( ) strongly demotivated ( )

Motivated ( ) not motivated ( )

12)-Do your learners fail in using English for Specific Purposes?

Yes ( ) No ( )

If yes, the failure lies in:

-Reading skill ( )

-Writing skill ( )

-Listening skill ( )

-Speaking skill ( )

13)-In your opinion, why do trainees meet such obstacles?

In reading - students' little background knowledge ( )

-limitation of text books ( )

In writing - students' prior writing experiences ( )

-technical aspects of grammar ( )

In listening - language (phonology, syntax, and vocabulary) ( )

-language use (discourse and pragmatic) ( )

- context, facts and experiences (background knowledge) ( )

In speaking, - Inadequate general language skills ( )

-English as a foreign language ( )



<b>Items Being Observed</b>	<b>Yes</b>	<b>No</b>
1-Are learners motivated to learn English for computer science (CS) ?		
2-Are learners able to use general English?		
3-Do learners meet difficulties in reading skill?		
4-Do learners meet difficulties in writing skill?		
5-Do learners face difficulties in listening skill?		
6-Do learners meet difficulties in speaking skill?		
7-Do learners have sufficient technical vocabulary of ECS?		
8-Do learners have same level of the English language?		
9-Do teachers have the content knowledge of the field?		
10-Do teachers have appropriate materials to teach ECS?		
11-Do teachers follow any program in teaching ECS?		

### **Classroom observation checklist**

**Adapted from Hutchinson and Waters' Checklist (1987)**

## **Interview with Learners**

This interview is a part of an academic research conducted for the fulfilment of a Master degree. It would be of a great help if you kindly accepted to answer the following questions. We inform you in advance that all information obtained is kept anonymous and confidential. We are so grateful for your contribution and cooperation.

**Q01:** Are you interested in learning English for computer science?

**Q02:** What is your attitude toward your teacher's selecting materials?

**Q03:** Do you find difficulties in learning the four skills (reading and writing, listening and speaking)? Why?

**Q04:** What are your English weaknesses in learning English for computer science?

**Q05:** Do you have problems with ECS vocabulary introduced in English by your teacher?

**Q06:** Do your teachers struggle with ECS content knowledge? What do you think about it?

**Q07:** What do you suggest to overcome these obstacles?

**Thank you!**

## **L'interview adressée aux stagiaires**

Cette interview fait partie d'une recherche universitaire menée pour l'obtention d'un diplôme de master. Ce serait très utile si vous aviez bien voulu répondre aux questions suivantes. Nous vous informons à l'avance que toutes les informations obtenues restent anonymes et confidentielles. Nous sommes si reconnaissantes pour votre contribution et votre coopération.

**Q01 :**Êtes-vous intéressé d'apprendre l'anglais informatique?

**Q02:** Comment trouvez-vous la sélection des matériaux par votre enseignant (e)?

**Q03:** Trouvez-vous des difficultés à apprendre les quatre compétences (lire et écrire, écouter et parler)? Pourquoi?

**Q04:** Quelles sont vos faiblesses en anglais dans l'apprentissage de l'informatique en anglais?

**Q05:** Avez-vous des problèmes avec le vocabulaire informatique introduit en anglais par votre enseignant (e)?

**Q06:** Vos enseignants (es) ont-ils des difficultés avec la connaissance du contenu ECS?  
Qu'est-ce que vous en pensez?

**Q07:** Que proposez-vous pour surmonter ces obstacles?

**Merci**