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Skills-Centred Approach for an ESP Course Design: Case of Master Physics Students Writing Scientific Papers at the University of Tlemcen

Thesis submitted to the department of English in candidacy for the degree of Doctorate in ESP

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Mr. Abdelkader BENSAFA

Date: 17/12/2015

Signature

Dedication

This work is dedicated to all whom I know with a special emphasis on:

- ✓ My parents who have supported me during all the stages of my life from birth up to now.

- ✓ My brothers Youcef and Abdessami as well as my sister Yasmina.

- ✓ Mr. Said MAHIDDINE and Mr. Sliman MEGUAGUI , who were, still are, and will continue to be my primary source of knowledge due to their endless support , psychological help, and pieces of advice without which I could not reach the end of this work

- ✓ My best friends: Youcef, Merouane, Redouane, Boumedien Noureddine, Abderrahim KACHOUR, Noureddine BENZEMRA, Djilali, Larbi, And Mustapha.

Abstract

The 21st century is characterised by its rapid shift towards a global as to a technological movement. To this end, many disciplines witnessed many changes. The domain of education is not an exception. A part from this, English for Specific Purposes (ESP) is seen nowadays as a critical agent in resolving many problems in different domains where English is taught. The spread of teaching English as a foreign language (EFL) is becoming more than necessary due to the process of globalisation; however the methods applied as to the techniques used while teaching English in general, and in ESP situations in particular, represent an arena of defeat for both teachers and students. Amongst the difficulties, writing in English and more precisely a scientific paper is likely to be the main concern. The main objective of this thesis is to investigate the difficulties encountered by master physics students at the University of Tlemcen while writing their scientific papers. For this purpose, a case study was conducted as a research field work. The data collected from a semi-structured interview, a questionnaire, and content analysis were analysed both quantitatively and qualitatively. The main results obtained revealed that the difficulties lie in terms of format and content. This is why; it is strongly believed that rethinking about the ESP course is more than needed. Besides, training language teachers to cope with those difficulties should alert the whole staff to ensure that training.

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List of Acronyms

APA American Psychological Association

CACI Chambre Algérienne de Commerce et d'Industrie

CAD Computer-Aided Design

EAP English for Academic Purposes

EBE English for Business and Economy

EGP English for General Purposes

ELT English Language Teaching

EOP English for Occupational Purposes

ESL English as a Second Language

ESP English for Specific Purposes

ESS English for Social Sciences

EST English for Science and Technology

EVP English for Vocational Purposes

GVC Group of Virtual Communication

ICT Information and Communication Technology

ISDN Integrated Services Digital Network

MA Master of Art

MLA Modern Language Association

MSN Microsoft Network

Ms Word Microsoft Word

NA Needs Analysis

NCP Communication Needs Processor

PC Personal Computer

SPSS Statistical Package for Social Sciences

TFL Teaching Foreign Language

UK United Kingdom

VESL Vocational English as a Second Language

VC Video Conference

WW1 World War 1

List of Abbreviations

Cm   Centimetre

Ed   Edited

Etc   Etcetera

Ibid   in the same place/ in the same reference

M   Millimetre

Ml   Mile

No   Number

Ok   Oklahoma

Pa   Pascal a unit of pressure

Qtd   Quoted

TV   Television

V   Volt

Vol   Volume

General Introduction

General Introduction

The 21st century has resulted in a huge expansion of technology, the spread of English based on what is generally viewed as the *Americanisation* of the world under the concept of *globalization*. Globalization is seen as a process of interaction and integration among the people, companies, and governments of different nations, a process driven by international trade and investment and aided by information technology. This process has effects on the environment, on culture, on political systems, on economic development and prosperity, and on human physical well-being in societies around the world.

Many scholars argue that the process is aiming at unifying the world under the same political system (Democracy), the same economic system (Capitalism and the Free Market System), the same religion (Monotheism or to believe in one God), and the same educational system (the LMD).

Apparently, the above mentioned issues gave birth to the spreading of English all over the world and through all domains. In other words, English nowadays has been given the status of being the first international language; or also known as the universal language; the global language; the language of technology, and a lingua franca, i.e., a language used to communicate between two persons whose native language is not the same). This is why most countries are obliged to rethink about the position of that language within their jurisdictions where Algeria, as our case study, is not an exception.

Speaking about Algeria, expending the use of English is more than a necessity to meet the demands of the target as to the international job markets. Moreover, overcoming the dilemma of the linguistic situation in Algeria which is characterised by the dominance of the French language gave birth to English. At the level of education, many attempts are continuously made at the highest level of the political decision making process. Consequently, English is nowadays taught almost at all stages of education (primary, middle, secondary, and higher). This is referred to as EGP or English for general purposes.

Furthermore, the introduction of English in the Algerian educational system faces many challenges namely the strong existence of French. This last, is the main actor due to the colonial period which lasted more than 130 years. It is observed almost everywhere in Algeria both its spoken and written form; at different levels (governmental, media, daily speech, and education as well). This gives it a position of being a *de-fact co official* language (though having no official status).

French is the most widely studied foreign language in the country, and a majority of Algerians can understand it and speak it, though it is usually not spoken in daily life. Since independence, the government has pursued a policy of linguistic Arabization of education and bureaucracy, which has resulted in limiting the use of Berber and the Arabization of many Berber-speakers. The strong position of French in Algeria was little affected by the Arabization policy.

All scientific and business university courses are still taught in French. Recently, schools have begun to incorporate French into the curriculum as early as children are taught written classical Arabic. French is also used in media and

business. After a political debate in Algeria in the late 1990's about whether to replace French with English in the educational system, the government decided to retain French. English is taught in the first year of middle schools.

Regarding English and more precisely within higher education districts, a new branch is integrated namely ESP or English for specific purposes. This new discipline is fundamentally based on needs specification and thus, process adaptation, i.e., the English taught in the ESP situation should mainly be based on learners' needs in terms of skills notably: reading; speaking; listening; and writing which, in fact, represent many difficulties encountered by our EFL students in both EGP situation and ESP context.

The situation under study is related to the writing courses designed to Master physics students at the University of Tlemcen. In that context, the nature of the courses seems to be a demotivating factor to learn English. Thus, affecting students' achievements in ESP in general; and writing scientific papers in particular. The task of writing a scientific paper and submitting it to a journal for publication is a time-consuming and often daunting task.

Barriers to effective writing include lack of experience, poor writing habits, writing anxiety, unfamiliarity with the requirements of scholarly writing, lack of confidence in writing ability, fear of failure, and resistance to feedback. However, the very process of writing can be a helpful tool for promoting the process of scientific thinking, and effective writing skills allow professionals to participate in broader scientific conversations.

Furthermore, peer review manuscript publication systems requiring these technical writing skills can be developed and improved with practice. Having an understanding of the process and structure used to produce a peer-reviewed publication will surely improve the likelihood that a submitted manuscript will result in a successful publication.

These kinds of challenges deeply motivated the researcher to undertake this study which revolves around the following problematic situation: how to overcome the difficulties encountered by master physics students at the University of Tlemcen while writing their scientific papers. Therefore, it has been thought to conduct this investigation through skills- centred approach to ESP course designs.

Hence, the overall aim is to diagnose those difficulties using a triangulation process for data collection and analysis to systematically design the appropriate writing course.

To deal with this problematic situation, the following research questions have been proposed:

1. Which type of difficulties master physics students encounter while writing their scientific papers?

2. At which level those difficulties lie?

3. How can ESP teacher training and course design help overcoming those difficulties?

Thus the following hypotheses are formulated to guide the study

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1. Master physics students seem to come across different kinds of difficulties while writing scientific papers.

2. It appears to be at both format and content the difficulties are found.

3. Harmonizing the ESP teacher training with the target course design may help our learners of physics overcome the difficulties of writing their scientific papers.

Regarding the general layout, this research work comprises four distinctive chapters: Chapter one is a review of literature where previous studies as to theories and approaches in the same vein of the topic are provided. This includes English for specific purposes (ESP) where definitions are exposed along with the underlying principles of the ESP approach. In addition to this, needs analysis is carefully highlighted. Then, ESP course design with its different approaches is discussed with a special emphasis on skills- centred approach. The last part of this chapter is about writing in general, technical writing, and major phases to write a scientific paper designed for publication.

Chapter two is the empirical phase of the study where it describes the research design, approaches, data collection and analysis procedures. It will do so by giving the rationale behind using the case study. Then, an overview of the quantitative and qualitative approaches is essentially presented. This is followed by a full description of the combination method, i.e., both quantitative and qualitative approaches are used in this study to analyze data. In this regard, a semi-structured interview, a questionnaire, and content analysis have been used as research

instruments. This chapter is concluded by a pilot study undertaken to test the reliability and the validity of the designed tools.

Chapter three reviews the process of data analysis and interpretation. This involves the combination of both quantitative and qualitative methods. The methodology followed in this research work is to expose the results of each rubric the questionnaire as to the interview were divided to. By the end, a detailed account of data discussion and interpretation is given to reflect on the research questions, objectives, and test the hypotheses.

Chapter four deals with a practical proposal and some suggested recommendations as a remedial work to the targeted situation. This includes the rationale behind teacher training, ESP materials development and adaptation, needs analysis grids, the use of ICT- based techniques, and a course of action about the different steps when writing a scientific paper. It ends, of course, with stating some limitations of this study.

Chapter One

1.1. Introduction

When looking to the logic of the title this research is dealing with; one can clearly understand that the following concepts have to be highlighted i.e. English for specific purposes (ESP), ESP course design, skills centred approach, technical writing, and how to write a scientific paper written for publication. Now we move to see- in a little more details- the above mentioned concepts and their struggle for existence.

