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The importance of a Learning- Centered Approach in Designing Effective Courses for Computer Science

The Case of Second Year Computer Science Learners at University of Ghardaia

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Dedication

*I dedicate this research to the dearest person I
have in the entire world, my mother, my father,
my brothers and my sisters.*

Acknowledgements

I would like to express my deep gratitude and appreciation to my supervisor, Dr. Chaouki Nouredine, for his help and insightful comments and suggestions that helped fulfill the present study.

I am also grateful to the staff at the Department of Computer Science at the University of Ghardaia.

Abstract

ESP is considered as a branch that deals with immediate and precise needs of adult learners. Teaching adult people is not the same as teaching children. ESP course design is an important element for an effective teaching. To design an ESP course that provides learners with what they need, a learning- centered approach is recommended.

This inquiry is based on designing a course for Computer Science learners on the basis of a learning-centered approach to course design. The aim is to assess the course designed to examine the extent to which it complies with learners' needs.

Results are obtained from a questionnaire administered to the learners after the implementation of the course to see the importance of a learning- centered approach in designing an effective course.

The conclusion drawn is that:

- Designing courses on the basis of the approach stated above complies with learners needs.
- This approach is important in designing courses for ESP learners.

List of Abbreviations

CLT: Communicative Language Teaching

CS: Computer Science

EAP: English for Academic Purposes

ECS: English for Computer Science

ELT: English Language Teaching

ESP: English for Specific Purposes

GE: General English

NAP: Needs Analysis Processor

PSA: Present Situation Analysis

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1.1 Aims of the Study

In non English speaking countries, English for Computer Sciences (ECS) is of great importance for computer users. Computers have become a broadly spread technology which makes computer users need to study the way interface between man and machine is successfully achieved. In this regard, course design is at the core of a significant and successful machine communication.

The present research aims at setting some criteria for designing an English course for computer science learners. The course is designed so as to enable computer science learners acquire the knowledge they need to interact adequately in the target situation. Moreover, the current work is devoted to spot some of the inadequacies within the process of course design that may cause problems in the learning process. In addition, this survey endeavors to make teachers, who are course developers themselves at the university aware of the importance of some principles when designing courses for ESP learners. The study also aims at making course developers sensitive to the difference between designing a General English course (GE) and ESP one. (Dubin & Olshtain 2000: 2)

Finally, the research seeks to highlight the importance of needs analysis in the effectiveness of ESP courses. Moreover, the present study aims at stressing the effectiveness of learning- centered approach in designing effective courses for CS learners.

1.2 Research Questions

Course design is at the center of ESP because it takes into account the needs of the learners. The present research attempts to set some criteria for designing courses for CS learners. The present inquiry attempts also to provide appropriate answers to the following questions:

- What is course design?
- What is ESP course design?
- What are the approaches to course design?

- To what extent is a learning-centered approach to course design important for CS learners?
- Are learning centered courses effective for CS learners?

1.3 Statement of the Problem

As computers are immensely used in various fields of human activities, their users are put in situations that demand an adequate man-machine interface. For instance, in English for Academic Purpose (EAP), learners need to interact with computers using English. The present study hypothesizes that learner- centered ESP courses comply with the needs of computer science learners effectively.

1.4 Structure of Study

The study consists of three chapters. The first chapter presents background information of the topic. The second one is devoted to ESP course design. The last chapter contains the application of the data introduced in the previous chapter. An assessment component is introduced to test the suggested model through designing the course to computer science learners following a learner-centered approach to course and syllabus design, material selection and evaluation procedures.

1.5 Means of Research

To fulfill the present research, a questionnaire of needs analysis is administered to sixty (60) second-year computer sciences learners at the University of Ghardaia, Algeria, where the central task is reading comprehension. After the implementation of the course, another questionnaire about course assessment is administered

1.6 Methodology of Study

The first step in the implementation of the suggested model consists in choosing a sample randomly. The hypothesis will be tested on second-year CS learners. Then, a questionnaire on needs analysis will be administered to examine their needs in their area of

study. After that, the course will be set down in accordance with learners' needs. Materials used are a mixture of authentic and simplified. Then, the course will be implemented on the group of learners chosen. The application of the course will take three (03) sessions one hour for each. The last quarter of the last session is devoted to a qualitative evaluation of the course. On the basis of the results obtained from the questionnaire, course weaknesses will be discussed. In this course nearly all details are taken into account: timing, course structure, methodology, lesson plan, materials, course objectives, assessment components.

1.7 Significance of the Study

The recent use of computers in English makes people need to study English for Computer Science (ECS) to interact adequately with their computers. Morvan (1989) believes that ECS is not just a commercial wave but it is a standard necessity for computer users. In addition, Munasinghe (1989) assures that educational computing technology transfer is unavoidable; thus computers are now part of our daily life.

1.8 Definition of the Terms in the Study

In conducting such a type of research, some key concepts need to be defined and explained:

Course design: According to Hutchinson and Waters (1987: 21-65) course design is a process composed of several stages, the ultimate aim of which is to provide learners with knowledge that help them to perform adequately in the target situation. According to Graves (2008: 13) 'course design', course development or curriculum design is a process that is composed of several parts and constituents. The act of moving from one stage to another enables the course developer to build up an effective course.

Course design is a process that enables learners build up new knowledge on the previously existed one. (Basturkmen 2010:26)

Course evaluation: is the process of making judgments and decisions about learners or courses. Evaluation is of two types quantitative and qualitative. The former means evaluating learners' performance using tests and workouts. The latter is about evaluating courses'

effectiveness using questionnaires or interviews as methods of data collection. (Sárasdy, Farczádi Bencze, Poór and Vadnay2006: 131, Diamond 2008:176)

Learning-centered approach: is an approach that considers learning as an internal process. It focuses on the learner as the central part in the process of learning. (Hutchinson & Waters 1987: 72)

Diamond (2008: 3-5) sees that a learning- centered approach to course design gives the chance to learners to learn what they need. It focuses on providing them with knowledge that helps them to perform appropriately in the target situation. This approach is useful and practical when revising, editing courses and materials. (ibid: 9)

1.9 Intervening Variables

The study aims at proving that the course designed on the basis of a learning-centered approach is most effective and is likely to enhance reading comprehension. Many intervening variables may cause some changes; the major ones are timing of the session whether in the morning or in the afternoon, stress of examinations and absences of learners.

1.10 Limitation of the Study

The present study is narrow like all scientific studies; it may be affected by the subjectivity of the researcher, learners' motivation towards the course data-gathering. These factors and some variables such as timing of the session may limit the present study in one way or another.

