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Deficiencies That Computer Science Doctorate Students Face in Dissertation Writing:

The Case of Computer Science Doctorate Students - University of Saida

A dissertation submitted in partial fulfillment of the requirements for the degree of *Master* in Didactics.

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Declaration of Originality

I hereby declare that this submission is my work and that, it contains no material previously published or written by another person nor material which has been accepted for the qualification of any other degree or diploma of a university or other institution.

Date: …….

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DEDICATIONS

I dedicate my research work to my parents who have always been my source of inspiration. *Thank you for always believing in me, making me feel special, supporting me and encouraging me. I will always be grateful for your unconditional love*.

I also dedicate my work to my beloved sister Anissa and my dearest brother Sid Ahmed who were always by my side. *Thank you for giving me strength*.

Last but not least, my appreciation goes to my best friends Leila and Fatima who have always been my source of joy and comfort. *Thank you for being you*.

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ABSTRACT

Over the past few years, the English language took a larger scale and became more wide-spread in the Algerian educational system especially in the scientific fields at all levels. Dissertation writing was an impetus for English for introducing specific courses (ESP) at the university level, switched from the French language into English language in various universities. As a result, most of the Doctorate students in the scientific disciplines are required to produce comprehensible, correct and accurate outcomes written in English. This study was an attempt to investigate from an ESP/Needs analysis perspective; the deficiencies and hindrances that computer science Doctorate students at Saida University face when achieving their needs and the techniques that they use to overcome those challenges. The subjects of the study were 25 computer science Doctorate students from Saida University in addition to 5 ESP teachers. The current study collected both qualitative and quantitative data from two questionnaires designed for ESP teachers and computer science students in order to investigate the writing deficiencies as well as the leaning techniques. Furthermore, a semi-structured interview was designed for ESP teachers for the sake of analyzing the teachers' perspectives and viewpoints about the ESP courses and learners' proficiency level in English. The findings of the current study indicated that computer science Doctorate students face some main issues regarding the grammatical features of the English language namely: sentence structure and Semantics. In addition to the terminology and glossary related to their field of study. Finally, the research set forth some pedagogical suggestions which drew attention to the essential features of an ESP course particularly: Needs, wants and lacks as well as the main characteristics that an ESP teacher needs to take into consideration when designing the ESP course.

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List of Abbreviations

AR: Action Research

CS: Computer Science

ECS: English for Computer Science

LSA: Learning Situation Analysis

PSA: Present Situation Analysis

TSA: Target Situation Analysis

List of Acronyms

CBI: Content Based Instruction

CLT: Communicative Language Teaching

EAP: English for Academic Purposes

EFL: English as a Foreign Language

EGP: English for General Purposes

ELT: English Language Teaching

ESL: English as a Second Language

ESP: English for Specific Purposes

LMD: License- Master- Doctorate

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General Introduction

The English language has led to the implementation of language teaching in various scientific fields mainly Biology, Engineering, Economics, and Computer Sciences. The English language is taught at various university levels and it is presented as an ESP course since the basic language of instruction in most of the scientific domains in the Algerian universities is French. A specific course which targets the students' needs and their objectives is required. One of the primary needs of Computer Science students along with various other scientific fields is a high standard of expertise regarding the learning skills in general and the writing skill in particular.

Even though Doctorate students are expected to be good writers, they still face some ambiguities and difficulties when writing their Doctoral dissertation. As a matter of fact, the deficiencies of Doctoral dissertation writing are highly related to the students' awareness of their learning needs, objectives and to the ESP course content. Accordingly, the current study seeks to explore CS Doctorate students' writing difficulties and their learning strategies to overcome the writing challenges as well as ESP teachers' perceptions about their learners needs.

The present work attempts to answer the following research questions:

- What are the challenges and deficiencies that computer sciences doctorate students face in their dissertation writing?
- To which extent can the ESP course help computer science doctorate students find optimum learning techniques regarding their writing difficulties?
- What are the techniques that students opt for in order to overcome the challenges they face when writing?

The above mentioned questions led to put forward the following hypotheses:

- Most students possibly face troubles in understanding the technical words and have a limited knowledge regarding the grammatical features.
- An ESP course targets students' necessities, needs, wants and lacks

- Computer science doctorate students may opt for translation and put effort on improving their proficiency level.

The methodology of the research including the research tools is viewed as a key element since they provide the researcher with accurate and reliable data. However, limitation of this research arises from the fact that there had been a lack of collaboration regarding the teachers' questionnaire. Moreover, due to the pandemic and the nonavailability of the researcher (studying abroad), some issues were faced regarding the willingness and the ability to answer the questionnaire in addition to the limited number of ESP teachers at Saida University. As a result, the author was obliged not to include the teachers' questionnaire within the data analysis section.

In order to attain the aim of the current study in which the doctorate students' writing deficiencies are examined and the learning techniques are investigated, a review of related theories and diverse studies is presented throughout this paper. Three complementary chapters will therefore address the subject of computer science doctorate students' writing challenges.

The first chapter is divided into two main sections. Within the first section, the review of the literature which includes the main definitions related to ESP and the four learning skills. The second section is a description of the specific English courses for computer science in the Algerian universities.

The first part of the second chapter consists of the methodology of the study in which two structured questionnaires and an interview are designed for Computer Science Doctorate students and ESP teachers at Saida University. Concerning the second part, the data gathered from the research instruments is analyzed, discussed and interpreted by the researcher for the sake of drawing a straightforward illustration of the results and findings.

The third chapter comprises the author's recommendations and suggestions regarding the topic. The chapter included various scholars' viewpoints concerning the ESP course content and its characteristics for the purpose of enhancing the teaching/learning process.

Chapter One:

The Role of English Language in Dissertation Writing: A Review to the Literature

1.1 Introduction

This chapter has two major parts. The first part gives a detailed review of the literature relevant to current studies in English for Computer Science. In this respect, it will shed light upon the definitions of various terms related to Doctoral thesis writing and the reasons behind writing hindrances. Besides, this chapter includes the importance of the four skills for computer science students. This chapter will also involve the strategies that help computer science learners reduce the writing deficiencies.

The second part describes the status of the English language besides, the nature of the English courses for computer science doctorate students. The first section provides a general definition of the educational system in Algerian universities; this part also provides a particular description of the status of the English language in the Algerian universities. Characteristics of the ESP course: its content, components and related terms are investigated and presented in the first part in addition to teachers' perspectives about ESP teaching.

1.2 Definitions

English became the most acknowledged language of technology and various scientific domains and with the growth of science and technology learners were able to understand the purpose of learning a language, their needs were specific (Hutchinson & waters, 1987). Moreover, the educational and scientific developments led to the emergence of various branches of study in which the only available material was written in the English language. Determining the linguistic features of a particular area of study helped the learners and workers to determine their needs. Due to those needs and to their different demands, the scale of ESP became wider.

English for Specific Purposes (ESP) is an approach based on the learner's needs. The main focus of ESP is the course content which is needs based (Hutchinson and Waters, 1987). The term (ESP) is regarded as a new trend in ELT. In the early 1970s, the two concepts of ELT and ESP were used interchangeably. Later on, the central reason for the creation of the latter which was to help students be more proficient in their specialism since the main objective of teaching ESP is to reinforce

students' prior knowledge in EGP and to create competent professionals was established in order to differentiate between ELT and ESP.

1.2.1 Characteristics of English for Specific Purposes

The teaching material, target situation analysis, a focus on the learner, and the various ESP approaches are the basic standards of ESP and an ESP course. For instance, Ewer and Hughes-Davies (1971) believed that an ESP course ought to be relevant to what learners need and to the language forms that are included in the different course materials. In the case of computer science students as mentioned by (F. Djaileb, 2015), learners' essential needs are well defined namely: Writing scientific articles in English, attending seminars and conferences, and producing grammatically correct output. That is one of the main reasons why ESP teachers focus on determining learners' needs before designing the ESP course. The main aim of an ESP course is to allow learners to work properly in a target situation, namely the situation in which learners use the language they are learning (Hutchinson & Waters, 1987). The term of target situation analysis was identified by Chambers (1980). The latter follows a specific process in which the syllabus of the ESP course is formed by identifying the target situation and thoroughly analyzing the linguistic features of that situation. Moreover, the center of the course design process is the learner need.

1.2.2 Needs Analysis

In the context of ESP, needs analysis is essential in the determination of language aspects and language use (West, 1994). Moreover, learners are the primary sources of needs analysis (Dudley-Evans and St John, 1998). In the case of computer science PhD students, the three components of needs analysis including: The target Situation Analysis (TSA), The Present Situation Analysis (PSA) and The Learning Situation Analysis (LSA) are crucial in identifying students' needed skills, language requirements, strengths and weaknesses in addition to their wants (Dudley-Evans & St. John, 1998).

According to Bosher and Smalkowski, (2002); Chaudron, Doughty, Long, Rivers and Urano (2005), and as cited in Djaileb's article in 2015, a course design ought to focus on needs analysis in the light of the fact that students' proficiency level differ. Attaining the learners' immediate needs requires a great care through the

implementation of relevant tasks that take into account the four skills and that may help improve learners' knowledge about their lacks and needs.

Needs analyses are of a great importance in ESP. According to the above authors Bosher and Smalkowski, (2002); Chaudron, Doughty, Long, Rivers and Urano (2005), these needs help in planning, implementing extra tasks or activities within a course, and developing the syllabi. The basis of performing needs analysis by educators mainly involves the selection of relevant articles and course materials.

1.2.3 The Status of Computer Science

Since the emergence of science and technology and with its rapid growth, the status of computer sciences became dominant in the educational arena with all the branches that computer science including: Database, software, scientific computing and software engineering. Consequently, the need of English language became more required in this field especially for the Doctorate students, also due to their well determined and specified needs, the English courses moved from EGP into ESP. (M. Rahman, 2012).

Teaching ESP for Computer Science Doctorate students is crucial since it deals with their specific needs. Through the English needs analysis, students' language needs can be identified. Moreover, the course design, development of the syllabus and the choice of the classroom material can be properly selected (Browns, 1995; Dudley-Evans & St John, 1998; Hutchinson & Waters, 1987; Munby, 1978; Robison, 1991; West, 1994). The ESP course played a huge role in the development of the English proficiency for many computer science doctorate students since most of the courses focus on improving and developing students' vocabulary and help them familiarize with the technical words. The essential goals of teaching ESP for doctorate students are to help students to publish scientific articles, to use English when attending seminars and conferences and to write their final dissertation in English. Although in some universities the language of dissertation writing is optional it could be English or French, most of the Algerian universities require the use of the English language.

1.2.4 Doctoral Thesis Writing: The Case of Computer Science

A thesis is a 'formal' document that follows a specific process and respect various 'rules' which regulate the way it is presented. Dissertation writing gives the researcher the qualification and the opportunity to prove that he/she has acquired the expertise and required information to plan and carry out a research project. It is distinguished by its attempt to analyze situations in terms of the clarifications, descriptions, comparisons and drawing generalizations that can be used to expand theory. It also discusses the reasons and motives that led to the production of an output, as well as describing what can be achieved. The most successful doctoral dissertations are narrowly focused and specific.

Doctoral dissertation writing is a challenging process especially for EFL learners, since students' awareness of their subject matter is not always sufficient in order to explain their ideas and thoughts regarding the doctoral dissertation topic. In other words, it is regarded as a demanding activity that is why, according to Murray (2006), teachers' feedback and comments affect students' writing outcomes through improving their ideas, content and language use.

1.2.5 Characteristics of Doctoral Thesis Writing: The Case of Computer Science

A recent study made by Djaileb in 2015 presents the nature of computer science English. The latter depends on Semantics and language structure in view of the fact that computer science students need to understand and produce grammatically correct, meaningful writings. They ought to be familiar with some technical terms in English.

Computer science texts are distinguished by material that includes more nouns than verbs, and compound nouns such as (word processing, index cards, object oriented, bubble memory, etc.) or specific terms such as (batch, algorithm, data, etc.) In addition to the use of discourse markers to explain concepts, illustrate, compare or refute the use of phrases such as (Nonetheless, pronominally, additionally, etc.). Moreover, the texts are characterized by their stylistic range which can be distinguished through the degree of formality, modality, frequency and structure of the vocabulary. For instance, descriptions can usually be detected in different materials such as: Scientific journals, reports, textbooks, etc.

1.2.6 The Four Skills

Many skills are required in order to achieve better and prompt results in the target situation including both the receptive and productive skills. Numerous studies were done to investigate the importance of the four skills for computer science students. In Djaileb's article (2015), the needed skills for computer science students were explicitly presented in the findings which revealed that learners were able to specify their needs and that most learners agreed on the fact that none of the four skills should be taken for granted in the English for computer science (ECS) course design. The following figure designed by Parupalli (2019) shows the language skills:

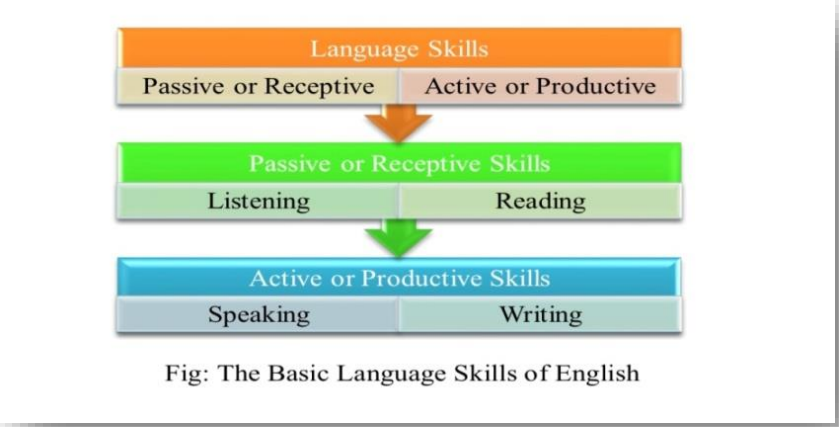


Fig: The Basic Language Skills of English

Figure 1.1: The Basic Language Skills of English (adapted from Parupalli Srinivas Rao, 2019: 07)

1.2.6.1 The Writing Skill

Writing skills are important among the four language skills. Doctorate students must have sufficient knowledge and ideas about all the skills in general and about the writing skills and sub-skills in particular. According to Johns and Swales (2002), Paltridge (1997), and Jenkins, English doctoral dissertation writing is taking a wider scale, nowadays and being aware of the academic writing principles is a must in order to achieve immediate needs. The evolution of the article anthology thesis format allows students to publish their writing while studying. The latter has a positive impact on improving the writing style of Doctorate students. For instance, John and Swales (2002) emphasized on the importance of creating a publication profile to overcome some writing ambiguities.