1.2. English for Specific Purposes (ESP)

From the early 1960's English for specific purposes (ESP) has grown to become one of the most prominent areas of EFL enterprise today. To this end, certainly a great deal about ESP could be written since its development is reflected in the increasing number of universities offering an MA degree in ESP (e.g. the university of Birmingham; and Aston university in the UK) and in the number of ESP courses offered to overseas students in English speaking countries(Anthony, 1997:9)

ESP has had a relatively long time to mature. This is why having a clear idea about what ESP means amongst the ESP practitioners is more than a necessity. In this sense, Dudley Evans (1997) - co-editor- of the ESP journal: "English for specific purpose: an international journal" was very aware of the confusion amongst the ESP community. As it is known, delimiting a subject is the first step to deal with it intelligently; and this , is true with ESP where a very heated debate and clear differences took place in how people interpreted the meaning of ESP could be seen.

According to Anthony (1997:9):

Some described it as simply being the teaching of English for any purpose that could be specified. Others, however, were more precise, describing it as the teaching of English used in "academic" studies or the teaching of English for vocational or professional purpose.

Based on insights gained from developing the curriculum for language preparation for professional work place and job market and a review of the literature on ESP, this part is intended to offer theoretical support for EFL instructors developing ESP curricula for not only ESL but also EST contexts.

1.2.1. Definition of ESP

As stated previously, Dudley Evans (1997) raised an important point related to what ESP means. This view was also shared with ST John. They clarified the meaning of ESP giving an extended definition of ESP taking into consideration Steven's original one and form their own. But what was Steven's definition of ESP?

Stevens (1988) defined ESP by indentifying its "absolute" and "variable" characteristics. Speaking about the "absolute" characteristics, ESP consists of English language teaching which is: (à) designed to meet specific needs of the learner, (b) related in content (i.e. in its themes and topics) to particular disciplines, occupations and activities, and (c) centred on the language appropriate to those activities in syntax, lexis, discourse, semantics...etc, and analysis of this discourse in contrast with general English. While the variable ones, ESP may be, but not

necessary, (1) restricted as to the language skills to be learned (e.g. reading only); not taught according to any pre-ordained methodology. (Stevens, 1988, 1-2)

Coming back to the new conceptualization of Dudley Evans and ST John (1998: 4-5); they revised Stevens' definition and postulate it as follows:

ESP with its absolute characteristics is defined to meet specific needs of the learner, it makes use of the underlying methodology and activities of the discipline it serves, and it is centred on the language (grammar, lexis; register) skills, discourse and genre appropriate to those activities.

They add also that:

While the variable ones leads ESP to be related to or designed for specific disciplines; it may use; in specific teaching situations, a different methodology from that of EGP, it is generally designed for intermediate or advanced students, and most ESP courses assume basic knowledge of the language system, but it can be used with beginners.

Both definitions seem to be the same with a nuance that the new given definition emphasises the idea of clarifying the underling criteria needed to give ESP the status of an approach (see title 1.2.2). The notion of ESP as an approach was clearly stated by Hutchison and Waters (1987:19) who theorize: *"ESP is an approach to language teaching in which all decisions as to content and method are based on the learner's reason for learning"*

Here, the idea behind why learners need to learn English is a crucial factor contribution in formulating both the content and the method of an ESP course. This idea was accentuated by Anthony (1997 as cited in Gatehouse 2001) who notes that:

> *It is not clear where ESP course ends and general English one begins; numerous non- specialist ESL instructors use an ESP approach in that, their syllabi are based on analysis of learners needs and their own personal specialist knowledge of using English for real communication.*

Once again, the rationale behind an ESP course is cited based of course on learners' needs analysis process. In sum, and besides the different definition, ESP is based on the following principle: *"Tell me what do you need English for, I will tell you the English you need"*.

1.2.2. ESP as an Approach

When it comes to ESP as an approach, one can say that it focuses on language centred in both theory and practice. This leads to say that giving a definition of ESP establishing a context about how it is seen; at the present time; in relation to the rest of ELT branches is more than a necessity. According to Hutchinson and water (1987:16-20): *"In the time honoured manner of Linguistics, we shall represent the relationship in the form of a tree"*. They represent some of the common divisions that are made in ELT.

When looking to the top of the ELT tree (see appendix A), it shows the different branches at which individual ESP courses take place. This level is mainly divided into two types of ESP:

✓   For the requirements of academic studies the English needed is either: EOP, (English for Occupational Purpose), EVP, /English for Vocational Purpose, and VESL (Vocational English as a Second Language).

✓   EAP: English for Academic Purpose aiming at preparing individuals for work place as well as training.

This was about the top side of the tree; concerning the down, and at this level, the main concern is the nature of ESP courses related to a specific domain or area of interest (specialized courses). Here, three categorizations can be recognized: EST (English for Science and Technology), EBE (English for Business and Economics) and ESS (English for Social Sciences).

The last level to speak about is that ESP is just one branch of EFL (English as a foreign language) and /ESL (English as a second language). These two last formulate the main branches of English language teaching in general or what is referred to as EGP (English for general purposes. Now- and since we are talking about a tree- automatically it needs to be nourished. This is why communication and learning serve as the main roots without which that tree cannot survive.

Now, if someone tends to look at the analogy of a tree mentioned above, he or she will figure out what ESP is not about. The following criteria denote that idea. (Kristen, 2007)

- ✓ ESP is not just a matter of science words and grammar for scientist and so on. When we look at the tree, there is actually much hidden from view inside and beneath the tree although we know the leaves and the branches. They are supported by a complex underlying structure. The point is we need much more communication than just the surface features of what we read and hear and also we need to distinguish between performance and competence in relation to what people actually do with language and the range of knowledge and abilities which can enable them to do it.

- ✓ ESP is not different in kind from any other form of language teaching. It is based on the principles of effective and efficient learning. Even though the content of the learning is different; the processes of learning should be different for the ESP learner than for the general English learner.

- ✓ ESP is not a matter of teaching "specialized varieties" of English because the fact that language is used for a specific purpose. There are some features which can be identified as "typical" of a particular context of use, and which, later on help learners to be prepared to meet in the target situation.

To conclude this part, one can say   ESP is a different form of ELT for the simple reason that it is an approach not a product. This idea is stressed by the fact that it (ESP) is based on learners' need with no emphasis on a given methodology or a particular type of teaching material. In addition to this   the linguistic factor dominates both the origins and development of ESP where the focus is mainly on the nature of specific varieties of language use depending on both needs identification and analysis. This last, will be highlighted throughout this chapter. But before, what function does ESP have in the arena of ELT.

1.2.3. Functions of ESP

Typically, the rationale behind integrating ESP in ELT is to help language learners cope with features of language or develop the competencies needed to function in a discipline, professional practices, or work place. This led Benesch (1996) to call for a critical approach to EAP (English for Academic Purposes) teaching. This view was supported by two main factors: first, the growing concern about the social and political implications of ESP teaching and second, the emergence of critical approaches in recent years. In sum, it is time to stand back from current practices in ESP teaching and consider the ideas and theories behind them.

In the same line with Benesch, Stern (1983) proposes a framework for analysis to examine ESP in practice and research comprising three (3) lines of enquiry: ideas about language, about learning, and about teaching. Here is a detailed discussion of these elements contributing in the formulation of the ESP approach and function as well.

When speaking about ESP teaching, it often takes- as a point of departure- the analysis and description of "language systems". Hopper (1987:139) defines language systems as: *"A set of abstract structures present for all speakers and hearers that is a prerequisite for the use of language."* Based on Hopper's definition, three language systems can be seen as evidence in both ESP teaching and research. Furthermore, they represent the underlying functions of ESP. They are listed below.

2.1.3.1. Functions Related to Teaching and Research

The first function ESP is there to fulfil is *teaching*. In this phase, a set of systems have to be covered: *the grammatical structure* which includes the rules governing the composition of clauses, phrases, and words. *The core vocabulary that* encompasses words frequently used and tended to be useful in a variety of situations. (e.g., I, the, have, and, on, want, etc.). *Patterns of text organizations*, i.e., how to organize information or ideas in a piece of writing. In sum, the primary function of ESP is to describe and ensure that learners are familiar with what is perceived to be the core of English. This was in teaching, so what about research?

Believing that research is a systematic process of collecting and analysing data to increase our understanding on a specific phenomenon (Leedy and Ormand, 2010), and in the same line with functions of ESP, the primary concern is to identify and describe the core structures. According to Helen (2008:44):

> *One of the major advantages of this approach to language description at a practical level is that fairly heterogeneous groups of ESP learners can be taught together; for example, English for General Academic Purpose's courses can be offered rather than English for specific academic purposes.*

From Helen's (2008) argument, it is clearly seen that the set of basic structures, words, or generic patterns of text organization already mentioned above are seen to be the central underlying criteria of the ESP approach. This leads to say that having even a little knowledge about them is a prerequisite to language use

regardless of specific domains. In line with these arguments, study of language use in the specific domain can come later.

1.2.3.2. Functions Regarding Language Use

In this part, our concern will be the description of language use and functional explanations of language. When dealing with the description of language use, the major focus is on the communicative purposes people wish to achieve and how language – as a means of communication- helps achieving those purposes.

When it comes to functional explanations of language, Brown and Levinson (1988**:** qtd in Helen, 2006:45) describe this fact as being**:** *"To locate sources outside the linguistic systems that determine how language is organized.ESP has embraced such idea".*

As stated previously, the linguistic factor is a dominant one in ESP. This is why; the functional view of language is seen from two angles: first, the different types of linguistic enquiry in ESP, descriptions of speech acts, genres, and social interaction formulas used in professional, workplace, or academic environment. Second, the attempts made to identify how words are used in particular disciplines (such as economy or law) to express discipline- specific concepts or what it is called terminology.

In sum, the ESP approach is built on an assessment of purposes needs analysis, and the functions for which English is required. In fact, as a general rule, when teaching EGP, the four skills i.e. listening; reading; speaking; and writing are stressed equally. However in an ESP context needs analysis plays a vital role in

determining which of them is most needed by the student and consequently the syllabus will be designed accordingly.

In this sense, an ESP program, might, for example, emphasise the development of reading skills in students who are preparing for graduate work in business administration; or it might promote the development of spoken skills in students who are studying English in order to become tourist guides. (Lorenzo:2005). Now we move to examine the link between theories about language learning and ESP.