1.11 Preliminary Outline

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Chapter Two: Course Design

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2.6 Advantages of ESP Course Design

2.7 Issues in ESP Course Design

2.8 Factors affecting ESP Course Design

Introduction

ESP appeared as a multi-disciplinary branch to teach English for particular specialties. This branch of ELT deals more principally with learners' needs so that learners will perform adequately in the target situation. (Smoak 2003:23)

Hutchinson and Waters (1987:19) posit that ESP is an approach to language teaching. The prominent status within it is given to learners' needs. The teacher attempts as much as possible to provide her/his learners with the knowledge they need. In order to achieve the course objectives, the main task of the teacher is to design an appropriate course in accordance with the particular needs of the learners.

2.1 Definition

Diamond (2008) defines course design as a complex process that is composed of several components moving from the general to the specific. He makes a distinction between curriculum design and course design. The two notions are different for him. He affirms that "course often has little relationship to curriculum" (ibid p.4) In addition, curriculum is developed by a group of teachers, administration staff, inspectors, etc, and involves a better negotiation of the curriculum content (ibid). Courses are often developed by a single teacher or some teachers attempting to meet specific needs of a particular group of learners.

On the other extreme, Richards(2001:145) uses the terms 'curriculum' and 'course' interchangeably defining them as "a cyclical process of creating a suitable teaching and learning product out of numerous materials that may seem unpractical or irrelevant at a certain phase but may not be so at another". Further, Young (2006) tackles the notion of 'course' synonymously with the notion of 'curriculum'.

The term 'course' and 'project' can be used interchangeably since they mean the same in terms of transmitting linguistic and communicative knowledge related to a given area of inquiry (Horn *et al.* 2008; Ting 2010)

More than being just a significant characteristic of ESP, course design is a nucleus for an effective teaching- learning process. According to Smoak (2003: 25), ESP learners are totally different from those in other streams. In other words, ESP learners may not find what they need in general textbooks. They need precise texts, tasks and information in order to define what they need, and what they lack. Moreover, course design for ESP learners requires more than designing a technical language course for learners who are already mature in terms of learning experience. So, decision makers need to call a technical teacher or expert of the domain to design an effective series of lessons for a particular group of learners (Horn 2008 *et al.*). It is understandable that course design is not just a product of a series of teaching-learning experiences; but it is a process of data gathering from multi- disciplinary angles.

“Course design is the process by which the raw data about a learning need is interpreted in order to produce an integrated series of teaching- learning experiences, whose ultimate aim is to lead the learners to a particular state of knowledge” (Hutchinson & Waters1987:65)

The word ‘process’ shows that course design is not a linear act that leads to a teaching-learning product rather it is a cyclical progressive and a dynamic operation that aims at providing learners with the needed knowledge. Course or curriculum is compared to a plan of a house and pre-negotiation process where to put the living room and where to put the kitchen taking into account the space. (White 1988: 4-5)

2.2 Steps in Course Design

Like any applied linguistic process, course design is made up of a series of steps which are dependently developed. Some of the steps seem to be the same. These steps are: setting objectives, orientation, planning of the course, implementation of the course, assessment and evaluation of the course.

2.2.1 Setting Objectives

As it was stated, course design is a process composed of a series of interconnected stages. Course design is realized through setting objectives of the learners. While setting objectives, the course designer needs to investigate what the learners need English for or what learners expect the course to provide them with. In other words, a course objective is a step of determining the ends of setting the course. Objectives are set in accordance with learners' needs, building on the previous capacities of the learners (Ellis & Johnson 1994:221).

This stage is referred to as “target situation analysis” (Hutchinson & Waters 1987; Anthony 2007). After determining the needs and the target situation, the course designer needs to analyze cautiously the needs step by step and point by point. These needs may be *necessities*, *lacks* or *wants*. Even though these elements are actually momentous, the course designer must take them into account. The phase of analyzing needs should provide information about the learners, the reason behind studying English, where and when the courses take place. Side by side with the perspectives stated before, Dudley Evans & St. John (1998: 123-124), using different terminology, certify that “present situation analysis (PSA) is the corner stone of any ESP course.

For Horn (2006 *et al.*), needs analysis is the process of defining educational goals and objectives. It is such a significant component in course design which needs to be developed in collaboration with other experts in the domain. When designing a course, three steps are of great importance for effective results. The first step is defining the goals and the expectations. It examines the needs of the learners to be dealt with as course objectives. Then, course designers articulate what they expect from the course and what results they expect learners to achieve. The second step consists of setting the course, developing or adapting materials, developing an assessment component. This is better achieved when course developers work in collaboration. The last step is the negotiation of each course designers' point. It is the agreement upon what to be included in the course and what to be discarded.

2.2.1.1 Needs Analysis

Needs analysis is the process by which learners' needs are collected through questionnaires or interviews. It is the process whereby knowledge of language and

communicative acts is determined in relation to the learners' ideas. (Basturkmen 2010:17). It is at the core of any ESP course; the term 'needs analysis' is used interchangeably with – 'target situation analysis' (Chambers 1980 qtd in Basturkmen 2008:18). For Dudley Evans and St. John (1998:123-124), needs analysis includes learners' professional and personal information, English language, learners' lacks, language learning, communication facts, course objectives and facts about the course.

Hutchinson and Waters (1987: 53) confirm that needs analysis is a way of collecting data about different topics, for example, topics to be studied, the level of the participants, the skills that they want to develop, etc. These data are collected through what is called 'Communicative Needs processor' (NAP) which consists of some key questions asked in order to obtain a set of information related to the learners' needs (*ibid*: 54). In addition, target needs analysis is a general term that can be used to speak about needs analysis. It is composed of several notions surrounding the needs analysis' concept: *necessities*, *lacks* and *wants*. The first is the type of needs that must be taken into the course content (Hutchinson & Waters 1987:55).The second stands for the information that learners do not know. (*ibid*: 55).The third, '*wants*', is the type of information that learners want and desire to have. (*ibid*: 56)

A significant point that many course designers may not pay attention to is that the process of needs analysis should not be done before setting up the course. It is a process which means that needs analysis is an ongoing activity to insure the needs of the learner at each stage. (Harding 2012:17)

2.2.2 Theoretical Perspectives:

The second stage in the process of designing an ESP course is the theory or the approach followed in the designing process. According to Hutchinson & Waters (1987:21); Anthony (2007: 1) course designers need to know both teaching and learning theories so that they know what to use and what not to use. The authors emphasize the effectiveness of Communicative Approach to Language Teaching (CLT), considering it as the most convenient approach to the teaching of ESP. Applying CLT principles may be accompanied with principles other than CTL. The teacher should be smart and eclectic. S/he may take other principles from other methods or approaches. Thus, the most convenient approach to ESP teaching should be an eclectic one where learners' needs are respected. (Harding 2012: 10)

2.2.3 Materials

Another step in the process of ESP course design is the selection of materials used in the process of teaching/ learning. According to Hutchison and Waters (ibid), Anthony (ibid) a course designer herself/ himself can develop materials for her/ his own learners. The other option is that a course designer may select from the existing materials what suits her or his group of learners. (Macalister 2010:6). The third option is that s/ he may choose from existing materials, making some modifications. Not so far away from what other researchers presented, Dudley Evans and St. John (1998: 190) argue that course design can be better achieved if it is a collaborated team-work. Brunton (2009:8) assumes that the course design must follow an eclectic approach to material selection. That is, taking from various sources.