Even though Doctorate students had a sufficient English training for five years at universities, they tend to find that writing an entire dissertation in English is a challenging process because they have to manage large amounts of texts across a lengthy period of time. Despite the fact that the proficiency level plays a role in the students' production, successful students struggle with writing at an advanced level (Paltridge & Starfield, 2007). Writing a doctoral thesis demands various skills and techniques in addition to the students' level: for that sake it is necessary to take into consideration the principles and the standards of dissertation writing.

ESP teachers tend to focus on the writing skill regarding the fact that Doctorate students are expected to be productive, to write articles and to publish the latter. A study done by S. Nisar in 2016 concerning the English language needs of computer science, depending on the statistical results, the writing skill is a must for computer science students. The following table shows the findings of the study:

Question 11: How frequently you need to WRITE the following during your degree?

Document	Always	Sometimes	Never
Memo	10%	20%	70%
Letter	20%	80%	0%
Agenda	25%	20%	55%
Minutes	0%	20%	80%
Report	20%	0%	80%
Proposal	15%	75%	10%
Manual	10%	50%	40%

Table 1.1: Writing Frequency (adopted from Sana Nisar, 2016: 18)

Based on the above statistics, the writing needs of computer science students are diverse but most of the writing activities are necessary including writing reports, letters, etc. the frequency of each activity depends on learners' immediate needs and lacks.

1.2.6.2 The Speaking Skill

The English language is regarded as the most used language in different scientific fields including: Business, Engineering, Medicine, etc. According to P. Srinivas

(2019) , 85 % of the scientific published articles are written in English. In the case of foreign or second language learners, it is important to focus on the speaking skill in addition to the other skills because it improves learners' performance in real life situations. As Brown and Yuke (1983) mentioned, "Speaking is the skill that the students will be judged upon most in real life situations". Various studies have confirmed that there is a sort of contradiction when it comes to the speaking skill i.e. even though the need of the latter is highlighted and the qualifications/ productivity of employees or learners is highly related to the communication, EFL/ ESL teaching environment tend to neglect the oral skill. The need of the speaking skill differs and as stated by Parupalli Srinivas in his recent article, the role of this skill can be divided into different sections depending on when and for what purpose it is needed:

Fig: The Importance of Speaking Skills

Figure 1.2: The Importance of Speaking Skills (adapted from Parupalli Srinivas Rao, 2019: 09)

When referring to the field of computer science, the need of obtaining a certain competency concerning the communicative skills in order to achieve different ambitions, wants and goals is crucial. Implementing the speaking skill in ECS courses is required mainly in view of the fact that they are required to attend numerous conferences and make presentations about the articles they are publishing without disregarding the significance of their performance in group discussions, presentation

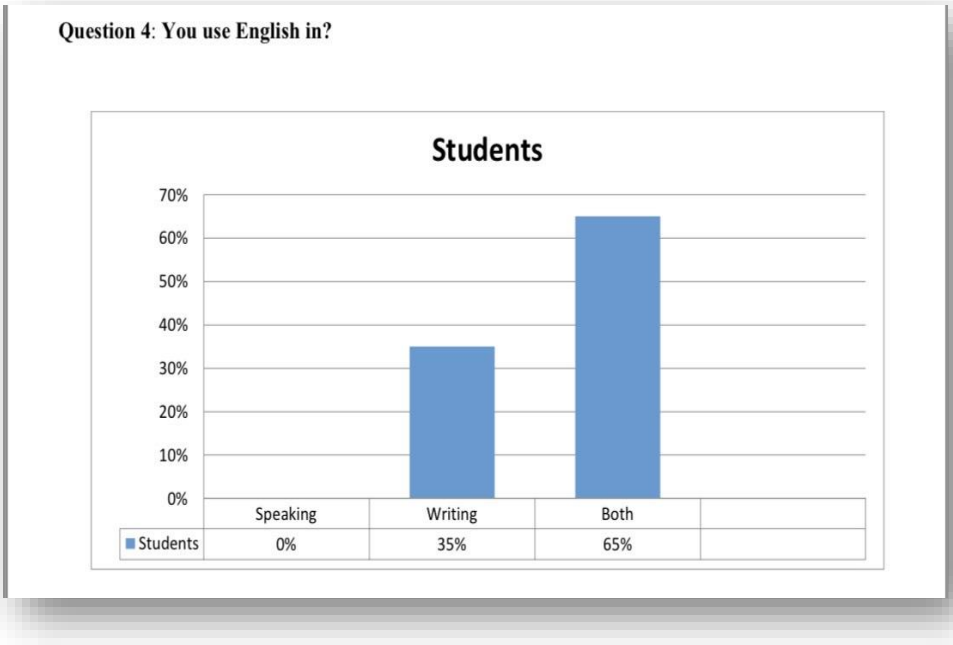
skills and debates. In S. Nisar's article (2016), the need of the speaking skill for computer science students was analyzed through the following question:

Question 12: How frequently you SPEAK in English at the following occasions during your degree?

Occasion	Always	Sometimes	Never
Presentation	80%	20%	0%
Meeting	10%	55%	35%
Technical interview with client	15%	45%	40%
Lecture	35%	65%	0%
Video conference	15%	20%	65%
Conference call	10%	15%	75%
Social conversation	60%	20%	20%

Table 1.2: Speaking Frequency (adopted from Sana Nisar, 2016: 19)

Based on the findings, spoken English is highly used in ECS classrooms. Most students use spoken English when making presentations or in social conversations. Furthermore, 35% students use English during the lecture and only 10 to 15% of them use English in technical interviews, video conferences or meetings. In addition to the use of the speaking skill, the researcher highlighted the pivotal need of both skills i.e. writing and speaking in computer sciences classrooms. Relying on the statistical results, most students agreed on the fact that the English language is used in both writing and speaking and learners' needs and wants are clearly shown through the below statistics:



Bar-chart 1.1: English Use (adapted from Sana Nisar, 2016: 12)

1.2.6.3 The Reading Skill

According to (Gernsbacher, Varner, & Faust, 1990; Hannon &Daneman, 2001; Walker, 1987) the reading abilities are greatly related to the cognitive skills of the learners, these abilities can be presented in various ways such as: word decoding, connecting ideas and concepts in a comprehensible and cohesive way. In reference to computer science, reading skill is viewed as a basic learning skill as learners are expected to be able to retain a high degree of coherence through incorporating textual knowledge, to suppress needless information and to possess certain reading strategies (Hacker, 1998; McNamara, 2007).

Voss and Silfies (1996) confirmed that most students are able to comprehend complex scientific texts based on their reading skills which may include: Retention difficulties and decoding difficulties. However, less complex texts may be based upon the reader's prior knowledge.

The essential skills in reading are basically known as decoding in addition to comprehension. For this reason, most learners have decoding or comprehensions problems such as: Confusion between letters and the sounds they represent, ignoring punctuation and lack of concentration while reading. The importance of putting the reading skill into practice in an ECS setting is highlighted in the following statistics:

Question 10: How frequently you need to READ the following during your degree?

Document	Always	Sometimes	Never
Memo	10%	15%	75%
Letter	50%	45%	5%
Agenda	20%	30%	50%
Minutes	0%	30%	70%
Report	0%	55%	45%
Proposal	25%	55%	20%
Manual	20%	45%	35%

Table 1.3: Reading Frequency (adopted from Sana Nisar, 2016: 17)

According to Sana Nisar (2016) the results of the above table revealed that computer science students ought to take the reading skill into account, regarding the frequency of the various documents that need to be read and understood such as: Letters and proposals. However, the percentage of some documents as: Memos, minutes and agendas indicate that the reading skill is not strongly required owing to the fact that CS students especially doctorate students tend to be productive (i.e. a great focus is on the productive skills rather than the receptive skills). Yet, the reading skill cannot be neglected because it helps the students to enrich their vocabulary and learn more technical words in view of their urge to acquire a considerable amount of technical vocabulary in a short period of time.

1.2.6.4 The Listening Skill

The ability to use the listening skill as a learning instrument is what makes difference between a productive learner and an unproductive learner (Rost, 2001 and Kurita, 2012). Foreign language students in scientific fields are required to possess good listening skills. According to Krashen, Terrell, Ehrman, and Herzog (1984) and Hamouda (2013) receiving a sufficient language input leads the way to a prompt and an undemanding acquisition. There is no doubt that learning cannot occur unless there is a comprehensible input. Rost (2002) asserts that the proficiency level of speaking is

greatly related to the listening skill taking into consideration that the speaking skill can be developed provided that the listening skill has been developed (Doff, 1995 and Ziane, 2011). As stated by Nunan (2001) the listening process covers six stages: Hearing, attending understanding, recalling, assessing and responding. Computer sciences students are required to develop their listening skill taking into account that listening skill help students to increase their speaking abilities that is why they ought to be given more opportunities to use this skill in real life situations through various techniques and strategies.

Many scholars such as: Henner Stanchina (1987), Murphy (1985), O'Malley and Chamot (1990) have shed light on the different strategies that can help students to enhance their listening skill involving the linguistic strategies which play a role in understanding meaning through grammatical features. S. Nisar (2016) pointed out the role of the listening skill in an ECS context:

Question 13: How frequently you LISTEN in English at the following occasions during your degree?

Occasion	Always	Sometimes	Never
Presentation	95%	5%	0%
Meeting	35%	30%	35%
Lecture	70%	30%	0%
Video conference	25%	10%	65%
Conference call	20%	25%	55%
Social conversation	35%	45%	20%

Table 1.4: Listening Frequency (adopted from Sana Nisar, 2016: 20)

The above statistics show that the listening skill is highly needed when attending lectures and presentations because learners are expected to understand, participate and share their viewpoints about a given topic, exchange their prior

knowledge, to reinforce the latter and cooperate with the teacher. Furthermore, the listening skill plays a huge role in enriching the vocabulary of CS learners especially because they have to deal with new technical words almost in every session. Computer scientists need to be good listeners, due to the need for proper communication skills. Professionals need to be able to create necessary contexts from previous conversation and try to solve them.

1.3Challenges and Difficulties

Common to the above studies, English Doctoral dissertation reflects students' degree of intellectual competence and the capacity to exploit and create new ideas, and to write academically and correctly (Anderson & MacLaughlin, 2006). Considering that English for computer science (ECS) courses cover all the four skills in general and the writing skill in particular, CS students are expected to be good writers given the fact that they have to write and publish scientific papers written in English regularly while studying in addition to their final dissertation. The question that arises in this case is what makes the writing skill a challenging activity for CS PhD students? Many researchers included in their researches the challenges, common errors and hindrances that most students face.

Nunan (1999) claims that EFL and ESL learners face some challenges when producing a coherent, fluent, extended piece of writing and according to (Bitchener & Basturkmen, 2006) writing a dissertation is not easy task because it comprises the choice of words, the structure and order of phrases. Having a certain proficiency level in grammar, vocabulary, punctuation and spelling is not sufficient if the leaner does not have enough knowledge about the format, content and the structure of his/her output. A recent study done by Hoda Divsar in 2018 investigated the challenges faced by Iranian students in their doctoral dissertation writing, the results of the study revealed that a large amount of learners are still facing various writing hindrances involving many factors including: linguistic challenges, lack of expertise and bad timescales, etc. these factors involve some writing obstacles namely:

- Difficulty in finding a novel and creative subject for study.
- Difficulty in finding coordinating institutes.
- Difficulty in collecting and processing data.
- Lack of sufficient vocabulary.

- Punctuation and spelling mistakes.
- Lack of theoretical knowledge.
- Loss of interest and motivation.

The following statistics confirm that most CS students face some difficulties in grammar, vocabulary and pronunciation:

PROFICIENCY LEVEL	Weak	Acceptable	Good	V. Good
Speaking	10%	20%	55%	15%
Listening	0%	15%	40%	55%
Reading	0 %	10%	45%	40%
Writing	0%	15%	45%	40%
Grammar	20%	40%	35%	5%
Vocabulary	5%	35%	50%	10%
Pronunciation	0%	45%	35%	20%

Table 1.5: Proficiency Level (adopted from Sana Nisar, 2016:15)

1.4Strategies to Overcome the Writing Barriers

Writing scientific text in Computer Science has always been a challenge for the learners. Wilhelmiina Hamalainen suggested a strategy which focuses on grammar and vocabulary taking into account the techniques that most CS students opt for. When writing the final dissertation learners need to bear in mind that first step towards successful and effective writing is planning. The importance of the four skills is highly reflected in the research process and the writing process. For instance, reading a lot of material is regarded as the initial step because learners can set a plan and select the needed data through making extensive readings. In Algerian universities, computer science students face troubles when it comes to the required

articles for the reason that a large number of these articles are published in French owing to the fact that 85% of Algerian universities impose on CS PhD students in addition to other scientific branches such as: science and technology, electronic engineering, etc to write their doctoral dissertation in English. That is why; most learners give a great emphasis on translation. Translation is viewed as an essential feature for Algerian EFL learners in general and for ESP students in particular when producing an academic research. As reported by Wilhelmiina Hamalainen (2006), scientific writing style relies on three basic characteristics: exactness, clarity and compactedness. These characteristics include many components as:

- Provide training to develop writing skills.
- Word choice.
- Avoiding ambiguous words.
- Using descriptive and illustrative headlines.
- Avoid using technical jargon constantly when it is not necessary.
- Using punctuation to add meaning.
- Using short words and short sentences.
- Avoiding long sentences and paragraphs.
- Writing descriptions based on figures.
- Giving importance to feedback in order to develop the quality of academic writing.