1.2.3.3. Functions towards Learning

Although explicit discussion of learning has been limited in the ESP literature, ideas about learning can be inferred from the course and materials designs developed and the types of research undertaken. We will divide this part into: ideas about the conditions needed in order for language learning to take place and the process though which learning is understood to occur.

Two ideas about the conditions and how these ideas are reflected in ESP teaching and research are as follows: the first idea (acculturation). The theory of acculturation can be broken down to include a few different topics; these include learning a new language, immersion, assimilation, and integration. Moreover, the concept is based on social considerations and is premised on the idea that ESP learners need to be enclosed social proximity or contact with their discourse communities (Schumann, 1986).

The second idea (input and interaction). It has been hypothesized that input which is com prehensile and interaction which has been modified best facilitate second language acquisition. Since the classroom is one of the few places where comprehensible input and modified interaction are made available, and since the teacher is an important source of input, this paper suggests that it is essential for ESL teachers to analyze what actually has gone on in their own language classrooms. Furthermore, is based on linguistic considerations and rests on the argument that provision of sufficient linguistic input opportunities for interaction are prerequisites for language learning(Stern, 1992).

However, language learning does not occur because learners enjoy conditions favourable to learning; it occurs as a result of learners engaging in cognitive processes and mental activities. When it comes to perspectives about learning process can be divided into two explanations: inter-mental and intra-mental. The former explains language learning as resulting from the cognitive processes of individual learner. The later, as resulting, forms the social activity of learner (Mitchell and Myles, 1998).

Speaking about the inter-mental perspective- also known as information processing- it offered a view of learning as an individual mental activity composed of simple processes which take time and practice, and through practice there is a development from controlled to automatic processing(McLaughlin and Heredia, 1996). While the inter-mental perspective- also known as activity theory- offered a socio-cultural view of learning. It also offered a view of learning as shaped and constructed by the goals of the learners by suggesting that it is the learners who

determine what they will learn and the same instructional task or activity is typically used by different learning objectives, and thus that the learner learns different things from them .

Another point should be mentioned here which is content- based approach. It is an approach related to language teaching and ESP which can be linked to information processing perspectives of learning. Advocates of this approach argue that language is best learned through the process of learning disciplinary or technical subject content (Kasper, 1997). It views the target language largely as the vehicle through which subject matter content is learned rather than as the immediate object off study. (Briton and Wesch, 1989: 5)

From all what has been said above, one can say that ESP is a student-centred rather than teacher- directed teaching method (Haines, 1989). But: Where is the role of the teacher clearly seen? How does it fit in the learning process? What are the responsibilities of the teacher? Are there specific methodologies in ESP teaching? What are the objectives of teaching ESP? All these questions will be discussed in what follows.

A teacher who already has experience in teaching English as a second language (ESL) should recognize the ways in which his /her teaching skills can be adapted for the teaching of ESP. As an ESP teacher, you must play many roles: you may be asked to organize courses, to set learning activities, or establish a positive learning environment in the classroom, and to evaluate student's progress. To do so, ESP has certain methodologies to use.

The discussion of those methodologies was coined by Stern (1992) to refer to an overriding methodological principle covering a wide variety of classroom techniques and procedures at the planned level of teaching. We have the predominantly input; input –to-output; predominantly output, and output to input.

Two of the above mentioned strategies are input- based. The first (predominantly input) is linked to the idea that learning occurs through students being exposed to samples of language use (Krashen, 1992). The second (input-to-output) is linked to the idea that learners need first notice language forms and features, and then use them in their own production (Scott and Scott, 1984).

On the other hand, two are output-based. The first (predominantly output) is linked to the idea that learning occurs through students struggling to communicate and being pushed to reach their linguistic ceilings (Swain1985, 1998). The second (output -to- input) is associated with the idea that learners are ready to acquire new language when they have experienced a whole (a lacuna) in their repertoire and are offered a solution to that problem in the form of feedback (Swain, 1986).

Regarding the objectives behind teaching ESP, there is a variety of objectives in that process.

- ✓ The first is to reveal subject-specific language use which is linked to the linguistic knowledge objective and, to a lesser extent; the cultural knowledge objective (Stern's categorization; 1992).

- ✓ The second is to develop target performance competencies which can be described as an approach focused on developing the ability to perform the activities of an occupation (Funnel and Owen, 1992).

- ✓ The third is to teach underlying knowledge or competencies which is term used by Hutchinson and Waters (1985) to refer to disciplinary concepts from the students' field of study.

- ✓ The fourth is to develop strategic competence which acts as a "mediator" between external situational context and the internal language and background knowledge needed to respond to the communicative situation (Douglas, 2000, p38).

- ✓ The last is to foster critical awareness which means that ESP teaching should work to encourage the learners- who became members of the target environment- to change the target situation to better suit their needs. Thus, ESP teaching should help students realize that target demands may be up for negotiation and that they have a role to play in taking action to help this come about (Hyland, 2000 and Hamp, 2002).

To conclude this part, one can say that if the ESP community hopes to grow up and flourish in the future of ELT, it is more than necessary that the agents and practitioners understand what ESP actually represents. Only then, new members can join with confidence to collaborate with the existing ones for the sake of carrying the practices which have brought ESP to the position it has in EFL teaching today. The following part will examine an important element in any ESP situation i.e. the process of an ESP course design as well as the underlying criteria in that process.

1.2.4. ESP Course Design

A part from the existing ESP literature, course design is one of the areas contributing in the enrichment of that literature. This last, refers to the process of interpreting what was learned about learning needs and theories. The desire behind is developing materials depending on syllabus to enhance the quality and the sustainability of the teaching methodologies. Besides, help establishing evaluation procedures in order to guide learners detain the state of knowledge.

Looking at the status of (ESP) in Algeria, the first remark one can draw is that most ESP courses are still limited to learning specific lexicon and translating texts. This may as it may not meet the growing demands for ESP instructions. With the continued expansion and participation in the international business arena as well as the process of globalization, much attention should be drawn to the design of ESP courses. This can help preparing and training learners to cope with their future professional communication.

The first dominating approach to ESP course design focused on the grammatical and lexical items of a particular field of English. Gao (2007:2) says: "*With the popularity of Communicative Language Teaching, language use became the key emphasis in the ESP world, known as the functional-notional approach*".

In the early 80's, it was found that there was a certain need underlying a particular language use and in addition, the learning process and skills needed to be taken into account (Dudley-Evans & St John, 1998). Amongst the key features of the ESP approach to course design is needs analysis. The following part will highlight this feature.

1.2.4.1. Needs Analysis

Many scholars and authors acknowledged the fact that Needs analysis has an important and , if we can say, a vital role to play in The process of designing and carrying out any language course (be it an ESP or EGP one).

1.2.4.1.1. General Overview

The process of needs analysis often entails a set of activities that are involved in collecting information for the sake of having the necessary bases to develop a curriculum which will meet the needs of a particular group of students (Iwai *etal*.1999). In this regard, Richards and Platt (1992**:**242-243) state that NA is: *"The process of determining the needs for which a learner or a group of learners acquires a language and arranges the needs according to priorities."*

Consequently, a researcher or a teacher engaged in the process of NA is likely required to gather information about the learners. This will give him an opportunity to know and clearly understand the reason for which language is supposed to be used in a specific context with certain people to an acceptable level of proficiency.

Another definition of NA to be mentioned here is of Basturkmen (1998:1) who deals with the practical side of NA and says: *"It is the identification of difficulties and standard situations by the observation of participants functioning in a target situation in conjunction with interviews and questionnaires"*. Here the focus was on the difficulties encountered by learners in the ESP situation from one side and the attempt to overcome such problems.

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Furthermore, West (1994:2) states that NA is: *"Essentially a pragmatic activity focused on specific situations although grounded on general theories, such as the nature of language and curriculum."* This reveals that the process of NA is described to be a pragmatic activity for the simple reason that it aims at putting forward the basis of any course design by finding out learners' needs and thus making the theories of language curriculum.

According to Xiao (2007: 1-2), NA is: *"a systematic gathering of specific information about the language needs of learners and the analysis of this information for purpose of syllabus design"*. In addition to this Nunan (1988:3) confirms the belief that NA is a technique and a procedure used to collect data that are essential in syllabus and course design. It is clear that he emphasizes information gathering in his definition of NA.

To conclude this part related to the definitions of NA, Jiajing (2007:2) maintains that: *"needs analysis is analyzing the specific needs of a particular group." this means that the analysis will serve to "prelude to an ESP course design, because it determines the 'what' and 'how' of an ESP course."*

1.2.4.1.2 Types of Needs

Before highlighting the different types of needs, it is worth mentioning here to present two types of NA: *formal needs analysis* (a term coined by Loretta Singletary 2003) is quite new in the ELT enterprise. On the other hand, *informal needs analysis* which has been conducted by many teachers for the task of assessing what learners need to master (language skills). But one may ask the following

question: why were different Approaches born and then replaced by others? In fact, the rationale behind this question is that teachers have intended to meet their students 'needs during learning. The current concept of needs analysis in ESP, according to Dudley-Evans and St John (1998:125), includes consideration of the following aspects:

- ✓ Professional information about the learners: the tasks and activities learners are/will are using English for- *target situation analysis and objective needs.*

- ✓ Personal information about the learners: factors which may affect the way they learn such as previous learning experiences, cultural information, reasons for attending the course and expectations of it, attitude to English- *wants, means, subjective needs.*

- ✓ English language information about the learners: what their current skills and language use are- present situation analysis- which allows us to assess (D).

- ✓ The learners' lacks: the gap between (C) and (A) - lacks.

- ✓ Language learning information: effective ways of learning the skills and language in (D) - learning needs.

Despite the fact that the current status of needs analysis, one cannot neglect the fact this process has gone through different stages. This evolution was strongly hypothesised with Munby's1978 Communicative Syllabus Design in which both situations and functions were established within the frame of needs analysis. In his book, Munby introduced the concept of Communication Needs Processor (CNP) which is the basis of his approach to needs analysis.