Since ESP course adopts language for communicative principles, materials should be designed or adapted following the same approach. Materials used for developing reading skills within CLT, should focus on both the textual features of the text and the contextual ones.

The use of authentic materials in ESP, simplified or non simplified, is an important feature of ESP courses. They are considered as means to foster learning. Dudley Evans and St. John (1998:190) consider authenticity a controversial area. For them, there are two types of authenticity: authenticity of materials and authenticity of objectives. The former is referred to as respectability of the purpose or the aim of the ESP course. Whereas the latter refers to the authenticity of the tasks, activities used as simulation of real life activities. The selection of such authentic tasks is related to the target needs of the learners.

A reading material designer should pay attention to reading strategies such as: skimming, scanning, meaning prediction, etc (Goodman 1979 qtd in Dubin & Olshtain1991). The material designer also needs to take into consideration the features of the text, the textual and the discoursal. (Dubin & Olshtain 1991:148-149). Finally, material developer needs to know the characteristics of the learners for whom s/he designs the materials. (ibid: 148-149)

2.2.4 Assessment

Assessment is another step in the process of course design which needs to be dealt with in a detailed way. A good definition of a methodology will pave the way to an effective course design and hence to assessment. (Anthony 2007)

Assessment or evaluation methods can be qualitative or quantitative. It is an effective way to collect data about the effectiveness of the courses and syllabi(Kiely & Ria Dickins 2005: 152). In the present inquiry, we will adopt the qualitative method to assess the quality of the course from the learners' point of view.

Not so far away from what has already been said, Brown (1995: 29-30) holds that the assessment component is automatically defined with the course design methodology.

2.3 Approaches to Course Design

2.3.1 A Language-Centered Approach to Course Design

A language- centered approach to course design is an approach that focuses on the linguistic performance of the learner in the target situation Hutchinson and Waters (1987: 65). The diagram introduced below elaborates the prominent status of language. This approach starts from the learning situation and theoretical perspectives on language learning to the choice of linguistic items, syllabus, material and evaluation. This model contains some of the perceptions which were firstly introduced by Tyler (1949 qtd in Richards 2001: 39-40) in the “the systematic approach to curriculum design”

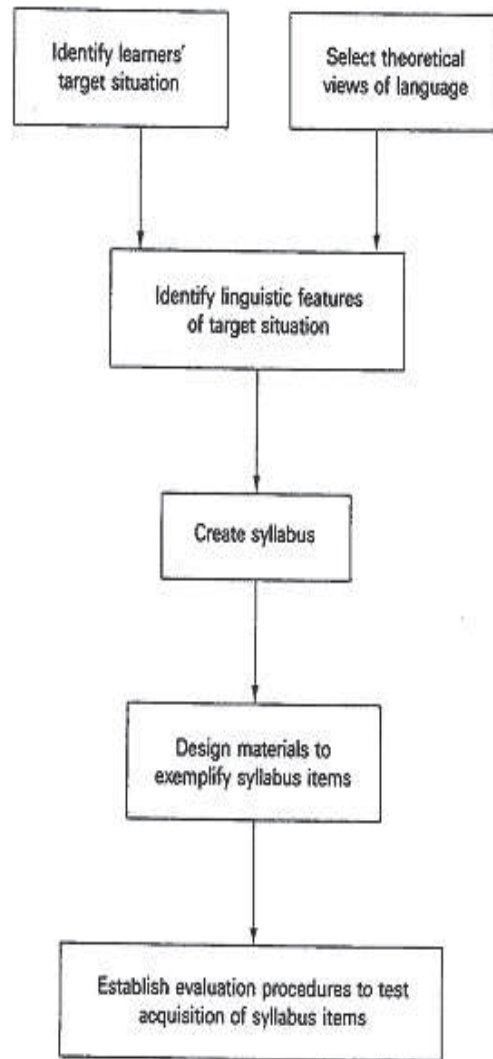


Figure 1: A language centered approach to course design (Hutchinson and Waters 1987: 65)

Even though this model seems logical, it has been criticized on account that it neglects the learners' needs which are the key notion of ESP. Wilkins (1976: 10-11) assumes that structural or a language-focused syllabus is linear and does not give the chance to remedial work or revision.

2.3.2 Skills- Centered Approach to Course Design

As a reaction to the over-concentration on the surface performance by learners, a skills-centered approach to course design is the prevailing way to get rid of some inadequacies that were presented by previous approaches. The term skills- centered can be used interchangeably

with “Process oriented courses”. (Widdowson 1981; Holms 1982 qtd in Hutchinson and Waters 1987: 69)

This model concentrates on competence, performance and objectives identified by the process of learning. In other words, the learner usually learns with specific goals and objectives. Skills- centered approach gives the chance to the learners to achieve what they need focusing on a given skill, reading, writing, etc. (Hutchinson & Waters 1987: 69-71)

“the process- oriented approach...is at least realistic in concentrating on strategies and processes of making students aware of their own abilities and potential, and motivating them to tackle target texts on their own after the end of the course, so that they can continue to improve.”(Holms 1982 qtd in Hutchinson and Waters 1987: 70)

According to Holms (ibid), skills-centered approach to course design focuses on determining the strategies that ESP learners aim at and need to develop. It also focuses on post courses improvement of the learning strategies.

2.3.3 Learning -Centered Approach to Course Design

Before the advent of ESP, courses were mainly designed on the basis of *Register Analysis*. But within ESP, courses become learning-centered ones. This approach to course design emphasizes the learners’ needs and the target situation analysis. (Dudley Evans & St. John 1998:26).

A learning-centered approach appeared as a reaction to the over emphasis of the structural studies. The functional notional approach is most likely to be applicable to programs the platform of which is the learners’ needs (Ash Shammari & Al Sibai 2005:6). It was firstly applied to classroom teaching then it was generalized to other domains.

2.4 Typology of ESP Courses

According to Dudley Evans & St. John (1989:146) there are two types of courses: intensive and extensive. They are two opposite notions. The first stands for a course that is

designed to be implemented in a short and limited period of time. Whereas the second type of course refers to courses that are designed to be taught in long period of time. Generally speaking, extensive courses are widely known in English for Academic Purposes (EAP) (ibid: 146). In the case of the course design for CS learners who need to study extra courses as feedback for their examination, intensive course is the most appropriate one.

In ESP, courses may be of two types in terms of broadness and narrowness. A narrow-angled course is a course where the degree of specification is high. This type of course is related to the type of the learners and their professional streams. Wide-angled course is the type of the course that has broad objectives. This type is related mainly to the nature of the learners' specialization; thus the more the field is limited the narrower the course is. (Basturkmen 2008:25-26)

2.5 Features of ESP Course Design

José Luzón Marco(2002) sees that ESP is a goal- oriented discipline the main objective of which is to build a state of knowledge in the learner' mental baggage, enabling him/her to communicate appropriately in the target situation. Consequently the features of ESP course design serve its main objective.