1.5An Overview of Specific English Courses for Computer Science

This section describes the educational system in Algerian universities in addition to the various terms which are related to ESP.

1.5.1 Algerian Educational System

Due to an immense growth that the Algerian educational system has witnessed in the recent decades, a series of problems and issues emerged. The latter led to a progressive degradation in the quality of education at university level (i.e. teaching/ learning value). The challenges that occurred were not fully regulated by the old classical system; consequently the government integrated a new system in the Algerian universities introduced as the LMD system which stands for: License- Master- doctorate (Sarnou Hanane; Koç Sabri; Houcine Samira; Bouhadiba Farouk, *Arab World English Journal*, 2012).

The key components of the LMD system are: the achievement of well defined goals, enhancement of the teaching/learning prospective besides this new system is based on the communicative approach which mainly focuses on raising learner's autonomy and self-reliance. The LMD regulations brought several changes and novelties in relation to assessment and teachers' role in the teaching process. Most importantly, the students' role has changed from being passive learners into principle active learners.

1.5.2The Status of the English Language in Algerian Universities

In Algerian universities, students have to pass through the three degrees of the LMD system in order to obtain the doctorate degree which enables the learners to teach their chosen subject at university level. Throughout the License and Master studies which take five years, English is included within the teaching/learning program in all the scientific departments including: Science and technology, Economics, Computer Sciences. The English language is introduced as an ESP course in all the scientific domains. Considering the fact that ESP courses do not have a broad focus, language features such as: Grammar, vocabulary, linguistics, etc are not precisely taught owing to the nature of the specialism. (N. Mebitil, 2013).

The proficiency level of the learners is highly affected by the course content, most of the time their needs are not attained that is why the majority of learners do not depend a hundred percent on the ESP course but they rely on their prior knowledge and by reinforcing the latter, they develop a better understanding about their needs and lacks.

1.5.3 Core Concept Definitions

In this chapter, important key concepts are defined for the present study. At the beginning, the key concept of ESP and related terms are introduced such as: ESP characteristics, learners' needs, wants and lacks, communicative language teaching in relation to ESP, content based instruction, common core, criterion-referenced assessment, intertextuality, and genre. Furthermore, the present section highlights teachers' perspectives about their readiness to teach ESP. for that sake, related terms such as: Action research and reflective teaching are introduced so as to explore some teaching strategies to improve the teaching/learning quality.

1.5.3.1 ESP Course

ESP was simply defined as teaching English for whatever reason that could be specified; other scholars have defined it differently as an academic teaching of English for professional or occupational purposes. (Anthony, 1997). In other words, ESP focuses on learners' basic needs taking into consideration the various contexts in which a language may occur.

In order to differentiate between the concept of ESP from EGP, Hutchinson and waters claim that learners' awareness of their needs is the main factor that distinguishes ESP from EGP (Hutchinson and waters, 1987) Moreover, Hutchinson and Waters (1987:65) have defined a course as "An integrated series of teaching-learning experiences, whose ultimate aim is to lead the learners to a particular state of knowledge."Therefore, an ESP course must adopt and involve some characteristics. Hutchinson and waters in 1987 mentioned three major types of ESP namely:

- English for Science and Technology.
- English for Business and Economics.
- English for Social studies.

1.5.3.2 Characteristics of Computer Science ESP Courses

According to Chams Eddine Lamri (2016), the primary characteristics of any ESP course are referred to as:

1. An ESP course is established to meet learners' specific needs.
2. ESP emphasizes on the language (grammar, lexis) and learners' skills.
3. Language methodology which is used in an ESP course differs from EGP in some situations.
4. Learners' background knowledge is an essential feature in teaching ESP.

It is knowledgeable that the basic focus of computer science English is on semantics but that does not mean that language structure and form are taken for granted because a great number of computer science students are familiar with the technical terms but still have troubles when it comes to grammatical structure. For this purpose, ESP teachers prefer to test students' knowledge for the purpose of evaluating the challenges and designing suitable courses. Computer science texts are characterized by scientific vocabulary, degree of formality, and detailed rules. ESP

course materials comprise textbooks, technical reports and scientific articles/journals. The main issue when designing an ESP course is to set goals that need to be achieved rapidly because of this, instructors give a great importance to needs analysis and to learners' current level (Anastasiia Belyaeva, 2015).

1.5.3.3 Needs, Lacks and Wants

Needs are usually defined as demands and requirements that students have so that they can interact effectively in the target situation. Furthermore, language acquisition is highly related to learners' needs. Target needs and learning needs are the basic types of the ESP needs. For instance, target needs are related to the target situation, learners' requirements and aims. Within the objectives, three major terms were introduced including necessities, lacks and wants.

1) Necessities demonstrate learners' acquired knowledge at the end of an ESP (final goals).
2) Lacks represent learners' level of proficiency, background knowledge, and shortage; identifying learners' lacks play a significant role in achieving the required level of competency.
3) Wants refer to personal objectives that learners want to gain from the ESP course.

Additionally, learning needs are indispensable when it comes to designing a course because a course design that focuses simply on the learning objectives is half done (Hutchinson and waters, 1987). Besides, target situation is not sufficient unless the essential learning conditions such as: Learners' motivation, skills, knowledge, and the classroom setting are involved. To reach the learning objectives, the course designer must take into account some parameters like determining the needs, designing appropriate syllabus, choosing suitable learning materials and giving importance to evaluation and assessment.

1.5.3.4 Content Based Instruction

Content based instruction is referred to as "the concurrent teaching of academic subject matter" (Brinton, Snow, &Wesche, 2003, p. 2) by giving the learners real, substantive academic contexts which aims at improving both the vocabulary of the students and their awareness of the material besides improving

academic learning skills is considered as one of CBI' goals (Chamot& O'Malley, 1994). CBI is implemented in the foreign language programs since it focuses not only on the content but also on the development of students' language and skills. In addition, CBI course content reflects the educational and the social context in relation to the first language and the target language and takes into consideration both language and content.

Brinton, Snow, &Wesche (1989) elucidated three fundamental courses involving the theme-based, sheltered, and adjunct courses. These courses can also be implicated in an ESP class since their primary objective is to attain L2 or FL competence in a specific subject area.

1.5.3.5 Communicative Language Teaching

CLT is essential in ESP; it usually focuses on the element of syllabus design and ensures that the language and skills taught are genuine and relevant for the students. It depends on the analysis, skills and specific target language needs. CLT allows ESP teachers to comprehend that learners are different individuals with different learning preferences. The term of communicative language teaching implies that students need to be interested in the communicative use of language in order to better understand what they are learning.

Communicative language teaching has brought the most important change in the field of English teaching (Nunan, 1999).

English language teaching has experienced a rapid shift in its methodology in the last fifty years, from grammar translation to direct method, to audioligualism and other variations (Leung, 2005).

Most importantly, Communicative Language Teaching (CLT) has been recognized as a successful method by many language educators due to a significant emphasis on improving learner's ability to use the language in context appropriately.

1.5.3.6 Common Core

Common core is part of ESP; it is mainly about all the common language elements such as: Grammar, vocabulary, etc. It is also a collection of academic standards which are implemented at most universities, detailing the learning

objectives for students in English. ESP instructors usually teach common core in parallel with the ESP course since it covers all language varieties (www.uefap.net).

1.5.3.7 Criterion-Referenced Assessment

Tests and evaluations are structured to assess student success against a collection of defined parameters or standards of learning i.e. written explanations of what the students are supposed to know and be able to do at a particular educational level (www.uefap.net).

1.5.3.8 Intertextuality

The concept of Intertextuality was first introduced by Julia Kristiva; it is an essential term in ESP because it involves the relationship between various scientific texts. According to Julia Kristiva it is beneficial for ESP and EAP learners to be aware that no text is completely original, all texts are a dynamic combination of references and quotes. This may help students to be more creative and competent.

1.5.3.9 Genre

Genres in ESP refer to groups of whole texts that have a common meaning and audience. They are culturally developed ways of attaining linguistic goals. Genre has a distinctive graphical structure, in which the genre feature is realized, it usually includes essays, papers, theses, oral presentations, PhD dissertations, etc (www.uefap.net).

1.5.4 Teachers' Perspectives about Their Own Preparation:

The implementation of the LMD system which follows a specific concept that is based upon defining teaching objectives, therefore, the demand to introduce ESP in different faculties was necessary. In this respect, most of the teachers try to cope with teaching ESP since most of them were qualified to teach other modules such as: linguistics, literature, didactics, etc. A study done by Nawal Mebitil in 2013 revealed that most teachers have not received any kind of training or an early preparation, a great number of teachers believed that they were not ready to teach ESP due to a lack of sufficient written material for example: articles, journals, etc. additionally, most teachers plan their own syllabus and design their own course depending on the final

objectives; ESP teachers, learners and subject teachers do not work in collaboration; lack of previous instruction concerning the ESP teaching techniques.

ESP teachers need to undertake a general training which allows them to develop the optimum teaching strategies in different domains having regard to language components like phonetics, grammar, semantics, etc. On the other hand, a specialized training is also crucial because it covers all the characteristics of a successful ESP course since it deals with syllabus design, teaching materials, specific terminology and needs analysis. Therefore, most ESP teachers depend on their own teaching abilities and select some effective techniques namely: Reflective teaching and action research.

1.5.4.1 Reflection in ESP Teaching

Reflection is an important concept in teaching because it helps teachers to recapture, think about, quantify and analyze their experiences (Boud et al, 1985). According to Boud et al (1985) reflection is a generic term for those analytical and constructive practices in which instructors participate in analyzing their own experiences in a classroom setting so as to better understand their role and most importantly, to help learners' develop their learning skills.

In ESP, reflection is crucial given the fact that ESP teachers design their own courses relying on the different characteristics of an ESP course as mentioned in the previous headings. Specific English courses ought to focus mainly on learners' needs and lacks as a result the basic feature in designing the syllabus is flexibility.

1.5.4.2 Action Research

Action research allows ESP teachers to reflect on their own teaching. The term "action research" refers to the collection of research approaches which simultaneously investigate a given social situation and bring a change in different areas. Many approaches are included in action reach such as: Participatory action research, critical action research, action learning, etc.

Action research designs are structured procedures performed by teachers to collect information and ultimately develop the ways in which their specific educational setting works (Mills, 2011).

"Action research involves a self-reflective, systematic and critical approach to enquiry by participants who are at the same time members of the research community. The aim is to identify problematic situations or issues considered by the participants to be worthy of investigation in order to bring about critically informed changes in practice" (Burns, cited in Cornwell 1999, p. 5)

Novice action researchers ought to discern how AR varies from ordinary experience in education. In AR daily study processes are combined; the researcher must prepare and observe *'More carefully, more systematically and more rigorously than one usually does in everyday life; and [to] use the relationships between these moments in the process as a source of both improvement and knowledge'* (Kemmis & McTaggart 1988, p. 10).

Many ESP teachers are engaged in action research because of the nature and content of the courses; they want to improve their teaching proficiencies and promptly attain the final objectives.

1.6 Conclusion

To sum up, computer sciences and other scientific branches require a good proficiency level in English for that purpose ESP courses are included in the educational program so as to improve CS students' proficiency level by focusing on the receptive and productive skills and by addressing the writing weaknesses and deficiencies. Relying on the previous studies and the different viewpoints of various scholars, the crucial role of ESP courses for computer science classes is identified in addition to the main purpose of an ESP course which is mostly about reinforcing students' background knowledge in English and creating skilled and qualified professionals.

The following chapter endeavors to explore the research methodology in addition to data analysis and results interpretation.

Chapter Two:

Research Methodology, Data Analysis and Interpretation

2.1 Introduction

The present chapter is divided into two sections. The first section describes the methodology of the current work along with the aim of the study, population/ participants and the research tools including: A questionnaire and an interview. The second section involves the research tools designs, data analysis and interpretation with regard to the proficiency level of CS doctorate students, their attitude towards the English language. Moreover, it aims to investigate the deficiencies that students face in their dissertation writing.

2.2Research Methodology

2.2.1 Introduction

This section gives a detailed description of the research methods that have been used. The current study includes the research design that the researcher has chosen as well as the reasons for this choice. The aim of the study is also outlined in addition to the sample population, the research design, and the two research tools that were used to collect the data.

2.2.2 The Aim of the Study

This research attempts to explore the status of the English language, the doctorate computer science students' proficiency level, and the challenges that students face when writing their doctoral thesis. It also attempts to analyze the perceptions of Saida ESP teachers towards students' proficiency level. Teachers' viewpoints concerning the ESP course was taken into account since the latter plays an important role on learners' input and output.

The present study also aims to promote students' understanding about their needs, their expertise in addition to their attitude towards the ESP course.