As Hutchinson and Waters (1987: 54) say: *"With the development of the CNP it seemed as if ESP had come of age. The machinery for identifying the needs of any group of learners had been provided: all the course designers had to do was to operate it"*.

The following part sheds some light on Munby's CNP framework. With the emergence of CNP, both the target needs and target level performance were given more importance. These two concepts are established through investigating the target situation and make this as the necessary point of departure in any material development or course design to fulfil the tasks put forward by teachers to meet their students' needs.

In this regard, Munby (1978) emphasised the idea that in the CNP model account is taken of *"the variables that affect the communication needs by organizing them as parameters in a dynamic relationship to each other"* The following diagram explain the above mentioned idea ad gives the different variables needed in the model.

Figure 1.1 Munby's 1978 CNP Model.

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The heart of the model is the Communicative Needs Processor (CNP). Information about the learner and other participants is fed into the CNP which consists of a number of categories. After these categories have been worked through, a profile of needs is finished up with i.e. a whole description of what the learner will be expected to do with the language at the end of the course is provided. The following are the relevant categories.

Table1. 1. Munby's Categorisation Adapted from (Gillett, 1989:92-104)

Category	Examples
Participant	The learners.
Purposive Domain - this category establishes the type of ESP, for what purpose	educational: social science, communications studies, law at HE level
Setting - the time and place	English University - lecture rooms, tutorials, seminars, library, laboratories, art rooms, examinations.
Interaction - the roles in which the participants will find themselves in terms of status, age group, social relationships etc.	student relationships: student-student, student-lecturer/tutor/technician
Instrumentality (medium and channel of communication)	Spoken-receptive and productive written - receptive and productive. face to face, print

Category	Examples
Dialect - the dialects the student will have to understand and produce.	standard British accents and dialects
Target level - level of linguistic proficiency, different skills may be different	ELTS 7 for Law, JMB grade 3 etc
Communicative event - what the learner will have to do with English.	attend lectures, take part in seminars, etc
Communicative key - the manner in which communication needs to be carried out.	formal/informal plus range of attitudes
Profile - what the student needs to be able to do.	

When it comes to the division of needs and to illustrate more, Kandil (2002:6) uses the following diagram that divides needs into two types: target needs and learning needs.

Figure 1.2 Types of Needs Adopted from (Hutchinson and Waters 1987. Cited in: Kandil, 2002:6)

Many ESP practitioners argue the fact that target needs are of great importance. That is why it is referred to as an umbrella term. This last, and in practice, hides a number of significant distinctions. At this level, it is important to consider the target situation in terms of: necessities, lacks, and wants. But before let us shed some light on the concept of learning needs.

1.2.4.1.2.1 Learning Needs

Learning needs can be defined as Xiao (2007:2) says:*"Factors that affect the learning like attitude, motivation, awareness, personality, learning styles and strategies, together with the social background".* In addition to this, Johns (1991), argues that needs analysis is the first step in course design as it provides validity and relevancy for all subsequent course design activities.

In the same line with Xiao and Johns, Kandil (2002:5) briefly says that the learning needs clarify the means through which learners proceed to achieve their target needs starting with realizing their lacks. Whereas Kaur (2007:3) divides learning needs into two types:

- ✓ The first is 'goal oriented' definition: it aims at explaining what the learner wants to do with the language.
- ✓ The second is 'a process oriented ' definition: it aims to tackle what the learner to "actually acquire the language.

1.2.4.1.2.2 Target Needs

Target needs are relatively related to the phase of establishing the rationale behind what the language is used for. In other words it refers to what the learner

needs to do in the target situation for instance the workplace. According to Hutchinson and Waters (1987) target needs are mainly related to:

- ✓ Necessities. (Target-situation analysis). It refers to what learners have to know in order to function effectively in the target situation. e.g., a businessman may need to know about letters, know how to speak at sales conferences, be able to read catalogues, etc.

- ✓ Lacks. (Deficiency Analysis) it refers to what does the learner know already. Need to carefully define this, through both considerations of courses they have taken, to actual contact with students. The analysis is complicated when there are a wide range of abilities in one class. Diagnostic tests are available, and these can be used to determine group and individual lacks.

- ✓ Wants. (Subjective Needs Analysis) it refers to learner perceived needs which is an important factor in motivation. That is why they must not be ignored. Hutchinson and Waters (1987:56-7) has three examples. Usually these needs are very personal; therefore they are sometimes called 'subjective'. In fact, these wants are very real, and may conflict with the necessities as perceived by the employer. Therefore ways must be found to accommodate them.

In respect of what has been said, one can say that obviously the wants of individuals cannot all be accounted for. However, as a least to consider, the wants of the majority can be discussed and partially met. Expectations need negotiation. This is due to the fact that sometimes there is a 'deferred needs' problem, students' wants are usually discovered by a short, anonymous questionnaire, and one need to

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consider how realistic wants are. This was briefly speaking about the two categorisation of need. Now what is the importance of NA in enhancing the quality as well as the sustainability of ESP course design?

1.2.4.1.3. The Importance of NA to ESP Course Design

Although teachers are not permitted to lengthen or shorten- in terms of both content and format- any course they teach. However, they are free to use different techniques and methods through which they can enhance students learning of any course, but ESP in particular. In other words using those techniques will serve as a mean to encourage and help their students to set their aims and plan their future in learning. In this regard, Kavaliauskiene and Uzpaline(2003:3) say: *"A current trend in teaching is to take into account learners' wants: they might want or need to carry out a variety of communicative tasks in the target language"*.

A convenient way to gather information on the ways in which learners prefer to learn is through NA. It enables the teacher to gather information about his learners' wants, lacks, and needs – as stated before- to be able to prepare for the ESP syllabus. It is recommended, thus, that the universities do "a wide range NA that includes the university undergraduates, graduates, professors, and any other relevant parties"(Kandil, 2002: 1). Now we move to see in a little more detailed the different approaches to course design in general and our concern in this(skills centred approach in particular).

1.2.5. Approaches to ESP Course Design

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 experience, whose ultimate aim is to lead the learners to a particular sate of knowledge (Wenzhong, 2008:91). Three main approaches to course design can be identified: language-centred, skills-centred, and learning centred. (Hutchinson and Waters: 2002 categorisation).

1.2.5.1. Language-Centred Approach: (Performance)

A language- centred 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). This approach aims to draw direct connection between target situation and the content of ESP course. It draws a direct link with the target situation and needs of knowledge to identify the linguistic features of that target situation, and then create a syllabus after those materials are designed and evaluation procedures.

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"
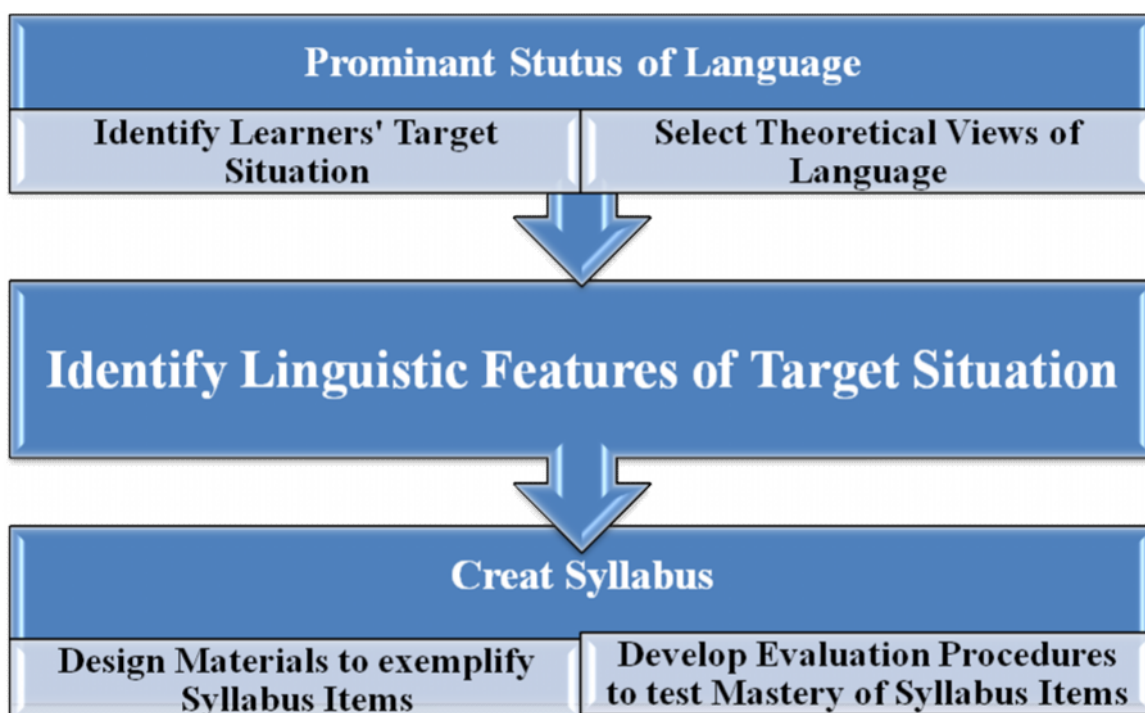
Figure 1.3 Language- Centred Approach to ESP Course Design 39 Adapted

from (Richards 2001: 39-40)

The conclusion which can be derived from the above mentioned figure is that language- centred approach to an ESP course design is simple in its framework. In other words, many teachers are in favour of it for the simple reason that its core objective is to draw a direct connection between analysing the target situation students are exposed to and the content of the ESP course provided to them.

However, one criticism to it – and this weaken it- is that it takes as a point of departure both learners and their needs. This is why it can be considered to be more a learning – centred rather than being a language one. The following part highlights the notion of the learning–centred approach.

1.2.5.2. A learning-Centred Approach (Competence)

When designing an ESP course based on a learning-centred approach, teachers are likely requested to select what students will read, make decisions about time management i.e. how class time will be used, and design assignments, examinations, and other assessments based on the contribution these components put forward to achieve the learning goals identified for the course (Claudia, 2011). A learning-centred course differs from a traditional teaching-centred course in several ways (Weimer, 2002).