It has always been a difficult task to design a course for foreign language (FL) learners because it requires efforts to prepare a coherent and cohesive language program as a starting point. Besides, it requires a clear statement of the methodology of teaching and learning and the correlated materials and evaluation procedure (Diamond 2008: xiv)

Purpose- related orientation is the first feature of an ESP course which refers to the communicative characteristic of an ESP course. Technically speaking, ESP is to teach communicative and functional language use in order to enable the learner to act appropriately in the target situation. Therefore, the tasks devised by the teacher are a kind of real life simulation (Carver 1983). Course designers' main task should comply with the needs of the learners.

The second feature of an ESP course is the common core content of the course. Young (2006) assumes that in some cases where ESP is taught to groups of specialized learners with pre-defined needs, the content of the course has a kind of general or basic knowledge.

Moreover some ESP teachers attempt to transfer and apply some principles of learning General English in ESP context (Young 2006). Hutchinson and Waters (1987) state that many general courses' components: skills, tasks, grammatical elements, etc. can be used in ESP courses. These elements should be used in harmony for the betterment of the learning process.

2.6 Advantages of Course Design

One of the advantages of ESP course design is that it facilitates the learning process Diamond (2008:3) states that efforts to prepare a course that fits the learners' needs will have a great impact on the behaviors, grades, achievements not necessarily in the classroom but also in real life performance. For Horn, Stoller, and Robinson (2008:3), studying ESP in general with a pre-prepared course enables the learner to hit two birds with one stone: learning the language and the needed knowledge in their area of specialty.

2.7 Issues in ESP Course Design

The main point that has always been controversial is the breakdown of the contact between the aims to be achieved and the real setting needs of the learner (Diamond 2008: 4) Even though designing a course seems to be an easy work but in many cases and in variety of domains and branches designing a program with all its components is really a difficult task to be handled in a short period of time. In other words, curriculum design takes much time when deciding about the objectives and goals of the program. The course designer must be knowledgeable and active, because s/he is asked to gather and synthesize data in general English and in the learners' specialty.

For Horn, Stoller, and Robinson (2008: 5) a serious point should be controlled when designing a course. It is the agreement of the course designers upon the course content, methodology, etc. In case there are conflicts or disagreements between the designers of the project, this will be strongly reflected when applying it.

A valuable course should be carefully designed so that the designer would not over concentrate on the grammatical aspects of language at the expense of the communicative ones which are the core of an ESP project (Dudley Evans & St. John 1998:26)

Even though needs analysis seems a simple task, it turns to be hard in an EAP context where learners are likely to be aware of their needs in the target field. (Ash-

Shammari & Al-Sibai 2005:5-6) So, the confronting situation is to define the needs of the learner and to know the target situation which learners will be put in, and the way needs are achieved and effectively dealt with (Harrabi 2010:3-4)

For Basturkmen (2006: 25) both types of courses, narrow and wide-angled course ones are seen as an issue that may cause trouble when being designed. Narrow and wide angle courses are heavy points that must be taken care of. This issue is related to the area of study of the learners and the common core that may differ from one learner to another according to the age of learning.

2.8 Factors Affecting Course Design

Some prevailing elements that may come into play have to be taken into account by the course designer in order for his/her work to be accepted. The theory of learning is among the important factors that can render the work great or just a drafting useless work. Hutchinson and Waters (1987:39) refer to the theories of learning as the approaches and perspective which have long before dealt with the way a language can be learned. The second affecting factor that the course developer should be aware of is needs analysis. The course is required to gather data about the learners, why they need to study English, the target situation where they will use English in and where the course will take place. The third element, according to Hutchinson and Waters (1987: 24) is language description and what other learning schools of thought have said about language and the way it is learned

Language description can be considered as literature review of language studies. In figure (2) below, if the three elements (learning theories, language description and needs analysis) are not highly controlled and appropriately contextualized they will affect the course effectiveness. The following diagram extracted from Hutchinson and Waters (1987: 24) provides an explanation of the elements that may affect course design and the relationship among these elements. Through this diagram, many ambiguous concepts are clarified such as the relation between language description and learning theories.

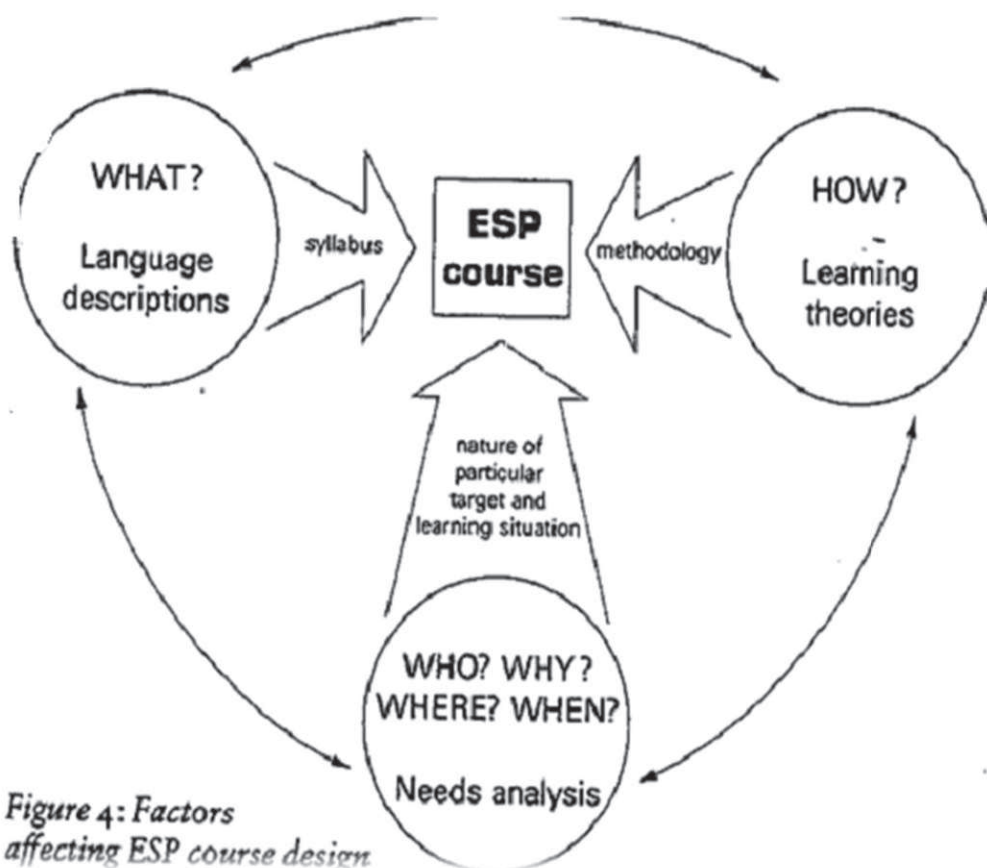


Figure 4: Factors affecting ESP course design

Figures (2) Affective factors in course design (Hutchinson and Waters1987: 22)

The three interrelated elements: language learning, language description and needs analysis affect the course design in the sense that the nature of language learning differs from one learner to another, and the learning process itself is affected by the reason for learning, the setting and the timing. Moreover, learning a given skill is not the same as learning the whole language. So, the course developer should take care of the elements and their sub-components.