2.2.3 Population of the Study

The population of the study consists of 25 computer science doctorate students from Dr. Moulay Tahar University, Saida. 3 ESP teachers from the Department of Science and Technology at Saida University were among the participants and 2 ESP teachers were from the University of Algiers. The population was chosen based on the

fact that doctorate students are more likely to identify their needs, wants and to determine the challenges they face when writing their dissertation. Therefore, the study was based upon purposive sampling. The study has potential limitations. Concerning the sample size, it was more practical to have a larger number of participants but since the number of doctorate students and ESP teachers is very limited, the researcher had to build the study upon a restricted number of participants.

2.2.4 Research Instruments

The current study is based on a mixed method. The combination of qualitative and quantitative methods has been defined by many scholars as the mixed-methods. Recently, many researchers opt for the mixed-methods for the sake of enriching and fostering the development of theory. According to Creswell & P. Clark (2011), mixed methods research is a procedure for collecting, analyzing and "mixing" both quantitative and qualitative methods in a single study or a series of studies to understand a research problem. The aim of this research method is to combine both qualitative and quantitative research to provide a better understanding of the research problem and to help the readers to determine the research's reliability and validity. This study contains two structured questionnaires addressed to students and teachers in addition to a structured interview. The researcher may rely on teachers' and students' point of views vis-à-vis the nature of English courses for computer sciences.

In terms of the questionnaire, it is defined as a written instrument eliciting the experiences. It is most frequently a concise set of questions designed to yield information about a pertinent topic (James, 1997). Moreover, a questionnaire requires anonymity and it ought to be suitable for geographically scattered population. There are two main types of a questionnaire known as the open ended and close ended. Within the closed ended questionnaire there are: Simple dichotomy and multiple choices. The latter includes the determinant choice and the check-list.

An interview has been defined differently by various scholars. For instance, Scott gave a brief description of an interview as "A purposeful exchange of ideas, answering questions and communication among two or more individuals". It simply refers to a conversation between the researcher/ interviewer and the respondent. The main types of an interview are known as: structured, semi-structured, and unstructured (James, 1997). This present work employed a semi-structured interview in which the respondents are expected to reply to the same questions.

2.2.5 The Procedure

It was practical for some participants to answer the questionnaire via email but due to the limited number of doctorate students in the University of Saida, it was preferable to design an online questionnaire. Moreover, computer science doctorate students are not always present because they attend ESP courses during the first 3 years of their doctoral studies. The teachers' questionnaire was sent to ESP teachers via email. The questionnaire was flexible and it included simple and straightforward questions in order to make sure that students understand the questions correctly and properly.

2.2.6 Questionnaires

For the sake of knowing the status of the English language and the challenges that students face in their Doctoral thesis writing, a questionnaire was designed. On one hand, the students' questionnaire includes three sections. The first section involves the personal information of the participants and their current level. The second section covers the students' attitude towards English; four questions were included in this section to figure out students' attitude towards the learning skills. The third section deals with the difficulties that students face when writing their dissertation. Four questions are designed to examine the reasons behind the writing hindrances. (See appendix A).

The teachers' questionnaire on the other hand, is divided into two sections. The first section comprises the ESP teachers' personal information and the second section is mainly about the course design. The questions are planned in order to analyze teachers' expectations from the ESP course design. (See appendix B).

2.2.7 Interview

The interview aims at knowing teachers' perception of their students' proficiency level and the effectiveness of the ESP courses. Six questions are administered to five teachers at computer science department. The main objective of the questions is to examine teachers' perspectives towards teaching ESP for computer science students. (See appendix C).

Factors such as the research objectives, research questions and study population dictated the choice of each research method.

2.3 Data Analysis and Interpretation

The present section attempts to analyze the data which was gathered from the two research instruments that the author has chosen to offer a better understanding of the research topic, clarify the results and produce evidence for the validity of research outcomes. An online questionnaire and a semi-structured interview were administered to computer science doctorate students and ESP teachers at Saida University.

2.3.1 Questionnaire Design

In order to obtain reliable and valid data, 25 computer science doctorate students from the University of Saida were asked to respond to a structured questionnaire which was divided into three sections (see appendix1).Each section incorporated four questions, most of the questions were closed-ended since the respondents were doctorate students, they are aware of their needs, lacks and objectives. However, open-ended questions were also used to collect more detailed answers.

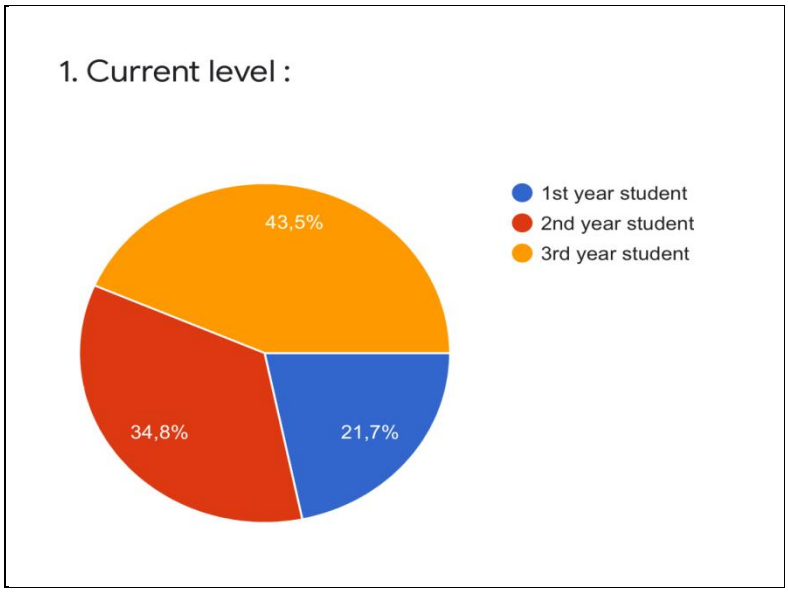
The first section asked questions about CS doctorate students' personal information including their proficiency level in addition to the status of English in the computer sciences domain. In the second section, students' attitude towards English is examined through four questions, in which students are asked about the language they choose in their dissertation writing, the learning skills and the need of a specific English course. Finally, the third section includes four questions as well and it seeks to provide the difficulties that students face when writing their dissertation and the most used techniques to overcome those difficulties.

2.3.2 Questionnaire Analysis

This part of the present chapter gives a detailed description of the questionnaire content. Starting with the first section which asked four questions about the students' personal information:

2.3.2.1*Personal Information*

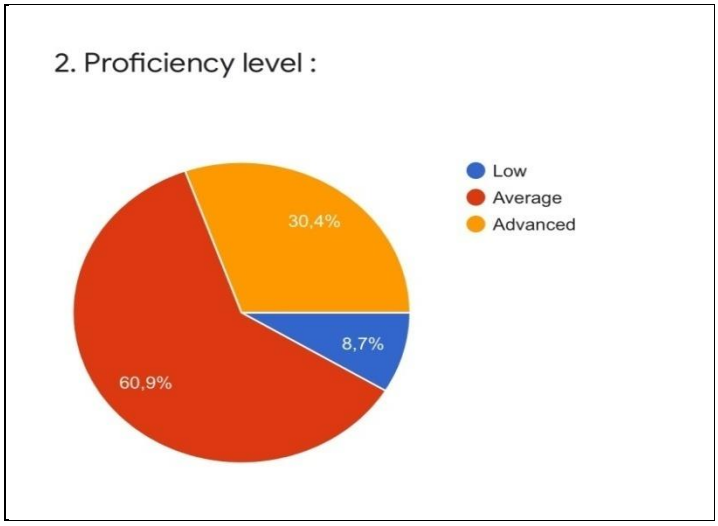
What is your current level?



Pie-chart 2.1: Current Level

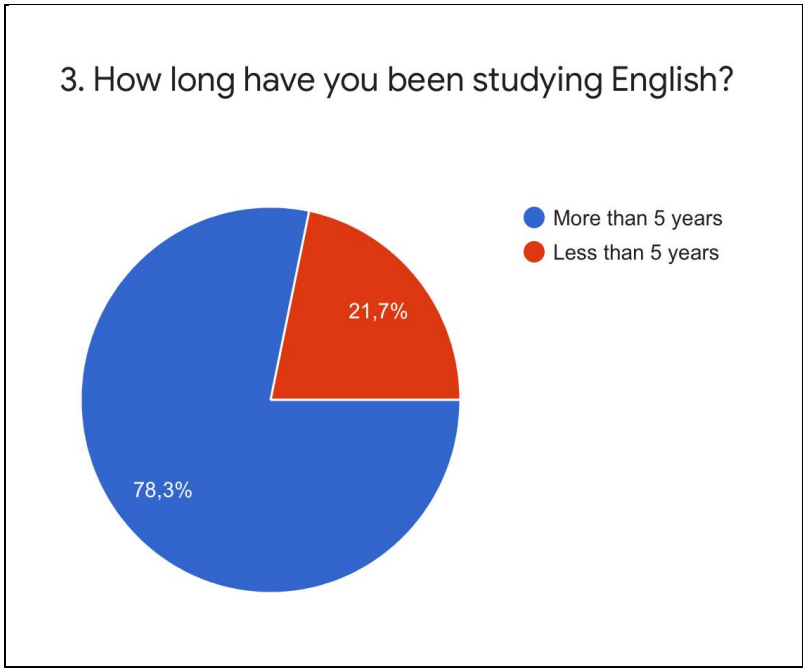
The above statistics obtained from the first question indicate that 43.5% of the participants are 3rd year Doctorate students.

The second question is concerned with the proficiency level of the respondents



Pie-chart 2.2: Proficiency level

The results about students' self-assessment reveal that a small number of students have a low proficiency level in English (8.7%). However, 60.9% of CS doctorate students consider that they are proficient when it comes to the English language.

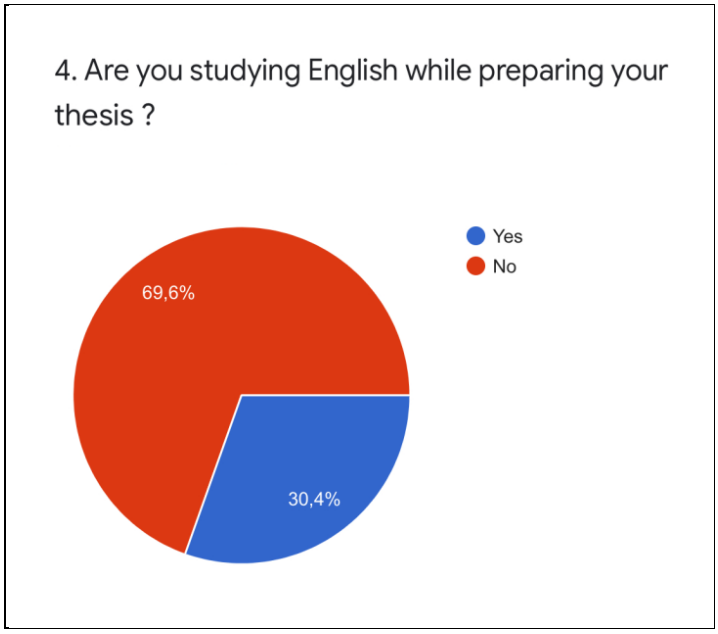


Pie-chart 2.3: Duration of English Learning at University

The answers to the previous question "*How long have you been studying English?*" show that the majority of the students (78.3%) have been learning English for more than 5 years at the level of Saida's university.

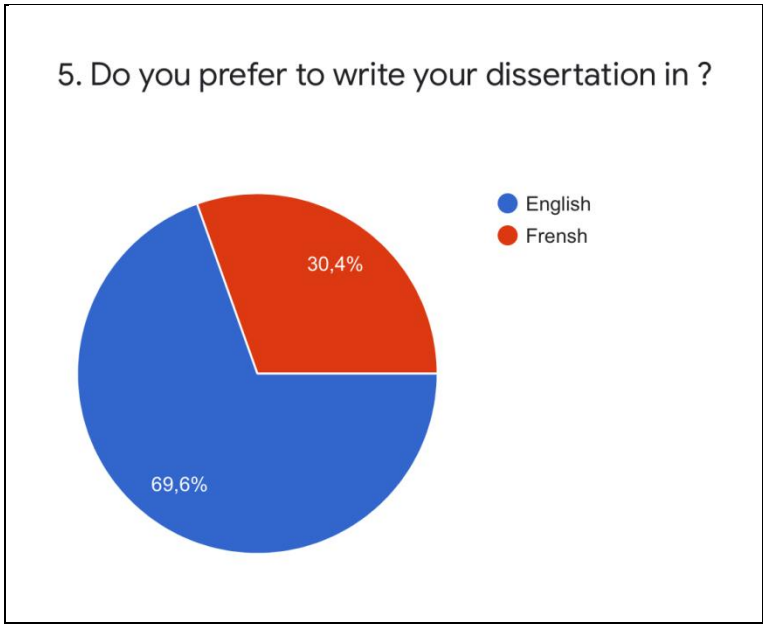
2.3.2.2*Students' Attitude towards English*

The first question in this section seeks to investigate whether CS doctorate students are still studying English while preparing their doctoral dissertation, attending extra courses outside the university or simply relying on the background knowledge obtained from previous English courses at the Saida University. The results are shown as follows:



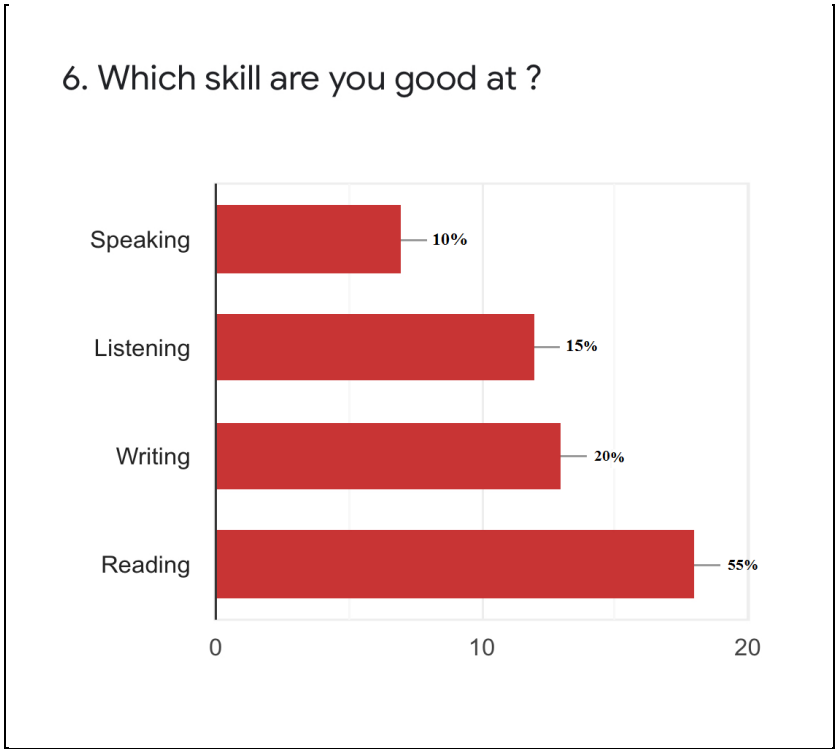
Pie-chart 2.4: The position of English Courses for Doctorate Students

The results of the 4th question "*Are you studying English while preparing your thesis?"*demonstrate that lot of students (69.6%) do not study English while writing their doctoral thesis and mainly rely on their own capacities. On the other hand, 30% of decorate students attend extra English courses out of the institution in parallel with their dissertation writing activity.