First, the balance of control in a learning-centred class will change. What does this mean? A common belief is that in a teaching,-centred environment, where teachers are seen to be the only source of information and are likely authoritative, the feeling of responsibility for learning is higher. This is why, in case some students' fail to learn, teachers blame themselves because they believe that good learning depends entirely on good teaching. Consequently, teaching-centred courses designers ensure control over many aspects of the course.

In contrast, in a learning-centred situation, students are ultimately responsible for their own learning using different strategies. For example they have to engage in assigned learning activities and exert the effort required to learn. So if students are supposed to take responsibility for their own learning, it is time to give them more control over the way learning experiences are structured. In addition to this, teachers delivering a learning-centred need to control aspects of the course to ensure that they meet their professional responsibility to create a course that addresses certain learning outcomes. In the same line, students need to control aspects of the learning environment to meet individual learning goals and maintain motivation.

To summarize this first criterion (the balance of control), two factors should be mentioned: maturity and meta-cognition skills of the students. It is known that the ability to identify appropriate learning goals, regulate learning strategies, and monitor progress differ from one student to another for the simple reason of a heterogeneous class. All this lead to say that the level of control practiced by teachers will be greater in beginning courses populated by students who have less developed meta-cognition skills.

Second, how students learn content is structured differently in a learning-centred course. Here, the course will take into account any activity which promotes long-term learning, especially learning that involves higher-order thinking skills. For example, a learning-centred course will include activities in which students create integrated, organized representations of knowledge that students must access while applying disciplinary content to solve realistic problems. However, a teaching-centred courses are content-heavy. In other words, rote memorization, which produces memories for content that are seldom retained for the long term and encourage, is highly stressed (Craik & Lockhart, 1972; Glenberg, Smith, & Green, 1977; Tulving, 1962).

Third, two main concepts are of great deal in this part: "guide on the side." and "sage on the stage." The former implies that teachers in a learner-centred course take on the roles of coach and mentor. Whereas the latter denotes that .In a teaching -centred orientation, teachers are more likely to focus on course content and the transmission of information to students. Learning-centred instructors act as a "guide on the side." Both "sages on the stage" and" guides on the side" present content, but learning -centred instructors also design activities that allow students to practice disciplinary skills with the content, provide feedback to students about the quality of their performance,

and suggest learning strategies that will help students improve their disciplinary skills and expand their knowledge base (King, 1993).

Fourth, responsibility for learning. Since it is a learning-centred course, students are directly encouraged to take their own responsibility while learning. In this regard, Perry (1999) coined the concept of "dualistic learning." where learners believe that their teachers should be expert authorities who transmit knowledge to them by lecturing about content and identify the correct models and interpretations for students.

Finally, assessment and evaluation of student work. In a learning-centred course, both assessment and evaluation play an important role for the simple reason of evaluating the effectiveness of the learning activities toward reaching course learning outcomes. In other words, the information gathered serves in monitoring students' progress toward achieving their learning goals and adapt their activities to improve their knowledge. In the same line with students, teachers use information from assessment to evaluate whether the assignments and activities provided in the course are effective in promoting the quality of learning intended.

Figure 1.4 Learning-Centred Approach to ESP Course Design (Hutchinson and Waters, 1987:74)

Identify Learners

Theoretical Views of Learning

Analyze Learning Situation

Analyze Learning Target

Theoretical Views of Language

Identify Attitudes/ Wants/ Potential of Learners

Identify Needs/Potential/ Constrains Of Learning/ Teaching Situation

Identify Skills and Knowledge Needed to Function in the Target Situation

Write Syllabus/ Materials To Exploit The Potential Of The Learning Situation In The Acquisition Of The Skills And Knowledge Required By The Target Situation

Evaluation

Evaluation

To conclude with, the idea behind this approach is that the learner is the main actor in the learning process for this to happen it takes the following principles (Chirimbu 2014and Hall, 2011):

❖ Learning is totally determined by the learner who uses his knowledge and skills to make sense of new information.

❖ Learning is not just a mental process; it is a process of negotiation between individuals and society.

❖ Course design is negotiation process in which both the target situation influences the features of the syllabus and also it's a dynamic process in which means and recourses vary from time to time.

1.2.5.3. Skills-Centred Approach (Competence/High Level)

As stated briefly above, the skills- centred approach or skills -centred focus in course design really looks toward the end. But this means it is best for course designers using a skilled- centred approach to worry about the process. Yet, they do not worry about the path or the trail that the individual student is going to take to get to the end; they are really only worry about the goals as the results.

So, the skills centred courses focuses on goals and the road that students will take to get there, but only as a group and not as individuals. Such syllabi are often filled with chains which have focuses on skills or necessities for reaching major goals and these are often listed and charted together. The following diagram figures out the idea behind the skills-centred approach to an ESP course design.