2.9 Syllabus Design

According to Dubin and Olshtain (1991: 28) a syllabus is defined as report of a set of concepts and principles that are significant for the course designer. The syllabus helps the course designer to limit the scope of his/her work when designing the course and developing material. The term “syllabus” may be used interchangeably with ‘curriculum’, ‘plan’, or even ‘course’.

According to Yalden (1989: 87) Syllabus is defined as a "summary of the content to which learners will be exposed".

There are four types of syllabi according to Dubin and Olshtain (1991: 37):

- **Structural- grammatical syllabus:** This type is used when the course designer aims at introducing grammatical notions and concepts.
- **Semantico-notional syllabus:** is kind of syllabus that focuses on introducing semantic entities of language. It provides information in the form of themes, for example, expressing gratitude.
- **Functional syllabus:** is a kind of syllabus that spotlights the communicative aspect of language use. It is mainly used in teaching ESP.
- **Situational syllabus:** this syllabus focuses on situational uses of language.
- **Communicative Syllabus:** CLT comes to expand the previous approaches and to present language from a communicative angle. It adds some ingredients to the area of language teaching, such as functions/ notions, appropriateness of use and discoursal use of language. Communicative syllabus focuses on the "process" which means the concentration on the workouts or activities that enhance learning. (Dubin and Olshtain 1991: 88-102)

In line with CLT precepts, CS learners need to develop their reading comprehension capacities; so the teacher is required to focus on providing his learners with different reading materials, then learners can choose what fits them. (ibid)

Conclusion

In this chapter, we have dealt with several key points in the process of ESP course design. We have reviewed some definitions of course design, steps in ESP course design, approaches to ESP course design. In addition, we have discussed the different types of course design, its features, its advantages, issues and some factors that may affect ESP course design. We end up with defining the syllabus and stating its types.

It is obvious that the process of designing a course is not an easy task that can be handled in a short period of time. Researchers and applied linguists confirm that course design must be taken care of to comply with the learners' needs.

Chapter Three: Application

Introduction

3.1 Computer Science Course Design

3.2 Computer Science Syllabus Design

3.3 Computer Science Materials

3.4 Computer Science Course Assessment

3.5 Discussion

Conclusion

General conclusion

Introduction

After having examined the main points in course design for ESP learners, the present chapter is devoted to applying what has been discussed so far. The chapter contains lessons for CS learners. Then, a questionnaire is administered to assess the course' effectiveness. The results obtained from the questionnaire are analyzed and discussed to see course' effectiveness.

Course design for computer sciences learners
(The case of computer science learners at the University of Ghardaia)

Session	Topics discussed	Function	Language focus	Tasks	Duration
01	-Introduction to the course. -Printers	-Giving instructions	-The imperative form	-Correct the incorrect sentence -Cross words	01hour
02	-Internet -Key notions related to the Internet	-Describing	-Terms used in defining and describing	-Define items -Fill in the gaps	01hour
03	-Common computer problems	-Describing processes	-Sequencing words	-Use the words in bold	01hour

Esteras R.S.(2004) Infotech: *English for Computer Users*. Cambridge: C U P.

Brookshear, J. G.(2007) *Computer Science : An overview*. PEARSON.

User-guide of computers and printers.

Syllabus design for computer sciences learners

(The case of computer science learners at the University of Ghardaia)

Content	<p>Unit01 : English for Computer Sciences</p> <p style="text-align: center;">Lesson 01: Printers → Giving instructions (p.01)</p> <p style="text-align: center;">Lesson 02: Internet → Describing functions(p.03)</p> <p style="text-align: center;">Lesson 03: Computer problems → Describing processes(p.06)</p>
Goals	<p>By the end of the course Computer Sciencelearners will be able to :</p> <ul style="list-style-type: none"> ✓ Interact in English when they use computers. ✓ Read materials written in English that are related to their area of study. ✓ Perform well in their examinations.
Assessment	<ul style="list-style-type: none"> ✓ Computer Science learners will not be assessed ✓ The course is assessed using a qualitative mode of assessment, a questionnaire.
Course Objectives	<ul style="list-style-type: none"> ✓ The course is expected to attract learners to English for Computer Sciences. ✓ Learners expect the course to provide them with information about how to surf the net and to communicate using computers. ✓ The course complies with 98% of the learners' needs.

The course model is adapted from: Kaur, S. 1(14), volume 6 (2007) "Matching Learner Needs to Aims". *ESP World*. www.esp-world.info/Articles-14/DESIGNING%20ESP%20COURSES.htm

The syllabus is adapted from: www.umn.edu/ohr/teachlearn/syllabus/index.

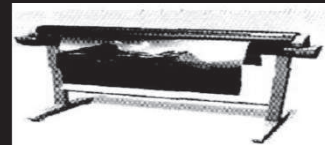
Printers



Ink jet multi-function



Dot matrix printer



Plotter

1. Definition

Printers are defined as an **output device** that enable PC users to print texts and graphics on sheets with the help of the **printer-driver** that converts data into instructions that the PC understands. **Print spooler** is like a queue which enables the user to change the order. The resolution of the printing is measured in dpi (dots per inch). The speed is measured in accordance with the number of pages printed per minute. One printer can be used by different users (**Print-server**).

Among the uses of the imperative form is to give instructions.

2. Installing your printer

Printers usually come with their CDs.

Windows contains drivers for multiple

printers. All you need is to open **start menu**, then **peripherals and printers** double click **add printer** icon, click the **next button** and select a **local printer** then select a port such as LPT1 or USB in most cases. Select the type of printer that you have, then, click **next button**. A window appears asking you to print a **test page**. The final step is to click the **Finish icon**.

To avoid printing problems, check **print preview button**, then, open the **file menu**, then, **print preview**, and look for the following: Chopped text, strange page breaks, overall appearance. You also need to check the **page layout**. It includes **margins** (the space you want to leave on the paper), **page size** (the size of the paper you have) and **print direction** (vertical or horizontal).

Tip: At the end of your document you may have a blank sheet, if so you might have pressed the enter key many times; so to avoid it press the arrow key.