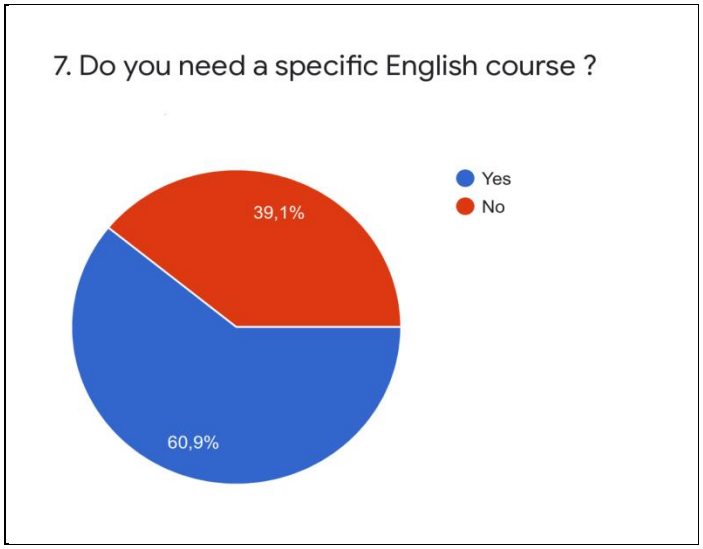
Pie-chart 2.5: The Language of Dissertation Writing

The answers of the 5th question "*Do you prefer to write your dissertation in French or in English?"* show that 69.6% of CS students prefer to write their final dissertation in English despite the fact that a small number of CS learners (30.4%) still believe that writing their final thesis in French is better since they can chose the language depending on their own preferences and competences.



Bar-chart 2.1: Learning Skills

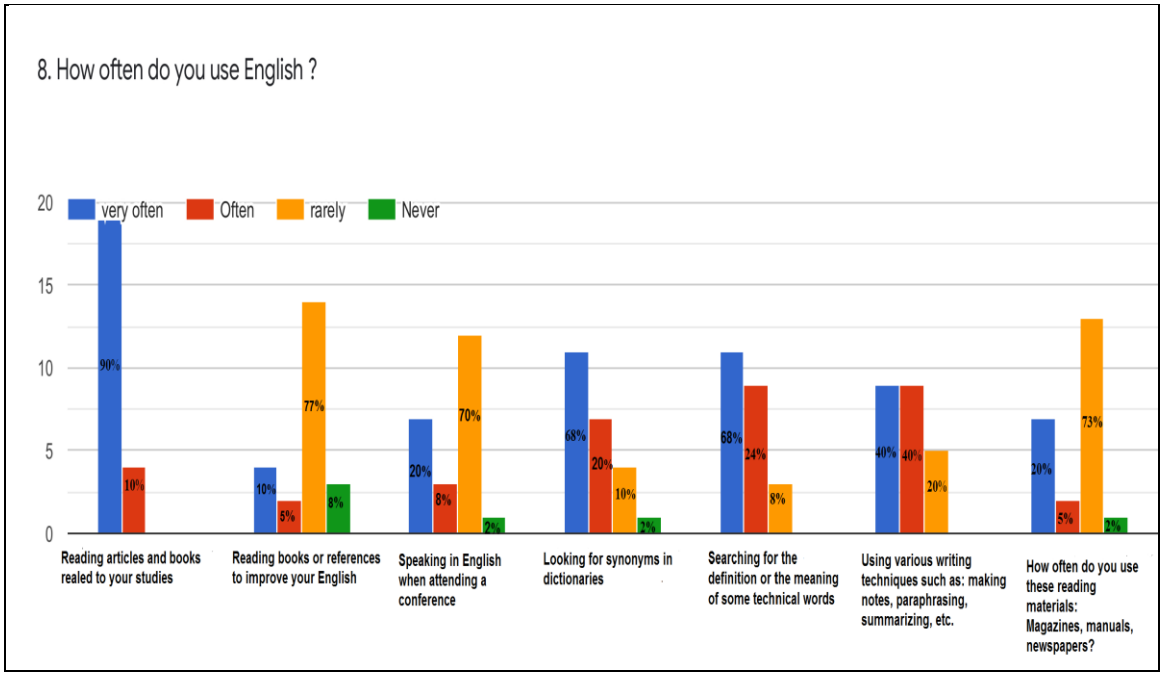
As shown in the above bar-chart, the outcomes reveal that 55% of students rate themselves as good readers, 20% believe that they are efficient when it comes to the writing skill. Moreover, 15% of students seem to have a good level of proficiency concerning the listening skill. Furthermore, a small number of students (10%) estimate that they are good at speaking.



Pie-chart 2.6: The Need for an ESP Course for Computer Science learners

The collected data indicate that a remarkable number of CS students (60.9%)believe that a specific English course is essential and has an impact on the learning process yet some learners (39.1%) think that ESP courses are not needed.

The 8th question is concerned with the various activities in which CS doctorate students use English.



Bar-chart 2.2: The frequency of the English Language Usage

The data obtained clarify that the use of English depends on the frequency of the activities in the field of computer science. Concerning the first activity, the results reveal that 90% of students tend to read articles and books related to their field of study very often and 10% often read articles and books.

For the second activity, 10% of learners read books and references to improve their English very often, 8% of them often develop their English through reading books and references. Moreover, 70% rarely use this strategy and only 2%never use the reading technique. As far as the third activity is concerned, 20% of CS doctorate students speak in English very often when attending conferences and 8% often do. However, 70% rarely use the English language and 2% never do.

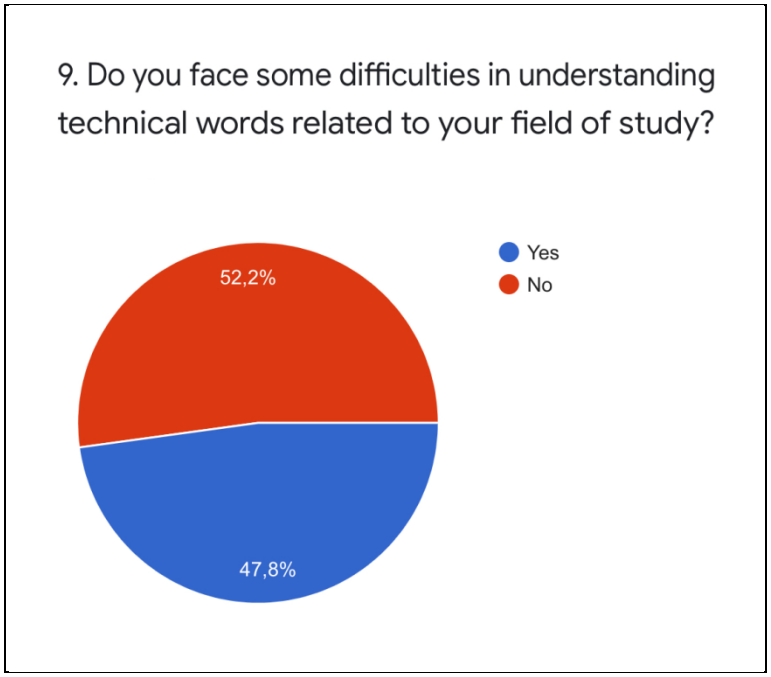
In relation to the 4th activity, most of the students (68%) very often look for synonyms in dictionaries, 20% often do although 10% and 2% of learners rarely/ never use this method. As for the 5th activity which concerns searching for the definition or meaning of some technical words, learners most of the time opt for this method to gain a better understanding (68%), 24% often use it and 8% of students believe that this method is rarely needed.

The results of the 6th activity show that 40% of students have the same answer regarding the use of various writing techniques such as: Making notes, paraphrasing, and summarizing are very often and often used by CS doctorate students. 20% assume that this activity is rarely required in their field of study.

Finally, the collected data reveal that a great number of students (70%) suppose that reading materials such as: Magazines, manuals and newspapers are rarely used but 25% believe that such activity is very often used.

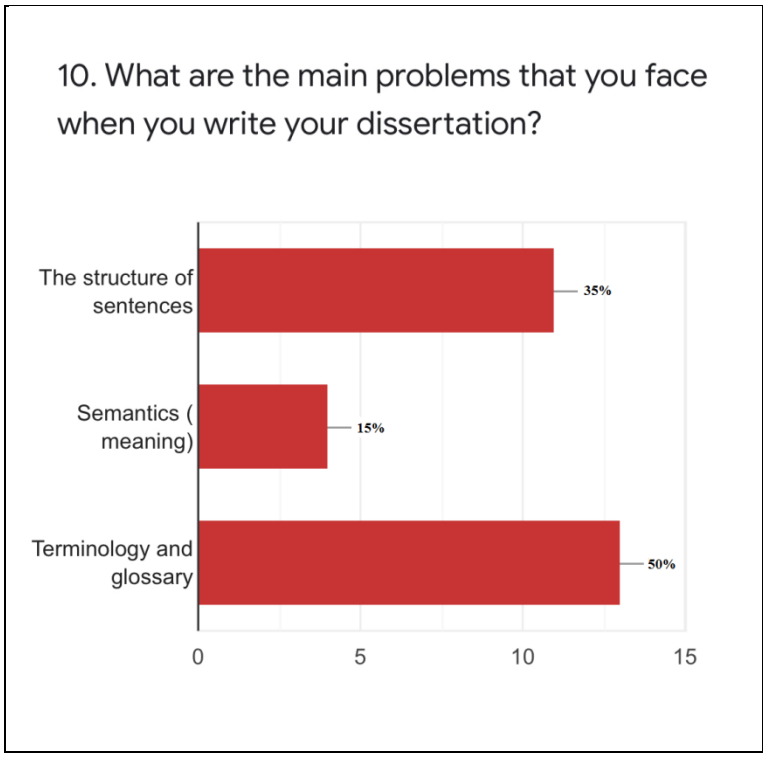
2.3.2.3 *Difficulties that Computer Science Doctorate Students Face when Writing their Dissertation*

In the following section, questions to explore students' writing deficiencies are asked.



Pie-chart 2.7: Difficulty in Understanding Technical Words

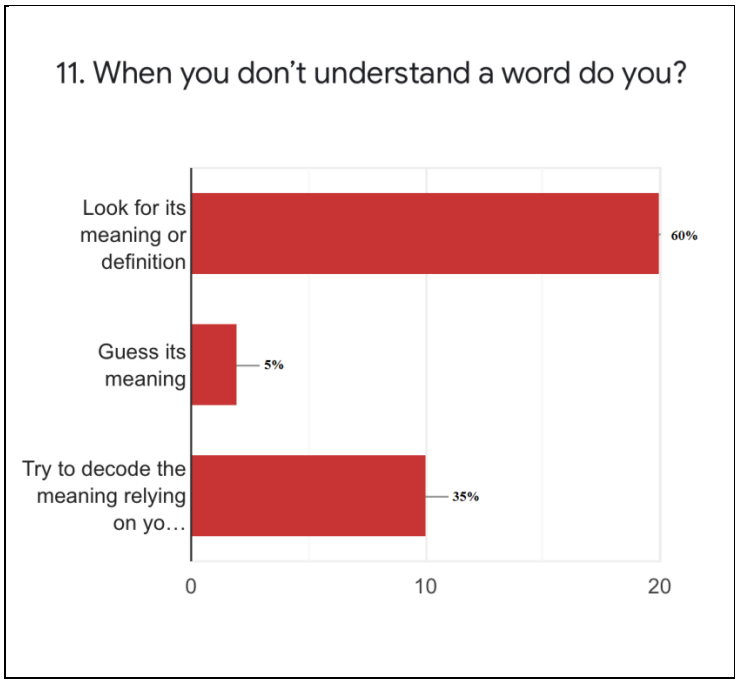
The above statistics describe the number of students who actually face some troubles when it comes to the comprehension of technical words. Basically, 52.2%of students face some difficulties when it comes to specific terminology. However, 47.8% actually encounter some issues in understanding technical terms.