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                    ┌─────────────────────┐
                    │   Identify Target   │
                    │                     │
                    └─────────────────────┘
                               │
                               ▼
┌──────────────┐    ┌─────────────────────┐    ┌──────────────────┐
│ Theoretical  │───▶│ Analyse skills/     │◀───│ Theoretical View │
│ Views of     │    │ strategies required │    │ of Language      │
│ Learning     │    │ to cope in target   │    │                  │
│              │    │ situation           │    │                  │
└──────────────┘    └─────────────────────┘    └──────────────────┘
                               │
                               ▼
                    ┌─────────────────────┐
                    │   Write Syllabus    │
┌──────────────────┐│                     │    ┌──────────────────┐
│ Select Texts and ││                     │───▶│ Develop Evaluation│
│ write Exercises  │└─────────────────────┘    │ Procedures which │
│ to focus on      │◀─                          │ require the use of│
│ Skills/ Strategies│                           │ Skills/ Strategies│
│ in               │                           │ in Syllabus      │
└──────────────────┘                           └──────────────────┘
```
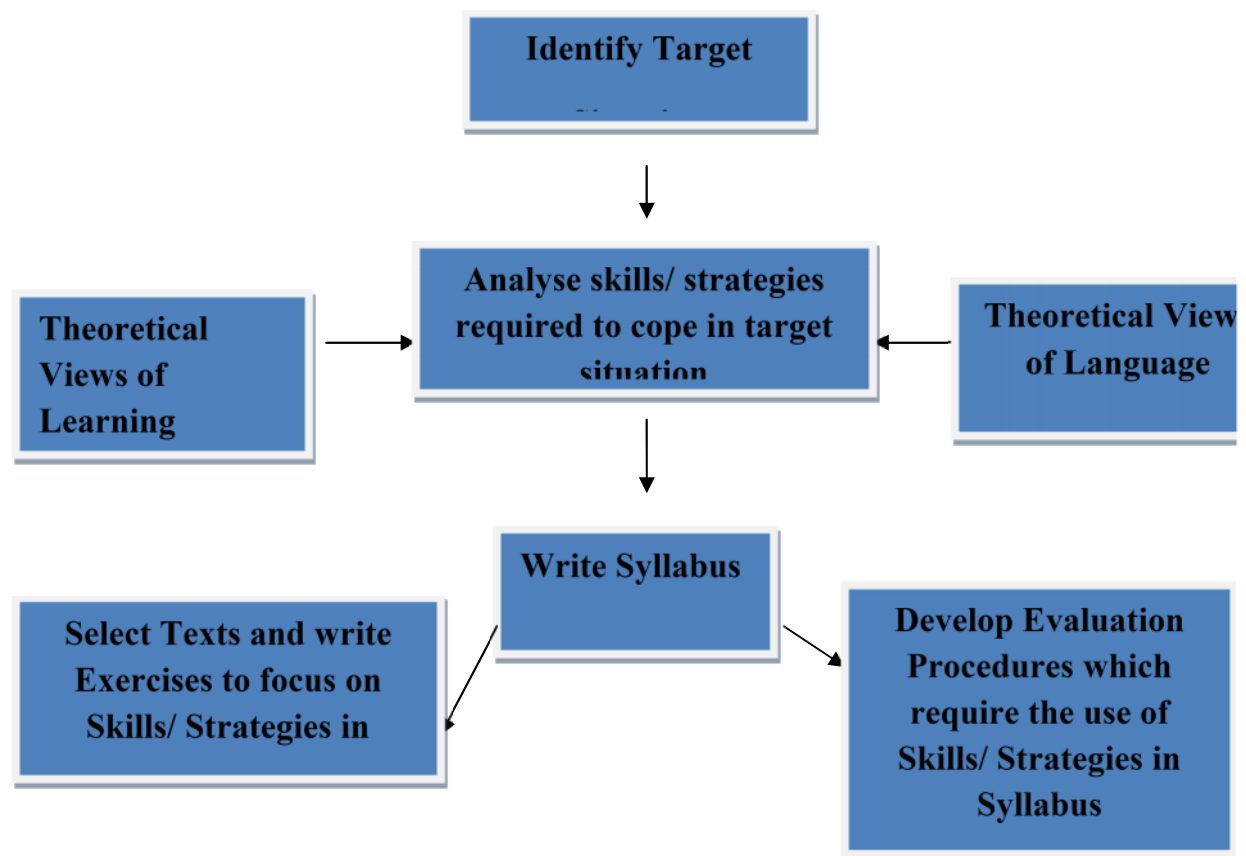
Figure 1.5: Skills Centred- Approach to an ESP Course Design Adopted from

(Hutchinson and Waters, 1987:71)

This approach aims at helping learners develop skills and strategies which continue after the ESP course by making learners better processors of information. This can be done through the following two principles: THEORY and PRAGMATIC. In the interpretation of a literary text, especially if the information granted by the author is insufficient, reinterpretation by means of inferences is necessary. The reader's previous background knowledge will often position him/ her in his/ her interpretation and so the text is open to subjective rendering.

The first dimension of the theoretical hypothesis is that in underling any language behaviour there are certain skills and strategies, which the learner uses in

order to produce or comprehend discourse It is clearly seen in Hemingway's "Iceberg Theory" of writing (Al-Zubeiry,2015).

Hemingway (Qtd. in Oliver, 1999: 322) summarises his theory:

> *If a writer of prose knows enough of what he is writing about he may omit things that he knows and the reader, if the writer is writing truly enough, will have a feeling of those things as strongly as though the writer had stated them. The dignity of movement of an ice-berg is due to only one-eighth of it being above water. A writer who omits things because he does not know them only makes hollow places in his writing.*

From this quotation, one can understand that the writer is likely required to omit words and sentences from his piece of writing. All this for the simple reason of pushing the reader come up with his or her own interpretation of it. In other words, what is written on the page is only a fraction of the larger, underlying themes i.e., what is not written.

But how to apply this theory in skills centred approach (more precisely while writing)? As it is known, Hemingway's Iceberg theory is related to writing about fiction. However, nonfiction writers can profit from it. Since this research is about writing scientific paper and science relies heavily on statistics, Hemingway's philosophy is that when looking to an iceberg, only 20% of it can be recognized. The other 80% is below the surface of the water. But without that 80%, one would not have the 20%. In other words, the visible 20% is built on the foundation of the

80%, even though it is not seen, or in some cases, even realize that it is there. So, the same thing can be applied while writing i.e. writers should build their stories and papers on the 80% of the iceberg no one else will see (Deckers, 2013).

The second dimension is that the pragmatic basis for the skills-centred approach is derived from a distinction made by Widdowson (1981) between goal-oriented courses and process-oriented courses. According to Holmes (1982: Qtd in Hutchinson and Waters, 1987:69):

> *In ESP, the main problem is usually one of time available and student experience. First the aims may be defined in terms of what is desirable i.e. to be able to read in the literature of the students' specialism, but there may be now here near enough time to reach this aim during the period of the course.*

He added also:

> *Secondly, the students may be in their first year of studies with little experience of the literature of their specialism... accordingly, both these factors...may be constrains which say right from the start, the aims cannot be achieved during the class.*

The above mentioned quotation highlights the two concepts put forward by Widdowon. In other words, speaking about goal –oriented courses, failure is likely the expected results. This is due to the fact that ESP is designed to facilitate the road for students to achieve their goals so how it is possible to build the course over that

goals. On the other hand, process- oriented courses aims t solving that problem associated with goals by bridging the gap between ESP course and the target situation. This is done under through believing that most students are not able to reach their goals.

As a result, the core of any ESP course should be how to facilitate the task of achieving the goals and clean the road in this process from all constrains. As Hutchinson and Waters, (1987:70) say:

> *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*

Despite the fact of being: a language, learning, or skills- centred approach; making the ESP course as dynamic and flexible as much as possible is the most important thing. Hence, a clear understanding of students' needs and the demands of the target situation will serve in developing the appropriate materials and methodologies needed to function effectively in a given domain. The following part deals with the process of writing a scientific paper. This is done by trying first to draw a comparison between scientific and literary writing. Second the criteria needed in writing a scientific paper (both format and content).

1.3. The Notion of *Writing*

As to the other language skills and more precisely speaking, writing is seen as a common and flexible method of communication or making connections between people out of distances and time. In other words, writing is a means of building links between individuals and within. The following part provides a historical overview about writing. To do so a variety of definition will be provided.

To begin with, Aristotle raised the point that writing is a process aiming at raising the reader's attention to the need of clarifying the complicated relationships between things, ideas and words. This will serve as a prerequisite to build and develop a critical thinking based on logic. Fischer (2001) argues that no simple definition of writing can cover all the writing systems that exist and have ever existed. He (2001:12) states that a 'complete writing' system should fulfil all the following criteria:

✓It must have as its purpose communication;

✓It must consist of artificial graphic marks on a durable or electronic surface;

✓It must use marks that relate conventionally to articulate speech (the systematic arrangement of significant vocal sounds) or electronic programming in such a way that communication is achieved.

In the same line with Fischer, Coulmas (2003) raised the point that it is not an easy task to find out a clear, concise, and precise definition for writing. He (Coulmas) distinguishes six meanings for the term writing:

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✓A system of recording language by means of visible or tactile marks.

✓The activity of putting such a system to use.

✓The result of such activity, a text.

✓The particular form of such a result, a script style such as block letter writing.

✓Artistic composition.

✓A professional occupation.

More recently, Daniels and bright (1996:3) define writing as: *"A system of more or less permanent marks used to represent an utterance in such a way that it can be recovered more or less exactly without the intervention of the uttered"*. In addition to this, Coulmas (1999:560) argues that writing is:

> *A set of visible or tactile signs used to represent units of language in a systematic way, with the purpose of recording messages which can be retrieved by everyone who knows the language in question and the rules by virtue of which its units are encoded in the writing system.*

From Coulmas' definition, the visible and tactile signs are needed in the writing. Tactile signs are common means of communication used by people with both a sight and hearing destruction. This method is based on the Deaf manual signs**. (See appendix B).

In sum, writing has been with us for several thousand years, and nowadays is more important than ever. In this regard, Antoine Meille (quoted in Coulmas 2003: 1) said: "The men who invented and perfected writing were great linguists and it was they who created linguistics". If so, what are the reasons behind writing?

1.3.1. Reasons to Write

In his article entitled "Five primary reasons to write. Seven essentials to writing well", Kerstetter mentioned that Writers write to inform, educate, entertain, persuade and motivate. To begin with, Educational writing is seen at the level of increasing the audience's knowledge. As it is known, knowledge is the highest level one can reach through learning. Here lies the role of the writer to educate as well as explain the meanings of characters, locations, events, objects and concepts his piece of writing is turning around.

The second reason Kerstetter mentioned is writing to entertain. This type is likely produced as means of transmitting a message. At this level ensuring successful results is quite difficult to achieve however trying to create an amusing atmosphere may open otherwise the audience's closed minds. In other words, a writer aiming at lightening the heart of the reader has the ability to remove the fear from frightening events and alarming ideas. Even so, the entertaining writer must look for the accuracy of what he is providing the reader with. This can only be reached when he writes with fairness and sensitivity.

When it comes to writing to inform, writers generally seek fairness because objectivity is impossible. This is due to the simple reason that they will tell the audience about someone, place, thing or idea in a neutral, unbiased and fair

manner. Here, the background and beliefs of the writer shorten and weaken the attempts to reach objectivity. Now, to overcome that problem of being either objective, subjective, bias, or neutral, writing to inform requires some basic skills such as honest self-analysis, accuracy in research. In addition to this followed by the services of a skilled editor to eliminate any biases can be of great deal in this process.

In the same line with writing to inform, persuasive writing plays an important role in presenting supportive arguments for a specific point of view. To do some basic skills are needed such as logic and reasonable arguments. In addition to this, it is more than important for writer to acknowledge the positive values in other opinions. In sum persuasive writing should concentrate on ideas and actions, addressing personalities only when essential to the argument. It also requires the foundation of accurate research.

The last reason to speak about is motivational writing, this types as its name denotes seeks to prompt people to action i.e. to be active but not passive. In other words, writing to motivate requests changes in behaviour with no respect to thoughtful and reasonable arguments.

However, the different reasons cited are not definite ones i.e. they are not the only ones but they encompasses the important reasons behind the writing process. All in all, motivating the reader to live the piece of writing is more than a necessity. This can only be done through logic, reasonable and objective arguments and presentation of the living world. This was about writing in general, so what does literature says about technical writing?