Check

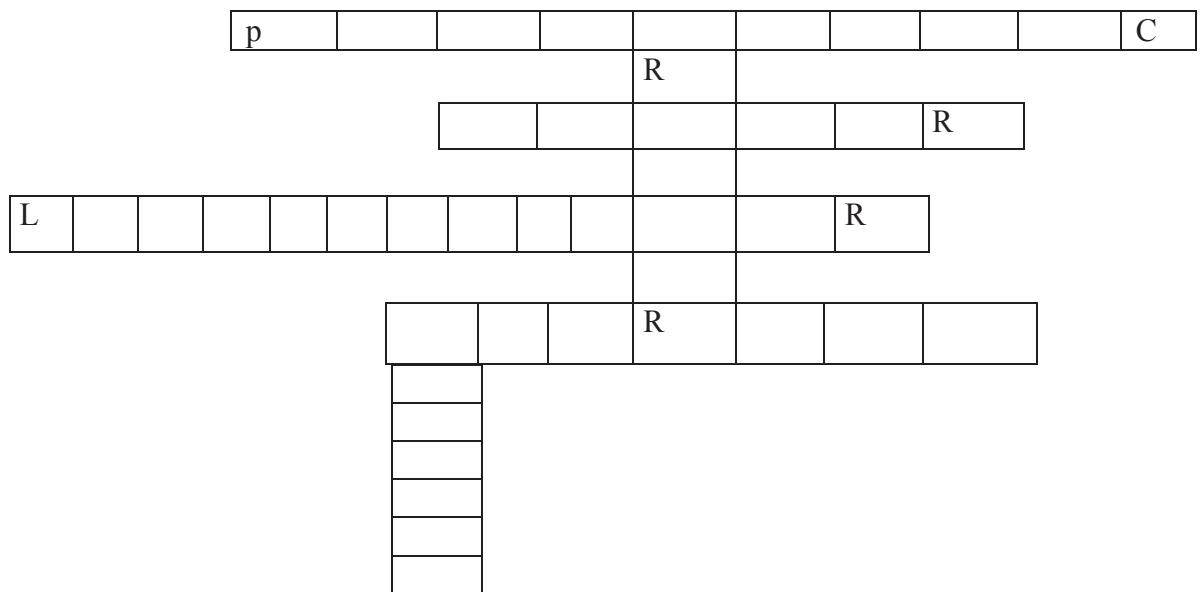
- ✓ Before printing click the print preview button to see how it may appear after printing.
- ✓ To check the page layout settings, open **File** menu and click page **Setup**.

- ✓ To quickly print documents click the print button.
- ✓ To cancel a printing task; double click the **printer icon** on the right end of the taskbar to display the print manager then, choose what you want from **File menu**.

Task one: Read the information above then correct the mistaken statements

- All you need is to click the printing button and no more than this.
.....
- Windows program has no drivers included.
.....
- The only access to the icon printer spooler is through a word document.
.....
- Data are converted to a language that the PC understands.
.....

Task two: Write the words in bold stated above in the crossword that follows:



Adapted from:

Remacha Esteras,S.(2004) Infotech : English for Computer Users. Cambridge: Cambridge University Press.

Brookshear,J. G.(2007) Computer Science : *An overview*. PEARSON.

User guide of computers and printers



What is the Internet?



1. Definition

The internet is an international computer network made up of thousands of networks connected together. They exchange data and information. **TCP/IP** is a protocol or language (**Transmission Control Protocol/Internet Protocol**). Every computer has an **IP number** that identifies it on the net.

2. How can I connect to the net?

To connect to the internet:

- Firstly, you need the right internet software
- Secondly, you should have a modem that converts digital data into analogue signals that can be transmitted over a telephone line.
- Finally , you need a telephone and cables (internal or external)

3. Useful definitions

ADSL: is defined as an **Asymmetric Digital Subscriber Line**. This allows you to use the cable for both phoning and internet.

WIFI: is the technology that enables internet users to connect wirelessly.

E-mail: is considered as the technology that enables internet users to exchange data and information via electronic messages.

Mailing list: or **list-server** that is based on programs that send messages on a certain topic to all the computers whose users are included in the list.

Chat: or **instant messaging** stands for real time conversation.

Internet telephoning: a system that is used for making voice calls via the Internet.

Video conference: a system that allows the transmission of audio and visual signals in real time.

Newsgroup: is a space where people can send and respond to public bulletin board messages stored on a central computer.

TELNET: a program that enables a computer to function as a terminal working from a remote computer and so use online database or library catalogue.

Languages focus: when speaking about functions and defining objects we may use expressions such as: **is used to, is defined, etc.**

Eg. Camera **is used to** store images as digital data.

A printer **is defined** as an output device.

Task one: Choose the right word from the above stated information for the definitions stated below:

- The act of receiving daily updates and headlines from newspaper on the PC. (.....)
- The act of doing a research and to have a way to the university library. (.....)
- Attending conferences from your home of desk. (.....)
- The act of reading people's opinion. (.....)
- Designing and publicizing data on your space. (.....)
- Reading students' drafting and sending correction to them. (.....)
- Hearing voice of friends on the net. (.....)

Task two: Fill in the gaps with the correct word:

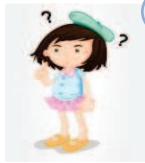
Modem password online download
TELNET hyperlink web protocol

- ✓ When you are connected to the internet you are described as being
- ✓ Ais a piece of text or an image that takes you to other internet site., when selected,
- ✓ The internet is based on a.....called TCP/IP.

- ✓ You need a to convert computer data into a form that can be transmitted over the phone line.
- ✓ Users have to enter the log-in name and ato gain access to the net
- ✓ FTP software allows you to.....files from the net to your computer.
- ✓ The World Wide Web is known as the.....
- ✓ To 'log on' to a remote computer you need to run aprogram

Adapted from:

Esteras, R.S. (2004) Infotech : English for Computer Users. Cambridge: CUP.
Brookshear, J. G.(2007) Computer Science : An overview. PEARSON



Problems are not always due to viruses but to the installation of new devices' software.

Do you have a problem with your PC?

1. Onscreen messages

If you have **Onscreen messages**, at first, check your monitor in case any message appears. Then, Check if everything is plugged in by turning off all the applications and even the hardware. After that, you need to remember when the problem starts because installing a new program, entering commands or adding new devices may cause problems. If the problem appears repeatedly, it may be related to your computer or the windows.

To prevent such a problem one solution is perfectly useful:

Firstly, click the **Windows Start** button, point to **All Programs, Accessories, System Tools**, and then click **System Restore**. Secondly, click **Restore my Computer** to an Earlier Time and click **Next**. Finally, choose a date to refer to. Dates are accompanied with some programs or what is called points, then, click **Next**. Bear in mind that **System restore** may take some time.