Bar-chart 2.3: Main Problems in Dissertation Writing

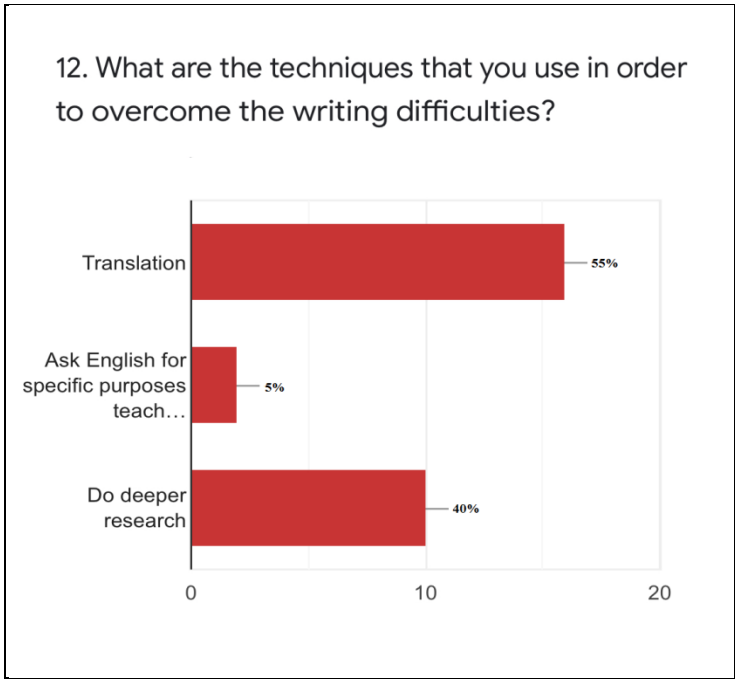
As for the 10th question "*What are the main problems that you face when you write your dissertation?"*The findings indicate that most students (50%) seem to have some issues concerning terminology and glossary. Furthermore, 35%appear to have troubles in the structure of sentences and a small number of CS students (15%) confront obstacles regarding Semantics (meaning).

The following questions investigate the different techniques and strategies that learners adopt to overcome the writing difficulties and to better achieve their learning objectives.



Bar-chart 2.4: Learning Strategies to Understand Complex Words

The outcomes demonstrate that 60% of doctorate students look for the meaning or definition of the words. Additionally, 35% try to decode the meaning of the latter based on their background knowledge and personal knowledge. Finally, 5% guess the meaning of the words relying on their intuition.



Bar-chart 2.5: Learning Techniques to Overcome the Writing Difficulties

The research results show that 55% of CS doctorate students prefer to use translation in order to empower and enhance their writing skill. 40% make deeper research to enrich their vocabulary. Lastly, only 5% of learners ask their ESP teachers to clarify any ambiguity or to overcome the writing hindrances.

2.3.3 Results Interpretation of the Students' Questionnaire

From the previous statistics, an interpretation is made concerning the three sections of the students' questionnaire. For the first section, the collected data show that students have an average proficiency level in English even though most of them have studied English for more than five years at the University of Saida, the standards upon which the students rated their proficiency level might not be solid because students' competency is based on the four learning skills. However, learners tend to evaluate their learning expertise based on one skill (in this case, the listening skill). That leads to draw an assumption about learners' awareness regarding their learning needs which are not clearly acknowledged. For instance, CS students prefer to focus more on the skills in which they are competent rather than enhancing the required and needed skills.

As far as the second section is concerned, 3rd year Doctorate students do not have English courses as a result they rely on their own capacities. As demonstrated in

the previous outcomes, some students prefer to attend extra English courses in order to improve the writing skills in addition to other skills. Furthermore, computer science doctorate students are not obliged to write their final dissertation in English but a great number of CS students still choose English mainly due to the availability of data which is usually published in English.

Some learners believe that ESP courses are apparently not obligatory since their specialty do not depend on the latter because doctorate students are expected to have enough expertise and knowledge regardless of the fact that they still need to improve other skills such as speaking and listening. As a result, they do not rely on ESP courses to improve their proficiency level. Moreover, English is frequently used in various activities such as: reading articles/books, attending conferences, etc. for that sake, CS students develop and opt for various techniques to understand complex terminology and to overcome the writing difficulties. The most commonly used strategies are: Translation, make further searches about a given topic or subject. An interview with teachers is needed to draw a clearer picture of students' needs as the questionnaire results remain insufficient.

2.3.4 Teachers' Interviews Design

The main purpose of designing a semi-structured interview is to reinforce the questions that were asked in the teachers' questionnaire and to collect more data regarding ESP teachers' opinion about teaching English for computer science doctorate students in relation to the ESP course design, course activities, students' competency level, teaching techniques, and learning strategies that CS students adopt to improve their learning skills. Therefore, 3 ESP teachers from the University of Saida in addition to 2 ESP teachers from the University of Algiers were asked to answer the following questions:

Question1: Do you opt for a readymade syllabus or do you design your own syllabus?

Question2: What kind of activities do you include when designing your course?

Question3: How can you define your doctorate students' proficiency level?

Question4: What do you think are the optimum teaching techniques that may improve your students' proficiency level?

Question5: What is the most needed skill according to your learners' needs?

Question6: What are the strategies that most of your learners opt for to overcome the writing deficiencies?

The teachers had different answers to the questions. As a result, the researcher tries to analyze the collected data taking into account the similarities and differences in the teachers' answers.

2.3.4.1 Interview Analysis

For the first question "*Do you opt for a readymade syllabus or do you design your own syllabus?"*ESP teachers had the same answer regarding the course design; they design the latter by themselves. Firstly, due to the fact that they teach ESP to various specialties not only computer science and they ought to take into account their learners' competency level besides their needs and lacks. Consequently, ESP teachers manage to design adjustable courses to help students gain expertise and achieve their immediate needs.

The result gathered from the second question "*What kind of activities do you include when designing your course?*"show that most of ESP teachers focus on the writing activities to improve learners' writing skills. These activities involve: writing abstracts/overviews, stating a proposal and analyzing data. At the same time, ESP teachers also include some learning strategies that help learners explain orally scientific events in the classroom or when attending a conference.

The answers that the teachers have provided for the third question "*How can you define your doctorate students' proficiency level?"* reinforced the results obtained from students' question since all the teachers have a common agreement upon computer science doctorate students' proficiency level based on assessment and learners' outcomes. The ESP teachers believe that CS students have a good level in English.

Depending on the respondents' answers on the fourth question "*What do you think are the optimum teaching techniques that may improve your students' proficiency level?*" including various activities, focusing on both receptive and productive skills in addition to rising students' autonomy by explaining only the most

important concepts and giving the learners a chance to make their own research and investigation. For instance, letting the students look for the meaning of technical words is one of the techniques that most ESP teachers choose.

The responses to the fifth question "*What is the most needed skill according to your learners' needs?"*indicate that ESP teachers view that CS learners should not focus on one skill because the receptive skills are complementary to the productive skills. However, learners tend to emphasize on the writing skill due to their fundamental needs involving: sentence structure, description of technical words and producing correct and meaningful output.

The data collected from the sixth question "*What are the strategies that most of your learners opt for to overcome the writing deficiencies?"* reveal that learners make further reading using books, dictionaries or websites to improve their reading skill. Additionally, they frequently write scientific articles and journals in English in order to enhance their writing skill. With regard to the listening and speaking skills, they usually join extra classes and attend conferences.

2.3.4.2 Results Interpretation of the Teachers' Interviews

According to the results obtained from the teachers' interviews and depending on the fact that CS doctorate students had an ESP course in their license and master degree and the first two years of the doctorate degree. Designing an ESP course by the ESP teacher can be beneficial because computer science doctorate students' learning needs are well defined. These needs include the enhancement of students' proficiency level in English through emphasizing on the writing skill without neglecting the listening, reading and speaking skills. However, teachers' lack of training and inability to defined students' deficiencies and learning shortage can be source of ESP teaching failure. On the other hand, teachers' awareness of their students' level in English (i.e. wants, needs and lacks) helps them design effective and efficient courses which. Furthermore, the techniques that ESP teachers opt for are practical at many levels: enhancing students' autonomy and improving their learning skills.

2.3.5General Discussion of the Final Results and Findings

Based on the research instruments' results which helped the researcher to draw a clear picture about the CS doctorate students' learning needs and attempted to answer the research questions**,** the hypotheses that the researcher has put forward were confirmed since computer science doctorate students face troubles in understanding the terminology and glossary related to their field of study besides the ESP course focus on helping student achieve their immediate needs such as: writing articles for publication and attending conferences, etc. Furthermore, the major finding indicates that a great number of CS learners confront difficulties when it comes to the structure of sentences and Semantics. The second basic outcome supports the researcher's hypothesis related to the techniques used by the learners. It shows that CS Doctorate students emphasize on technical words comprehension and give priority to translation in order to strengthen their writing skills taking into consideration that apart from ESP classes, CS studies are in French language.

2.4 Conclusion:

The present chapter covered the data that have been collected from two research instruments mainly a questionnaire designed for Computer Science Doctorate students and a semi-structured interview for ESP teachers. The results gave the opportunity for the researcher to gather reliable and valid data and to reinforce the above mentioned research hypotheses.

The following chapter will incorporate the author's suggestions and recommendations concerning the collected data in addition to various scholars' theories, findings and suggestions that have a relation with the present study.

Chapter Three:

Recommendations and Suggestions

3.1 Introduction

Based on the previous results and findings which provided answers to the previous research questions concerning computer science doctorate students' proficiency level and the difficulties they face in their dissertation writing in addition to the students' learning strategies to overcome those hindrances. The gathered data confirmed the suggested hypotheses and indicated that CS learners encounter difficulties regarding the technical words understanding and their lack of knowledge about language rules primarily sentence structure. Furthermore, translation is regarded as the main technique that CS learners select.

The present chapter will involve the researcher's suggestions in addition to different scholars and experts recommendations in connection with the current study. Practical implementation in ESP courses, giving priority to learners' wants and needs, emphasizing on learners' self improvement as well as including ESP courses for all doctorate levels are the core focus of this chapter.

3.2 ESP Courses

Even though the language of instruction for all the scientific fields in the Algerian universities is French, most of the students especially Doctorate students manage to write their final dissertation in English due to the availability of needed data in English. Learners' competency level is significantly correlated with the density of the ESP course, this is one of the reasons that require including ESP courses for all doctorate levels since ESP is designed for intermediate and advanced learners.

Depending on the findings of a previous study done by Sana Nisar (2016) on the English language needs for computer science undergraduates, although ESP learners are aware of their needs and know what to expect from an ESP course, the latter have a general focus rather than a specific focus. As a result, students do not attain their needs immediately. Sana Nisar suggested that ESP courses ought to be more specific. Moreover, effective instructional methods to make learning easier for students should be applied and teachers should assess each student in terms of their lacks and English language learning insufficiency. In order to determine the current

level of learners' competency level in English, each student should be evaluated individually. The current English competency level of computer science students and the requisite proficiency level to advance the curriculum with the use of the English language are completely different that is why ESP instructors have to distinguish between the two concepts so that the ESP courses would have a specific focus.

3.2.1 Course Design

The results revealed that ESP teachers design their own course for that sake it should rely on some approaches in which students' needs are the basic feature. For instance, these approaches were introduced by Hutchinson & Waters (1987)as language-centered approach, skills-centered approach and learning-centered approach. These three approaches must be included in every ESP course, since each approach has an effect on the content and emphasis of ESP courses. According to Hutchinson & waters (1987), language-centered approach is concerned with identifying learners' target needs, identifying the linguistic features of target situation, creating the syllabus, designing suitable materials and testing acquisition.

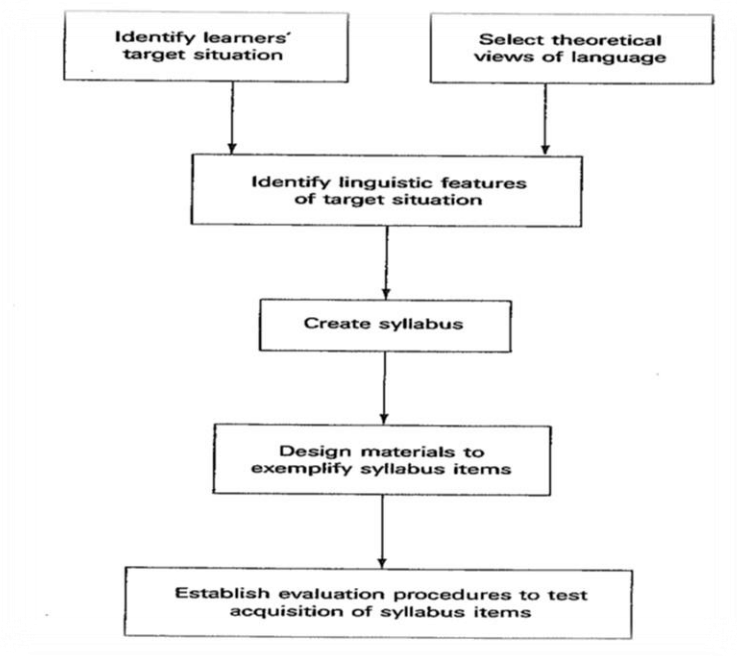


Figure 3.1: A Language- Centered Approach to Course Design (Adopted from Hutchinson & Waters, 1987: 66)

Skills-centered approach is concentrated upon the competence that underlines the performance through certain skills. Its main goal is to help students improve their

learning skills and strategies. It helps the course designer to explore the future skills and abilities of the ESP classroom students and takes into account the student's current level.

The skill-centered approach looks at how the learner's mind treats the acquired knowledge. As for the third approach introduced by Hutchinson & waters (1987) as the learning-centered approach highlights the imporance of the learner in the development of the learning process but the most relevent strategy that an ESP practionner may opt for is combining the three approaches by selecting the positive aspects of each approach. Additionally, a course design is viewed as a negotiated and a complexe method in which the course content responds to the lerners' needs and to the intricate learning/teaching situations.