1.3.2. Technical Writing Criteria

As a broad definition of Technical writing, it refers to is simplifying the complex. Though this definition seems to be a simple one but in fact it encompasses a whole range of skills and characteristics that address almost every aspect of our daily life and also at various levels. Nevertheless, technical writing is rooted in history along with the development of languages (of course written ones). Many historians argue that modern references to technical writing as a discipline begins around the time of WWI. This argument was supported by the technical developments the world witnessed in all domains and aspect of live such as: industry, telecommunications, transportation, education...etc.

Up to this, very heated debates took place as an attempt to have a concise and precise definition foe technical writing. Those debates resulted from two main aspects associated with technical writing: broad focus and narrow one. The former obscures the basis and usefulness of the definition. The latter which arbitrary and sometimes oddly relegates samples of writing as in or out of the realm of technical writing. (Allen, 1990)

Besides this dilemma, establishing the academic boundaries as well as a clear status of technical writing is more than a necessity. The reason behind is to overcome the ambiguity and create a clear context to facilitate the task for those writers (despite their level i.e. beginners or advanced) how want to engage in the technical domain. As mentioned in the beginning of this part elated to technical writing, some basic definitions were provided.

For example, Briton (1975:11) defines technical writing as: *"communication that has one meaning and only one meaning"*. From this definition, the notion of objectivity while writing can be depicted. This objectivity is seen in the choice of words and the combination of them. This process is governed by the fact of precise i.e. precise choice, precise combination, and precise way of exposing it to the reader. All of which facilitate the task for precise interpretation.

Dobrin (1983:229) also was aware about the disagreements amongst the technical writers' community when providing a definition for the term technical writing. He chronicles the previous attempts and said:

> *The definers of technical writing do not collect information systematically. Instead they go on a vast experience to govern the formulation they give us: they use retrospective, intuitive, conservative procedure. Bound of their experience approximates the bounds of the corpus.*

He added that:

> *They assume the something called technical writing exists, that it will change slowly, and that they assume – in other words- that their experience is sufficient to comprehend...the text they assemble and that those texts are in fact what technical writing is. But there is no reason to believe that their experience is complete, or to believe that we can get to*

their experience in its totality with a few well chosen words.

So why should we depend on that experience for a definition?

After hypothesizing what mentioned above, Dobrin (1983:242) gave his own definition**:** *"Technical writing is writing that accommodates technology to users".*

From another angle, the US Bureau of Labour Statistics (2011) defines technical writers as those who:

> *…put technical information into easily understandable language. They work primarily in information-technology-related industries, coordinating the development and dissemination of technical content for a variety of users; however, a growing number of technical communicators are using technical content to resolve business communications problems in a diversifying number of industries.*

Regardless of the dilemma of defining technical writing, the conclusion which can be drown is that the problem is not in the term itself but in those who try to define it. In other words, all the attempts to define it suffer from what is called inflection i.e. are technology and science the core of technical writing? Is technical writing about following some rules in the practice of writing despite of the subject matter? So finding an answer to not only the two mentioned questions but other will serve in delimitating the topic of technical writing and this is the first step to deal with it intelligently. The following part will try to do so by highlighting the goal or goals of technical writing.

1.3.3. The Goal of Technical Writing

As any other piece of writing, technical writing has some goals to reach. Those goals are designed for specific audience in specific context. Now besides the specification of the goals, technical writing generally aims at transmitting pieces of information to help those who will receive them enlarge their knowledge. Thus, this developed knowledge (which is an increased understanding of the world) will push them take actions towards the phenomena they are facing. This was in general, so what about specific goals of technical writing?

When it comes to specific goals technical writing may address the following areas: using a software application, operating industrial equipment, preventing accidents, safely consuming a packaged food, assessing a medical condition, complying with a law, coaching a sports team, or any of an infinite range of possible activities. All of which will be of a great deal when the target situation (work place, factories, enterprises...etc) are asking for skilful agent to well perform the tasks required. Here, technical writing plays an important role in ensuring the realisation of what has been said above by providing accurate and updated information.

Now-and based on all what has been said above- what are the guidelines one has to follow when writing a scientific paper? But before, it should be mentioned here that some researchers use the two terms scientific and technical interchangeably. However, others prefer to use the term scientific when dealing with all what is science; and technical when dealing with all what is related to

technology. In this work, the researcher opted for the first point i.e. when mentioning scientific papers it automatically includes technology.

1.3.4 Guidelines for Writing a Scientific Paper

Writing a scientific paper is not an easy task. It needs more practice and some simple tips to follow. First, a good rule of thumb is the writer needs to keep in mind that his paper will be addressed to someone who already knows about the field he is writing about. Second, to be sure that the paper respects the norms required, a simple step to start with before is to read some already written scientific papers. This will help in understanding the format, the content, and the style.

Besides, successful production of a written product for submission to a peer-reviewed scientific journal requires substantial effort. Such an effort can be maximized by following a few simple suggestions when composing/creating the product for submission. By following some suggested guidelines and avoiding common errors, the process can be streamlined and success realized for even beginning/novice authors as they negotiate the publication process. When it comes to the sections the paper is composed of, chapter four (suggestions and recommendations will highlight them in a little more details.

1.4 Conclusion

The overall objective of this chapter was to put the reader in the vein of the topic this thesis is about i.e. skills-centred approach for ESP course design in general and writing a scientific paper in particular. To do so, the rationale behind ESP as an approach not a product was dealt with (including definitions, needs

analysis and approach to design a course). Then, how to write a scientific paper was given (including first; what writing is in general and technical in particular). The following chapter will shed light on the research design and procedures undertaken to realise the empirical phase of the work.

Chapter
Two

2.1. Introduction

The current chapter attempts to describe the research design, approaches, and procedures. It states the rationale behind using the case study. It also gives a more or less clear idea of the combination of the research methods adapted to both quantitatively and qualitatively approaches and; essentially used to analyse the obtained data. In this respect, a semi-structured interview, a questionnaire, and content analysis will be exploited as research instruments.

2.2. The Research Design

This research was conducted under the umbrella of the case study research design. The reason for choosing this type of research is that it focuses on understanding the phenomenon -in this case writing a scientific article by master physics students - within its natural settings and objectives. Before talking about the case study as a research design, it is worth mentioning here that the whole process can be summarized- as stated by Mouton (2001:133): *"To satisfy the information needs of any study or research project, an appropriate methodology has to be selected and suitable tools for data collection and analysis have to be chosen"*.

Case study, as defined by Yin (1994), Eisenhardt (1989), and others, has well-defined steps. However it is significant, at this level, to note down that it does not involve the use of a particular sort of evidence. Yin (1994) lists six most important sources of evidence: documents, archival records, interviews, direct observation, participant observation, and physical artifacts. Table 1.1 summarizes both strengths and weaknesses of the six elements:

Table2.1. Strengths and Weaknesses of Sources of Evidence adapted from

(Yin, 1994: 103)

Source of Evidence	Strengths	Weaknesses
Documents	Stable – can be reviewed repeatedly Unobtrusive- not created as a result of the case study Exact- contains exact names, references, and details of an event Broad coverage- long span of time, many events , and many settings	Retrievability- can be difficult to fin Biased selectively- if collection is incomplete Reporting bias- reflects (unknown) bias of author Access- many of deliberately withheld
Archival records	Same as those for documentation Precise and usually quantitative	Same as those for documentation Accessibility due to privacy reasons
Interviews	Targeted- focuses directly on case study topic Insightful- provides perceived causal inferences and explanations	Bias due to poorly articulated questions Response bias Inaccuracies due to poor recall Reflexivity- interviewee gives what interviewer wants to hear
Direct observations	Reality- covers events in real time Contextual- covers context of case	Time – consuming Selectivity- broad coverage difficult without a team of observers Reflexivity- event may

Source of Evidence	Strengths	Weaknesses
		proceed differently because it is being observed
		Costs- hours needed by human observers
Participant observation	Same as above for direct observation Insightful into interpersonal behaviour and motives	Same as above for direct observation Bias due to participant observer's manipulation of events
Physical Artifacts	Insightful into cultural features Insightful into technical operations	Selectivity Availability

Additionally, it can be accomplished using quantitative and/or qualitative methodologies (these two will be highlighted throughout this chapter). A frequent confusion is that case studies are solely the result of ethnographies or of participant observation (Yin, 1981).This unique characteristic-the ability of the researcher to use observations of a single unit or topic, or contextual case, as the central point of a study, along with its plurality as a research method-has enabled researchers using the case study to go beyond the boundaries of the traditional research paradigms.

In spite of how it is used, for either theory building or theory testing, case study research is an essential research methodology for applied disciplines. It is a process of scholarly inquiry and exploration whose fundamental objective is to create new knowledge (Herling et al, 2000). It can also be considered as a research strategy aiming at examining an existing phenomenon and the associated contexts