2. My computer does not start

Tip: firstly, secondly, thirdly, finally then after that are called ordering words or sequencers

Check if your PC is turned on. Then, check if your PC is **plugged into** the **surge suppressor** or **UPS**, make sure the power is turned on. If you see a message “**Non-system disk or disk error**” maybe you forget a **Floppy disk** or **CD** in one of the drivers. In order to solve some problems you can use the floppy disk accompanied with your PC to figure out the problem that windows has. This step needs to be done under the supervision of an expert

Task one: From your own experience with computer interface, choose a problem that you faced and tell your friends how you solved them. Use the ordering words when talking about the process.

I was using my computer then-----

(Adapted from: User- guide of computers)

Assessment of course effectiveness

Put a cross in the appropriate box:

1. Is the course relevant to your studies?
 - ✓ Yes
 - ✓ No
 - ✓ Somehow
2. Does the course serve your needs?
 - ✓ Yes
 - ✓ No
3. Is the quality of teaching
 - ✓ Excellent
 - ✓ Acceptable
 - ✓ Bad
4. Have you benefited from the course?
 - ✓ Very much
 - ✓ Enough
 - ✓ Little
 - ✓ Not at all
5. Did the course provide you with new knowledge?
 - ✓ Vocabulary
 - ✓ Grammar
 - ✓ Communication skills
6. The organization of the course is
 - ✓ Excellent
 - ✓ Good
 - ✓ Average
7. What do you suggest?
 - ✓ Home-works
 - ✓ Extra sessions
 - ✓ Other topics
 - ✓ No change
8. What impressed you the most?
 - ✓ Methodology of the teacher

✓ Grammar tips

✓ Organization of the lectures

9. Does the course help you perform well in your examination

✓ Yes

✓ No

10. Which of the techniques do you prefer?

✓ pair- works

✓ Lectures

✓ Discussion

11. The lessons' handouts are :

✓ Helpful

✓ Un -helpful

Many thanks

3.5 Discussion

3.5.1 Analysis of the questionnaire of course' effectiveness:

Question 1: Is the course relevant to your studies?

- ✓ Yes
- ✓ No
- ✓ Somehow

Options	Number	%
Yes	27	90
No	0	0
Somehow	3	10

Table 3.1: Course relevance

From the results recorded above, it s clear that 90% of computer science learners considers the English course relevant to their studies. For 10% of the whole sample the course is relevant to a given extent. The last option has been left (0%).

Question 2: Does the course serve your needs?

- ✓ Yes
- ✓ No

Options	N	%
Yes	25	83.33
No	5	16.66

Table 3.2: The needs of the learners

About 83.33% of CS learners hold that the course complies with their needs that were previously obtained from the questionnaire of needs analysis. 16.66% of the learners think that the course did not comply with what they need and expect.

Question 3: Is the quality of teaching

- ✓ Excellent
- ✓ Acceptable
- ✓ Bad

Options	N	%
Excellent	20	66.66
Acceptable	9	30
Bad	1	3.33

Table 3.3: The quality of teaching

The majority about 66.66% of CS learners consider the quality of teaching as being excellent whereas 30% think that the quality of teaching as being acceptable. The remaining percentage, (3.33%), considers the quality as being bad.

Question 4: Have you benefited from the course?

- ✓ Very much
- ✓ Enough
- ✓ Little
- ✓ Not at all

Options	N	%
Very much	6	30
Enough	20	66.66
Little	04	13.33
Not at all	0	

Table 3.4: Learners' benefits from the course

It is noticed that the majority of the learners (66.66%) have benefited from the course to the extent they expect. About 30% of the learners profited a lot from the course. Whereas 13.33 % sees that the course has provided them with little knowledge.

Question 5: Did the course provide you with new knowledge?

- ✓ Vocabulary
- ✓ Grammar
- ✓ Communication skills

Options	N	%
Vocabulary	19	63.33
Grammar	3	10
Communication skills	8	26.66

Table 3.5: Course' knowledge

The results expressed in the table 3.5 illustrate that the learners (63.33%) have achieved new knowledge in vocabulary; and 26.66% of the learners have profited from communication skills.10% have obtained new knowledge in grammar.

Question 6: The organization of the course is:

- ✓ Excellent
- ✓ Good
- ✓ Average

Options	N	%
Excellent	9	30
Good	21	70
Average	0	0

Table 3.6: Course' organization

This question is about the efficiency of the course for CS learners. About 70% of the whole proportion sees that the organization of the course is excellent whereas 30% think that it is good. The last option has been left 0%.

Question 7: What do you suggest?

- ✓ Home-works
- ✓ Extra sessions
- ✓ Other topics
- ✓ No change

Options	N	%
Home-works	8	26.66
Extra sessions	18	60
Other topics	4	13.33
No change	0	0

Table3.7: learners' suggestion

After the end of the course, learners' suggestion would be very important to know whether learners were interested with the course or not. 60% of the learners suggest having extra session; 26.66 % recommends having home-works. The remaining percentage (13.33%) suggests dealing with extra topics.

Question 8: What impressed you the most?

- ✓ Methodology of the teacher
- ✓ Grammar tips
- ✓ Organization of the lectures

Options	N	%
Methodology of the teacher	13	43.33
Grammar tips	2	6.06
Organization of the lectures	15	50

Table3. 8: learners' impression about the course

For 50% of computer science learners the most impressing component in the course is the organization of the course; and 43.33% see that the methodology of the teacher is also make an impact on them. 6.06% think that grammar tips are also important.

Question 9: Does the course help you perform well in your examination

- ✓ Yes
- ✓ No

Options	N	%
Yes	28	93.33
No	2	6.66

Table 3.9: the importance of the course to the learners' examination

This question is asked to know whether the course is important and helpful to the learners' examination. 93.33% holds that the course is of great help for their examination; and 6.66% sees that the course has nothing to do with their examination.

Question10: Which of the techniques do you prefer?

- ✓ pair- works
- ✓ Lectures
- ✓ Discussion

Options	N	%
Pair-work	03	10
Lectures	02	6.66
Discussion	25	83.33

Table 3.10: the preferable technique

From the results stated above, it is obvious that the majority of the learners (83.33%) prefer the discussion technique. For 10%, pair work was admirable. About 6.66% prefer lecturing.

Question 11: The lessons' handouts are:

- ✓ Helpful
- ✓ Un -helpful

Options	N	%
Helpful	29	96.66
Un-helpful	01	3.33

Table 3.11: the lesson handouts

The handouts for about 96.66% are helpful in the learning process whereas; 3.33% consider the handouts unhelpful.

Discussion:

After the implementation of the course, some key components and principles have been proved. The course is designed on the basis of a learning-centered approach to course design; the teaching process is also based on the Communicative Approach to Language Teaching. The aim of this inquiry is to design a learning-centered course for CS learners and implement it to investigate the extent to which this approach complies with the learners' needs. The results obtained from the questionnaire of course' assessment illustrate that learners approved the course in general. The most important aspect that impressed the learners is that the course served their needs and meets their expectations so as to perform well in the target situation. This conforms to what has been said by Dudley Evans & Maggie (1998: 26) in Chapter Two.