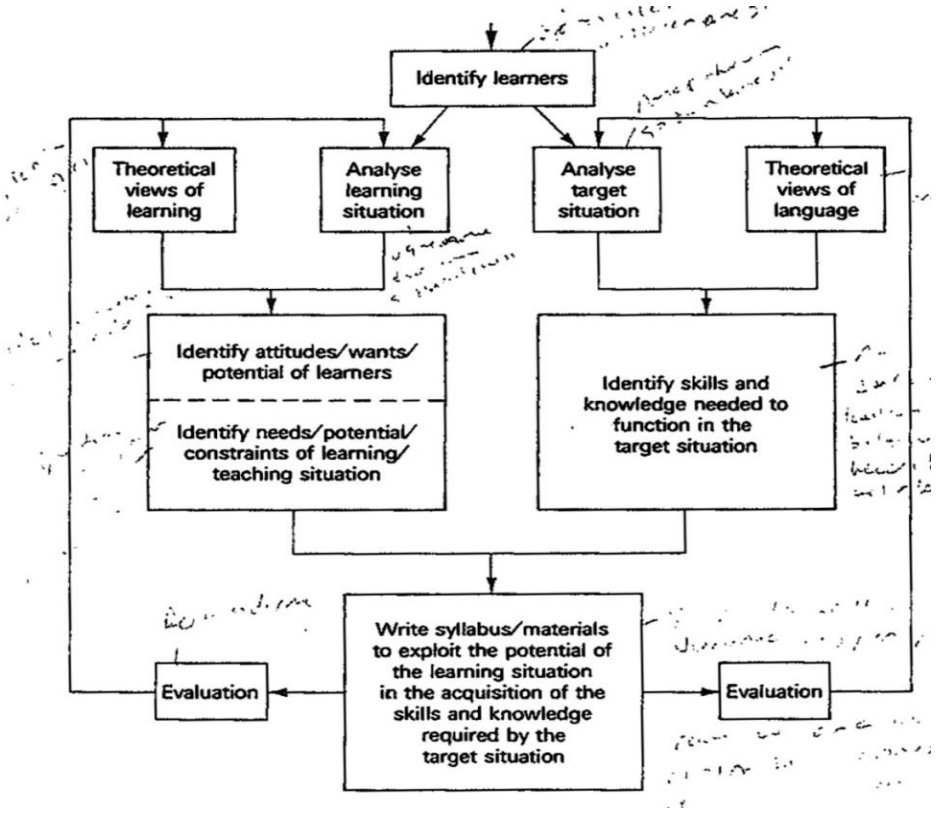


Figure 3.2: A Learning- Centered Approach to Course Design (Adopted from Hutchinson & Waters, 1987: 74)

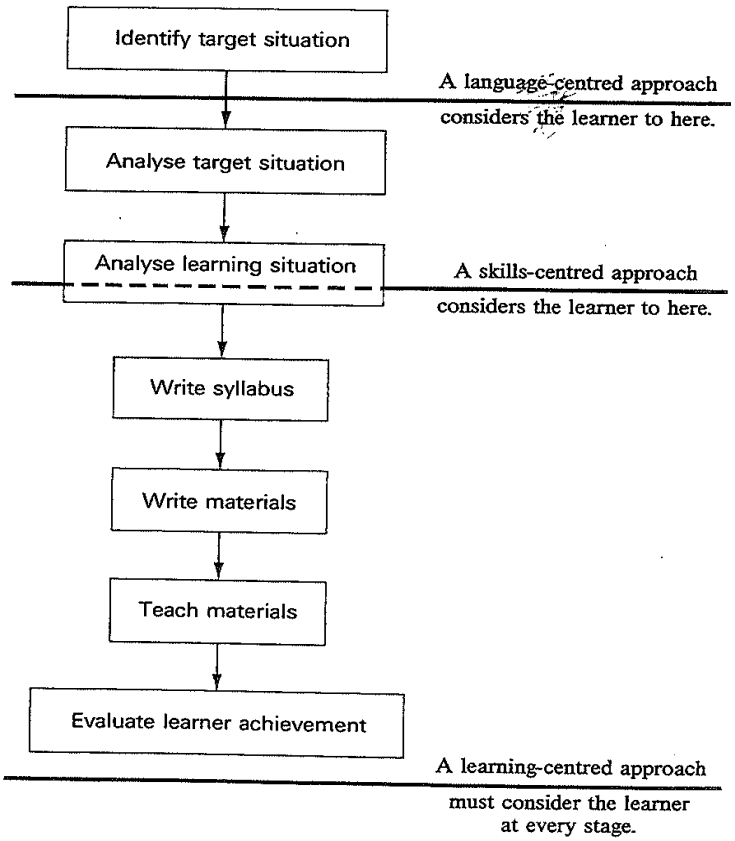


Figure 3.3: A Comparison of Approaches to Course Design (Adopted from Hutchinson & Waters, 1987: 73)

In light of the above descriptions , ESP teachers at Saida's university need to take into account the different approaches of an ESP course design without emphsizing only on one aspect for example: Giving importance to one skill rather than training the students to enhance the needed skills (i.e. the writing skill in the case of computer science students).

3.2.2 Course Content

A recent investigation done by F. Djaileb (2015) suggested some alterations regarding the ESP course content. Starting with the reading and writing practices, the researcher believe that they should focus more on the tasks students may perform besides authentic tasks should concentrate on the precision and fluency of English among computer science students. The research (projects) and collaborative tasks should be carried out by the students to increase their autonomy. Finally, the choice of language materials should be appropriate to the students' future work and studies.

The main challenges that ESP teachers face are the selection of suitable materials and to make students reach their desired level in a short period of time. That is why, evaluation of the teaching materials through needs analysis is an essential process in the course content. Hutchinson & waters (1987) suggested that teachers should write their own content in the sense of reviewing existing materials because the latter can be a valuable guide for comprehension or avoidance of what should be included in a course. The evaluation process should also be consistent and better presented as a corresponding exercise, comparing the identified needs with available solutions.

The lack of the required material can negatively affect the teaching/learning process and lead to an inadequate motivation and sensitivity, which leads to an unfavorable perception regarding the ESP course with regard to this, Fiorito (2006) stated that students can learn English while working with materials that they think are fascinating and important and can be used in their professions or further studies.

Belcher, 2006; Hutchinson & Waters, 1988; Long, 2005 underlined that authentic materials should be included in ESP courses and reflect the target situations of language use by students.

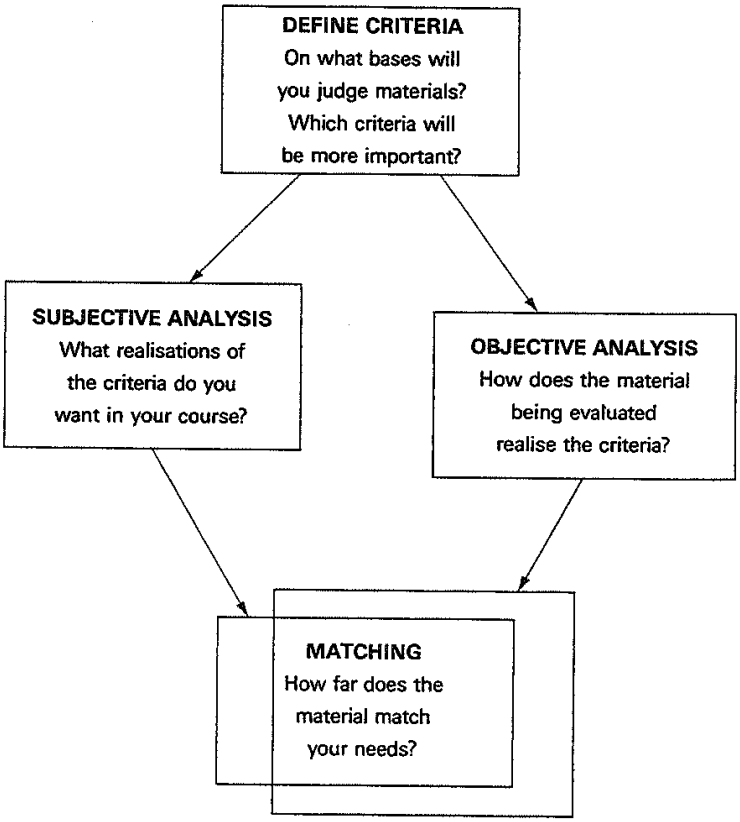


Figure 3.4: The Material Evaluation Process (Adopted from Hutchinson & Waters, 1987: 98)

3.2.3 ESP teaching Objectives

The main goal of teaching ESP is to enable learners to widen their scale of knowledge with regard to acquiring the English language for a given specialism. Being aware of the purpose for which a teacher teaches ESP is the first step towards achieving one's teaching objectives. Basturkmen (2006) points out five general goals cited by C.E. Lamri (2016) these goals are the basis of any specific teaching process:

- To expose the use of the topical language: To teach the students how vocabulary and language features are used in the target situation.
- Developing goal success skills: To know what do language learners do and the skills they need to be qualified.
- To teach the required knowledge and understand the meaning behind it: To concentrate on student progress. In relation to their language skills and awareness of different areas of study.
- Creating better learning skills: To improve students' productivity and learning quality.
- To encourage criticism in learning: Enables students to better understand their learning goals and target needs.

3.3 Enhancing Students' Academic Writing Skills

The finding of the previous chapter revealed that computer science Doctorate students emphasize on the writing skill because of the nature of their studies which involve the production of various outputs for that reason ESP courses need to entail more writing activities such as: writing scientific journals, writing scientific overviews, etc.

Gevers et al. (2006) suggest that more attention needs to be paid to writing preparation for publication in view of the fact that graduate students are often required to write manuscripts without any prior training that may help them accomplish this objective (Heinrich et al . 2004). Even though, learners depend on their own knowledge there will always be a gap between their current levels and their learning objectives that is why, ESP learners need substantial linguistic assistance (grammar,

vocabulary and sentence structure) to accomplish the tasks and abilities that the target situation demands including books or journals summaries, personal project reports , computing reports and note-taking.

3.4 Teachers' Awareness about Students' Necessities, Wants and Lacks

An ESP instructor must be aware of what his/her learners need in order to achieve their goals. According to Hutchinson& Waters (1987, 55), necessities help the teacher "*To find out what the learners need in the target situation for their job at the time*". Furthermore, the wants are examined "*To find out what the students want to be included in the materials*" (Hutchinson & Waters, 1987, 56). As regards to the lacks, they need to be well defined "*To find out the gap between what the students have known and what they still need to know"* (Hutchinson & Waters, 1987, 55-56).

The technique that the ESP teachers can benefit from is conducting needs analysis in the interest of analyzing students' target needs (i.e. students' main objectives) and learning needs (i.e. how the will achieve those objectives). (Richterich and Chancerel, quoted in Hutchinson and Waters 1987:102) As cited in Benmansour Benyelles Radia's article, analyzing students' needs aims at:

- Clarification of language skills necessary for work or study (Pilbeam, 1978).
- Drawing a profile of the needs that clarifies the varying levels of tasks performed by learners.
- Determination of the standard of facilities language instruction.

3.5 Team Teaching

Based on the earlier result, it is preferable for an ESP teacher to work in collaboration with the subject specialist because they will be able to gather information on the nature of a curriculum and also select suitable tools, approaches and methods (S. Bouhafs; A. Boughari, 2016). For the sake of making the ESP course more practical, Williams (cited in Jordan1997:121) mentions some crucial elements namely:

- Willingness to work with all groups of workers to strengthen the course content.
- Clear delimitation of their accountabilities.

- Knowledge of their practical equipment and approach to teaching.
- The student recognizes the collaborative effort as a teaching supplement.

Richards et al (2005) suggested some features to achieve a better collaborative team teaching (cited by S. Bouhafs; A. Boughari, 2016) as follows:

- Time
- Tolerance
- Truthful reflection
- Reassessment
- Faculty and Administrators' response

3.6 Translation in ESP

The language of instruction is one of the key issues faced by computer science doctoral students. It is knowledgeable that French is the language of instruction in different Algerian faculties and the wide use of translation (from the French language to English is clearly reflected in the proficiency level of computer science students. initially, the apparent lack of grammatical awareness such as: sentence structure and semantics in addition to language understanding and processing (terminology and glossary) as the research findings indicated adversely affected students' competency level in English as a result learners still face troubles in the writing skills regardless of their degree. Furthermore, the kind of activities proposed in an ESP classroom could trigger the use of French (learners' inability to produce an outcome in English leads to the use of French instead)

Switching the language of instruction to English can be beneficial especially for the scientific domains. Benmansour Benyelles Radia suggests a remedial work which requires further considerations concerning the entire language curriculum at different educational levels primary at the university level.

Translation is seen as a learning tool in ESP since the majority of students believe that it is one of the most convenient techniques to overcome the learning challenges.

3.7 Conclusion

In the present chapter, the researcher offered some suggestions and recommendations based on the analyzed data and the research findings. These suggestions were reinforced by other scholars' recommendations and viewpoints concerning the present study. The essential suggestions emphasized on the characteristics that an ESP practioner ought to take into account when designing his/her ESP course for computer science doctorate students in particular. Moreover, the crucial role of the basic features of an ESP course namely: Necessities/ needs, wants and lacks were put forward in this chapter.

General Conclusion

GENERAL CONCLUSION

English language teaching for Computer Science is crucial due to the fact that learners are expected to have a good proficiency level in English and to be competent regarding the learning skills. One of the essential aims of computer science doctorate students is dissertation writing. The latter has always been a challenging process for most of the students since the writing skill is based upon some criteria and standards that the learners cannot easily achieve. Therefore, the need of an ESP course which targets the students' needs and their learning objectives is evident.

The present study aimed to examine the difficulties that computer science doctorate students face in dissertation writing in addition to the learning techniques and strategies that they opt for in order to overcome the writing deficiencies.

For the sake of achieving the above research objectives, the following questions were formulated:

- What are the challenges and deficiencies that computer sciences doctorate students face in their dissertation writing?
- To which extent can the ESP course help computer science doctorate students find optimum learning techniques regarding their writing difficulties?
- What are the techniques that students opt for in order to overcome the challenges they face when writing?

To pursue that, the following hypotheses were suggested:

- Most students possibly face troubles in understanding the technical words and have a limited knowledge regarding the grammatical features.
- An ESP course targets students' necessities, needs, wants and lacks.
- Computer science doctorate students may opt for translation and put effort on improving their proficiency level.

After analyzing the data gathered from a mixed methodology in which a structured questionnaire was designed for computer science doctorate students in

addition to a structured teachers' questionnaire and an interview designed for ESP teachers at Saida University. The suggested hypotheses were apparently confirmed through the findings which revealed that a great number of CS doctorate students face some troubles regarding the technical wards comprehension and sentence structure. Moreover, the results obtained from the analyzed data proved that the optimum technique that the students find practical and helpful is translation besides they emphasize on their personal knowledge and their level of competency to overcome the writing difficulties.

The current study was divided into three chapters, each chapter presented a set of information to offer a better understanding of the problem, clarify the results and produce evidence for the validity of research outcomes. For instance, the first chapter presented an overview of the literature review and some core concepts related to the topic.

The second chapter was divided into two sections. The first section presented the methodology of the research including the research instruments, participants, and procedure. On the other hand, the second chapter covered the data analysis of the obtained results which answered the research questions and confirmed the hypotheses.

The third chapter included the researcher's recommendations and suggestions to develop the ESP course content and to help students achieve their learning goals firstly by having a clear image of their needs. Furthermore, the author's recommendations were reinforced by other scholars' findings and suggestions.

The fact that ESP courses are generally designed by the ESP teacher can be beneficial for the learning/teaching process because it allows the teacher to be aware of his learners' needs and lacks as a result the course will have a specific focus rather than a broad one. Moreover, learners' prior knowledge and level of competency affect the teaching and learning quality that is why the implementation of an ESP course in all levels is the primary key for the development of learners' proficiency level in English.

REFERENCES

- Anthony, L., 1998. *Defining English for Specific Purposes and the Role of the ESP Practitioner*. Okayama University of Science, Japan. Available at: <https://www.researchgate.net> [Accessed 7 March 2020].

- Beeby, A., RodríguezInés, P. and Sánchez-Gijón, P., 2009. *Corpus Use and Translating*. Amsterdam: John Benjamins Pub. Co.

- Belcher, D., 2012. English for Specific Purposes: Teaching to Perceived needs and Imagined Futures in Worlds of Work, Study, and Everyday Life. In: *TESOL Quarterly*. Georgia State University: Teachers of English to Speakers of Other Languages, Inc. (TESOL).

- Belyaeva, A., 2015. *English for Specific Purposes: Characteristic Features and Curriculum Planning Steps.*Zaporizhzhya National University, Ukraine.

- Bouhafs, S. and Boughari, A., 2016. *Students' Attitude towards ESP Course: The Case of First Year Master Biology Students at Tlemcen University*. Master degree. University of Tlemcen.

- Brown, H., 2000. *Principles of Language Learning And Teaching*. White Plains, NY: Longman.

- Burns, A., 2010. *Doing Action Research in English Language Teaching*. New York: Routledge.

- Burns, A., 2015. *Action Research*. PhD Applied Linguistics. UNSW Sydney | UNSW · School of Education.

- Butler, Y., 2005. *Content-Based Instruction in EFL Contexts: Considerations for Effective Implementation*. University of Pennsylvania.

- Cheriguene, A., Tayeb, K. and Kerrache, C., 2020. Writing for Journal Publications: A Case Study of Eight Computer Scientists in Algeria. *Arab World English Journal*, [online] pp.102 - 113. Available at: <https://dx.doi.org> [Accessed 14 September 2020].

- Creswell, J. (2002). *Educational research*. University of Nebraska–Lincoln.

- Difranza, A. (2019). 3 TYPES OF COMPUTER SCIENCE SKILLS EVERY CS PROFESSIONAL NEEDS.

- Divsar, H. (2018). Exploring the Challenges Faced by Iranian TEFL Students in their Doctoral Dissertation Writing. *International Journal of English Language and Translation Studies*, *INSS: 2308-5460*, PP: 195-203. Retrievedfromhttp://(www.eltsjournal.org).

- Djaileb, D. (2015). *Issues in Teaching English in an ESP Context: The Case of Computer Science.* (Associate Professor). University of Science and Technology, Oran Algeria.

- Gilakjani, A. (2016). *The Significance of Listening Comprehension in English Language Teaching* (Assistant Professor). Islamic Azad University of Lahijan. Department of English Language Translation.

- Gnutzmann, C. (1999). *Teaching and learning English as a global language*. Tübingen: Stauffenburg.

- Gupta, T., 2019. Reflective Teaching as a Strategy for Effective Instruction. *Educational Quest- An International Journal of Education and Applied Social Sciences*, 10(1).

- Hamalainen, W., 2006. *Scientific Writing for Computer Science Students*. University of Joensuu.

- Hidayati, D. and Haryati, S., 2018. Target and Learning Needs in English for Midwifery Students. Leksema*: JurnalBahasadanSastra*, 3(1), p.71.

- Hutchinson, T. and Waters, A., 1987. *English For Specific Purposes A Learning Centered Approach*. 6th Ed. New York: the press syndicate of the University of Cambridge.

- Hutchinson, T. and Waters, A., 2008. *English for Specific Purposes. Cambridge*: Cambridge Univ. Press.

- Hyland, F., 2013. Challenges Faced by Second Language Doctoral Student Writers in Hong Kong and Their Writing Strategies. *Australian Review of Applied Linguistics*, 39(2), pp. 158-180.

- Inggs, J., &Meintjes, L (2009). *Translation Studies in Africa*. London: Continuum.

- Kapp, C., Albertyn, R. and Frick, B., 2011. Writing for publication: An intervention to overcome barriers to scholarly writing. *UnisaPress*, (ISSN 1011-3487), pp.741–759.

- LAMRI, D., 2016. *An Introduction to English for Specific Purposes (ESP).* Dr. University of Tlemcen.

- Master, p., 1997. Content-Based Instruction vs. ESP. Peter Master.

- MEBITIL, N., 2013. *The LMD System: A Problematic Of an ESP Perspective*. Mascara University.

- Morley, D., 2014. *Academic Phrasebank*. The University of Manchester.

- Nisar, S., 2016. *The Present English Language Needs of Computer Science Undergraduates: a Case Study in International Islamic University, Islamabad. (Female Campus)*. Department of English, International Islamic University, Islamabad.

- Paltridge, B. and Starfield, S., 2007. *Thesis and Dissertation Writing In A Second Language*. USA and Canada: Routledge.

- Paltridge, B. and Starfield, S., 2013. *The Handbook of English for Specific Purposes*. Hoboken, N.J.: Wiley.

- Pym, A., Malmkjaer, K. and Plana, M., 2013. *Translation and Language Learning: The Role of Translation in the Teaching of Languages in the European Union. A Study*. Belgium.

- Radia, B. *Teaching common core English in ESP classes: a Way to Promote Translation as a Learning Tool*. University of Tlemcen.

- Rahman, D. (2012). *The English Language Needs of Computer Science Undergraduate Students at Putra University, Malaysia: A Focus on Reading skills*. International University of Business, Agriculture and Technology.

- SARNOU, H., KOÇ, S., HOUCINE, S. and BOUHADIBA, F., 2012. LMD New System in the Algerian University. *Arab World English Journal*, [online] Volume.3 Number.4 (ISSN: 2229-9327), .pp. 179 - 194. Available at: <http://www.awej.org> [Accessed 6 April 2020].

- Schleppegrall, M. and Bowman, B., 1992. *ESP, Teaching English for Specific Purposes*. Washington, DC (1990 K Street, NW - 8th floor, Washington 20526): Peace Corps, Information Collection & Exchange.

- Sri, D., 2014. *Communicative Language teaching and its Misconceptions about the Practice in English Language Teaching (ELT)*. University of Pendidikan, Indonesia.

- Srinivas, P., 2019. *The Importance of Speaking Skills in English Classrooms*. Doctor. King FaisalUniversity.

- Efklides, A, 2018. *The Importance of Reading*. Retrieved from https://www.researchgate.net/

- Uefap.com. 2020. *Using English for Academic Purposes*. [online] Available at: <http://www.uefap.com/index.htm> [Accessed 14 April 2020].

- Uso Juan, E., & Martinez Flor, A. (2006). *Current trends in the development and teaching of the four language skills*. Berlin: Mouton de Gruyter.

- Ventola, E. and Mauranen, A., 1996. *Academic Writing*. Amsterdam: John Benjamins Pub.

Appendices

Appendix A: Students' questionnaire

Students' Questionnaire

The purpose of the study is to examine 'The challenges and difficulties that Computer Science Doctorate students face when writing their dissertation'. This questionnaire will help to ensure the accuracy of data. Your responses will be treated anonymously. Thank you for your cooperation.

Section I: Personal Information

1. Current level:

1st year ☐ 2nd year ☐ 3rd year ☐

2. Proficiency level:

Low ☐ average ☐ advanced ☐

3. How long have you been studying English?

More than 5 years ☐

Less than 5 years ☐

4. Are you studying English while preparing your thesis?

Yes ☐

No ☐

Section II: Students' Attitude Towards English

5. Do you prefer to write your dissertation in?

English ☐ French ☐

In case you have chosen English, do you think that writing your dissertation in English is?

Beneficial ☐ Practical ☐ challenging ☐

6. Are you good at?

Speaking ☐

Listening ☐

Writing ☐

Reading ☐

7. Do you think that ESP training can improve your writing skills?

Yes ☐

No ☐

In case your answer is YES, what do you expect from an ESP course?

……
……
……
……
……

8. How often do you use English?

	Very often	**often**	**rarely**	**Never**
Reading articles and books related to your subject				
Reading books or references to improve your English				
Speaking in English when attending a conference				
Looking for synonyms in dictionaries				
Searching for the definition or the meaning of some technical words				

Using various writing techniques such as making notes, paraphrasing, summarizing, etc.				
How often do you use these reading materials: Magazines, manuals, newspapers?				

Section III: Difficulties that students face when writing their dissertation

9. Do you face some difficulties in understanding technical words related to your field of study?

Yes ☐

No ☐

1**0.** When producing an output (writing), do you find problems with?

The structure of sentences ☐

Semantics (meaning) ☐

Terminology and glossary ☐

11. When you don't understand a word do you?

Look for its meaning or definition ☐

Guess its meaning using the context clues ☐

12. What are the techniques that you use in order to overcome the writing difficulties?

Translation ☐

Ask ESP teachers ☐

Do deeper research ☐

Thank you for taking the time to complete this survey. We truly value the information you have provided.

Appendix B : Teachers' Questionnaire

Teachers' Questionnaire

The purpose of this study is to examine 'The challenges and difficulties that Computer Science Doctorate students face when writing their dissertation'. This questionnaire will help to ensure the accuracy of data. Your responses will be anonymous. Thank you for your cooperation.

Section I : Personal information

1. How long have you been teaching ESP?

More than 5 years ☐

Less than 5 years ☐

2. What is your teaching status?

1 ☐ Full-time

†2 ☐ Part-time (50-90% of full-time hours)

†3 ☐ Part-time (less than 50% of full-time hours)

3. Do you teach computer science PhD students ESP?

Yes ☐

No ☐

If your answer is yes, which level do you teach?

1st year ☐

2nd year ☐

3rd year ☐

4. How can you rate your students' current level in English in relation to the four skills?

	Very low	**Low**	**Average**	**Good**	**Very good**
Reading skills					
Writing skills					
Speaking skills					
Listening skills					

Section II: course design

5. Do you have a specific syllabus that you need to follow or do you plan your own lesson?

Readymade syllabus ☐

Plan a new course design ☐

6. In case you plan your own lectures, do you?

Focus on the four skills ☐

Focus on the needed skills ☐

7. Do you include some activities in your classroom?

Yes ☐

No ☐

8. In case your answer is yes, what kind of activities do you think that help your students to improve their level?

……

……

……
…….

9. What are the skills that your learners need to focus on

Reading ☐

Writing ☐

Speaking ☐

Listening ☐

10. Do you think that writing a dissertation in English is beneficial or challenging and why?

Beneficial ☐ challenging ☐

……
……
……
……

11. What do you think are the difficulties that most students face in their dissertation writing?

……
……
……
……..

12. In your opinion, how can your students' present needs such as: Understanding the central ideas, decoding meaning and learning technical vocabulary improve their writing skills?

……
……
……

Thank you for taking the time to complete this survey. We truly value the information you have provided.

Appendix C:

Teachers' Interview

For the sake of collecting reliable data the present semi-structured interview is designed. Your identity will be kept strictly confidential. Your responses will be anonymous and will never be linked to you personally. Please answer the following questions about your attitude towards teaching ESP courses for Computer Science Doctorate students.

Question1: Do you opt for a readymade syllabus or do you design your own syllabus?

Question 2: What kind of activities do you include when designing your course?

Question3: How can you define your PhD students' proficiency level?

Question4: What do you think are the optimum strategies that may improve your students' proficiency level?

Question5: What is the most needed skill according to your learners' needs?

Question6: What are the strategies that most of your learners opt for to overcome the writing deficiencies.

Thank you for your willingness to participate and share your responses.