Lessons' organization focuses on presenting notions and functions of language without neglecting grammatical aspects. This feature is at the core of any communicative syllabus as argued by Dubin & Olshtain (1991:88-102) in Chapter Two.

The results of course assessment show that the course had positive effects on CS learners to the point that the majority of them suggested having extra sessions after their examinations.

Conclusion

To conclude, the learning –centered approach to course design is of great importance to ESP learners. It gives them the opportunity to see that the course serves their needs. It also helps them to perform appropriately in the target situation. So, the point to be highlighted is that learner-centered approach to course design is of great importance in developing an effective course for computer science learners.

General conclusion

The present research is about ESP course design in general. It adapts a learning-centered approach to course design. Before dealing with course design, a questionnaire about needs analysis was administered and analyzed to define learners' needs. After teaching the course, an assessment questionnaire was administered to learners to evaluate the course effectiveness.

After the analysis of course assessment questionnaire, it appeared that learners benefited a lot from the course. They also approved the course organization and the way it complies with their needs. So, teaching ESP in general and CS learners in particular require an approach that deals with their real needs.

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Appendix: A questionnaire of needs analysis

Put a cross in the appropriate box:

1. Do you think that English is important in your study?
 - Yes
 - No
2. Do you think that English language is:
 - Interesting
 - Not interesting
3. What do you need an English course for?
 - To use the PC
 - To surf the net
 - To communicate in English for Computer Science
4. Is one session per week enough?
 - Yes
 - no
5. The difficulty that you face is due to:
 - The methodology of the teacher
 - The time of the lecture
 - The coefficient of the module
6. What is the main difficulty that you face in English when you use computer?
 - Vocabulary
 - Structure of the sentences
7. What is the main part of a computer that you need to study in English?
 - Hardware
 - Software
8. Which of the following elements you think you need to study ?
 - Printers
 - Magnetic Drives
 - Operating system
 - Graphical user interface
 - Data Bases
 - Internet

9. Do you suggest studying other topics?

-
-

Analysis of questionnaire of needs analysis

The questionnaire was administered twice to sixty (60) Computer Science Learners. The aim was to ensure that learners grasped the meaning of the questions.

Question 1: Do you think that English is important?

- ✓ Yes
- ✓ No

This question aims at defining learners' attitude towards English in general and learning it in particular. It also gives the chance to the course designer to know whether learners are motivated to learn English or not.

Importance of English	N	%
Yes	45	75
No	15	25

Table1.1: The Importance of English to CS learners

Table 1.1 indicates that 75% of the respondents consider that English is important either for their studies or for their career. While 25% of the respondents answer “No” which means that they are not interested in English or they consider it as unimportant.

Question 2: Do you think that English is interesting?

- ✓ Interesting
- ✓ Not interesting

This question is about knowing if the respondents are interested in studying English or not. The answer is important for the course designer to know whether Computer Science learners are motivated to learn ESP or not.

Options	N	%
Interesting	48	80
Not interesting	12	20

Table 1.2 Learners' interest in learning English

Table1.2 above shows that about 80% of learners see that English is interesting maybe because of its importance or its usability. On the other extreme about 20 % see that English is not interesting.

Question 3: What do you need English for?

- ✓ Use PC
- ✓ Surf the net
- ✓ Communicate English for Computer Science

This question is asked to know what computer science learners need English for. It is at the core of any ESP course. (Hutchinson & Waters 1987)

Options	N	%
Use the PC	15	25
Surf the net	18	30
Communicate in English for CS	27	45

Table1.3 The reason of learning ECS

Table 1.3 shows 25% of CS learners need English to use PCs; 30 % need it to surf the net. While 45% need English to communicate.

Question 4: Is one session per week enough?

- ✓ Yes
- ✓ No

Sometimes the number of sessions is important for both course designer and learners. Sometimes learners are not satisfied with one session per week.

Number of sessions	N	%
Yes	20	33.33
No	40	66.66

Table1.4: Number of sessions per week

It seems that 66. 66% of CS learners see that one session per week is not enough. While 33. 33% of the respondents think that the sessions they have are enough.

Question 5: The difficulty that you face is due to:

- ✓ The methodology of the teacher
- ✓ The timing of the session
- ✓ The coefficient

The previous question aims at defining the actual obstacles that prevent CS learners from getting coping with the course.

Options	N	%
Methodology of the teacher	20	33.33
The timing of the session	10	16.66
Coefficient	20	33.33

Table 1.5: Difficulties facing learners

About 33.33% of the respondents face two major problems: methodology of the teacher and the coefficient. 16.66% of CS learners think that the timing of the session is not appropriate.

Question 6: What is the main difficulty that you face in English?

- ✓ Vocabulary
- ✓ Structure of the sentences

Most of the time, learners' failure is due to the difficulty of the test than a difficulty in the course itself. The present question aims at defining the area of difficulty that learners face in English for Computer Science.

Options	N	%
Vocabulary	38	63.33
Structure of the sentence	22	36.66

Table 1.6 Difficulties facing learners in learning English as FL

From table 1.6, 63.33% of learners consider that the main obstacle that they face when they learn English is vocabulary. Whereas 36.66% think that the structure of the sentence is the cause of their failure in English.

Question 7: What are the main parts of a computer that you need to study in English?

- ✓ Hardware
- ✓ Software

Question 7 is asked to examine what learners want to study in the computer in general.

Need of the learners	N	%
Hardware	47	78.33
Software	13	21.66

Table 1.7 Learners' needs in the computer

78.33% of Computer Science learners prefer to study Hardware whereas 21.66% prefer to study software.

Question 8: which of the following elements do you think you need to study?

- ✓ Printers
- ✓ Drives
- ✓ Operating system
- ✓ Interface
- ✓ Data base
- ✓ Internet
- ✓ Computer problems

This question is at the core of the course. Learners choose what they need and want to study in English.

Options	N	%
Printers	18	30
Drives	05	8.33
Operating system	03	05
Interface	00	00
Data base	02	3.33
Internet	17	28.33
Computer problems	15	25

Table 1.8 Course contents

Table 1.8 shows that learners choose what they need to study mainly printers (30%), Internet (28.33%) and computer problems (25%). On the basis of these results, the course designer will design the course that serves the needs of the learners.

Question 9: Do you suggest other topics?

- ✓ Operating system
- ✓ Web design

Options	N	%
Operating system	02	3.33
Web design	03	5

Table1.9: Learner's suggestions

3.33% of the respondents suggest studying the operating system, whereas 5% of the learners suggest studying web designs.

Results

The results obtained from the analysis of the questionnaire show that CS learners are interested in studying English, but they consider the methodology of the teacher and the coefficient of the module as the major causes of their failure. CS Learners aim to study ECS so as to be able to communicate in their field of study, using English. The majority of the learners need to have English courses to know how to read texts in their specialty. The majority them choose to study printers, internet and computer problems.