that are not clearly apparent. For example, experiments vary in that they focus on isolating the phenomenon from its context; histories as well vary in that they are limited to past phenomena. Two concepts were mentioned above are likely to be highlighted in a little more details i.e. theory building and theory testing.

The former (theory building) refers to the fact that researchers are there in the vein with no theory in mind. After conducting research following a systematic approach based on the rules of science i.e. observing the phenomena or the problem, formulating the hypotheses, collecting and analysing data; they end up with, develop, or build a theory which will serve as a solution to future problems. The whole process is referred to as defining the unknown.

On the other hand, the latter (theory testing) denotes that researchers start with an already given theory when approaching a problem. After conducting research they provide a new conception about that theory. In other word, theory testing is about redefining the known by seeing it from a new angle. Which gets to the point is that both theory building and testing are- in fact- leading to each other as mentioned in the following figure.
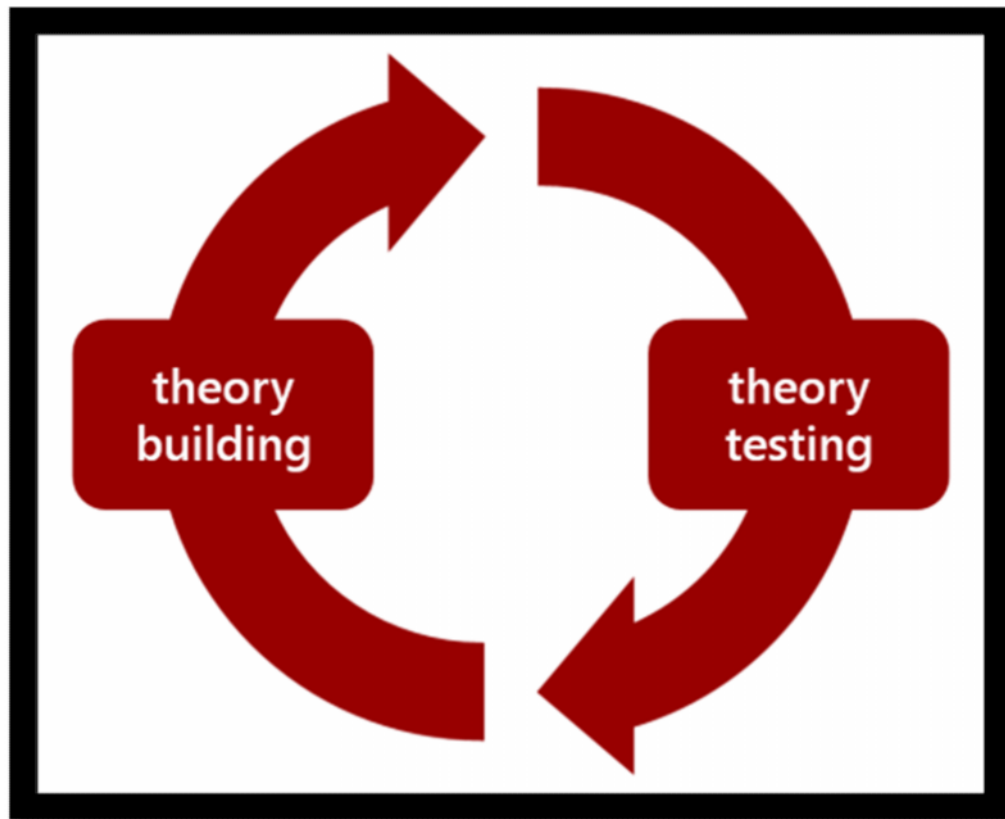
Figure 2.1 Theory Building Vs Theory Testing Adopted From

(Colquitt and Zapata-Phelan: 2007)

The stated distinctions amongst types of evidence, data-collection technique, and research approach are believed to be significant in defining case study research. In the vein of all other forms of research, it should be concerned with issues such as methodological strictness, validity, and reliability. This is accomplished through the six elements (Stake, 1981).

First, determining and defining the research questions. This step serves in guiding the whole investigation as it shows the research the point of departure and the point of arrival with the existing literature in between. Second, selecting the cases and determining data-gathering and analysis techniques. At this level, the researcher is likely requested to make profit from previous research or cases done in relation with his own. The reason behind is that the conclusions as to the

recommendation and or suggestions of previous studies will serve as a basic information for the researcher. After that a clear image should be developed about how the necessary data will be collected and analysed. All this aims to ensure reliability and validity.

Third, preparation to collect data. Due of the fact the researcher will find himself in front of a large amount of data, it is highly requested to have an advance preparation which will represent a support while handling that large amount of data in a documented and systematic fashion. All this is referred to as databases which can assist the process of categorizing, sorting, and retrieving data for analysis.

Fourth, collecting data in the field. Here, the researcher will address his data collection instruments to the participants involved. In return, he will receive the feedback which will be evaluated and analyzed by the end (the fifth element).

Sixth, preparing the report. This final element is the nucleus of the case study as it will summarize the whole process. By doing this, the research will move from all general to specific and from all what was complex to easy. Consequently, the final report, draft, or manuscript will allow the reader to question and examine the study and reach an understanding independent of the researcher.The following table summarizes the existing literature about case study as a research design:

Table 2.2 Case Study as a Research Design Adopted from (Hakim et.al, 1994)

Author/ Definition	McKinney 1966	Saunders 1981	Stake 1985	King 1985	Smith 1988	Yin 1989	Patton 1990	Hakim 1994
Holistic				✓			✓	✓
Absence of control					✓			
Rare phenomena					✓			
Sources of ideas					✓			
Sources of hypotheses					✓			
Situation of theory development					✓	✓		
Future systematic research					✓	✓		
Boundaries between phenomena and context are not clearly defined					✓	✓		
Contemporary focus within a real life context					✓	✓	✓	
How and why questions					✓	✓		

Author/ Definition	McKinney 1966	Saunders 1981	Stake 1985	King 1985	Smith 1988	Yin 1989	Patton 1990	Hakim 1994
Dependent on inductive reasoning		✓						
Use of multiplicity of date		✓				✓	✓	
Are specific		✓						
Cannot be standardised		✓						
Are descriptive, qualitative, exploratory and explanatory		✓		✓	✓	✓		
Have a heuristic value		✓						
Empirical enquiry						✓		
Multiple sources of evidence are used						✓		
Intensive examination of specific factors							✓	

Author/ Definition	McKinney 1966	Saunders 1981	Stake 1985	King 1985	Smith 1988	Yin 1989	Patton 1990	Hakim 1994
Unique configuration of being	✓							
Bounded system			✓					
Embedded case studies were sub units of analysis						✓		
Unit chosen was temporally and spatially bound	✓							

As stated previously, the strengths of the case study justify its choice in this work. For instance, it enables the researcher to have an in-depth vision of writing scientific papers as a means of content delivery for an ESP course at the University of Tlemcen and the series of procedures related to it (the way those papers are delivered and received by the audience). It also allows data crosschecking as many sources of evidence are used such as, interviews and questionnaire. Thus a researcher selects a case study design because of the nature of the research problem and the questions being asked.

Case study is the best plan for answering the research questions; its strengths outweigh its limitations. The case study offers a means of investigating complex social units consisting of multiple variables of potential importance in understanding the phenomenon. Anchored in real-life situations; the case study results in a rich and holistic account of a phenomenon. It offers insights and illuminates meanings that expand its readers' experiences.

These insights can be construed as tentative hypotheses that help structure future research; hence, case study plays an important role in advancing a field's knowledge base. Because of its strengths, case study is a particularly appealing design for applied fields of study such as education, social work, administration, health, and so on. An applied field's processes, problems, and programs can be examined to bring about understanding that in turn can affect and perhaps even improve practice. Case study has proven particularly useful for studying educational innovations, evaluating programs, and informing policy.

2.3. The Research Approach

The present study opts as well as for a combination of quantitative and qualitative approaches regarded as a worthy method in improving understanding. In practice, both approaches are frequently considered to be suitable within a single investigation. It is up to the researcher to choose a specific approach which will allow him to obtain a somehow clear understanding of the topic. Before defining, giving the strengths, and justifying the use of the combination of both quantitative and qualitative approaches; it seems much more appropriate to draw the reader's attention to each one of them in isolation.

Yet, it is of great value here to make a clear distinction between three main concepts used in both approaches: data, information, and knowledge. Data are the primary source or the ground to start with. They are characterized by being abstract, general, and with no context; whereas, information can be defined as being data in context. Now, if this information widens one's horizon and increases his/her understanding about living the world; it is then called knowledge.

2.3.1. Quantitative Approach

The quantitative research is more or less grounded in the positivist social sciences paradigm which primarily reflects the scientific method of the nature sciences (Creswell, 1994; Jennings, 2001). This paradigm is primarily based on a number of values, including: a belief in an objective reality; knowledge of which is just gained from sense data that can be directly practised and established between independent observers. In addition to this, phenomena are areas under discussion to

natural laws that humans realize in a logical manner through empirical testing. This can be undertaken through making use of two main approaches of reasoning i.e. inductive and deductive hypotheses derived from a body of scientific assumption.

Deductive reasoning- or as it is sometimes referred to "top-down" approach- is about moving from general to the more specific. Figure 2.2 may better illustrate the process deductive approach is about.
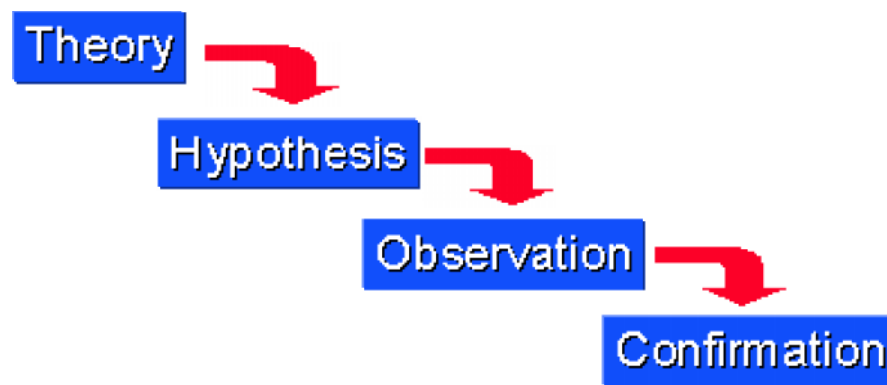
Figure 2.2: The Process of Deductive Approach Adopted from (Trochim and Donnelly: 2008)

On the other hand, inductive reasoning- or as it is sometimes called "bottom up" approach- is about moving from specific observations to broader generalizations and theories. Figure 2.3 highlights that process:
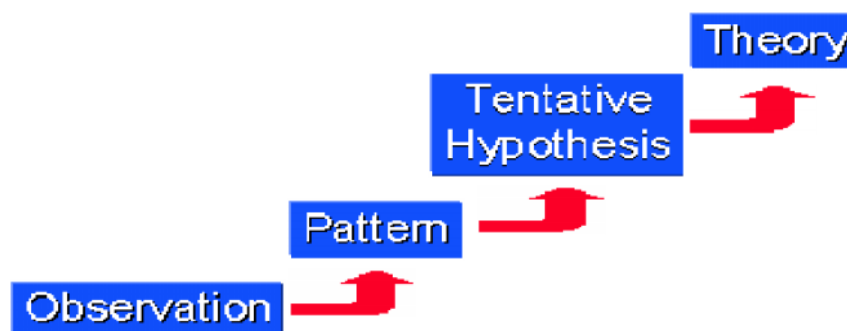
Figure 2.3 The Process of Inductive Approach Adopted From (Trochim and

Donnelly 2008)

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Furthermore, researchers who assume a more deductive approach use theory to conduct the design of the study and the interpretation of the results. They are likely to abstract data from the participants into statistical representations rather than textual pictures of the phenomenon. This means that the entire research process is objectively constructed and the findings are usually representative of the population under investigation.

Its main strengths are *precision* and *control*. Control is achieved through sampling and design; whereas, precision is perceived in the reliable quantitative measurement. A further strength is experimentation which leads to statements about causation, since the systematic manipulation of one variable can be shown to have a direct causal outcome on another when other variables have been dropped out or controlled (Babbie, 1995; Blanch et al., 1999).

Moreover, hypotheses are tested through a deductive approach, and the use of quantitative data permits statistical analysis (Welman et al., 2001). Despite all the benefits quantitative approach comprises, one of the limitations reported by critics is that scientific quantitative approach denigrates human individuality and the ability to think (Walle, 1996). In the same line of thought, Gilbert (1993) argues that its mechanistic philosophy tends to reject several concepts related to freedom, choice, and moral responsibilities. This lead to the point that a scientific approach cannot, in fact, be absolutely objective, since subjectivity is involved in the choice of a problem as valuable of research and in the interpretation of the results.

2.3.2. Qualitative Approach

In fact, a qualitative research to this investigation allowed us to use a naturalistic approach which seeks to understand phenomena in context-specific settings, such as real world setting where the researcher does not attempt to manipulate the phenomenon of interest (Patton, 2001: 39). In this vein, naturalism commonly refers to the philosophical belief that only natural laws and forces (as opposed to supernatural ones) operate in the world and that nothing exists beyond the natural world.

Followers of naturalism (naturalists) assert that natural laws are the rules which govern the structure and behaviour of the natural world. In addition to this, they believe that the universe is a mere product of these laws; and that the goal of science is to discover and publish those laws systematically.

This leads us to claim that this approach is roughly defined as "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification" (Strauss and Corbin, 1990: 17). Instead, it is the kind of research that produces findings arrived from real-world settings where the "phenomenon of interest unfold naturally" (Patton, 2001:39).

Unlike quantitative researchers who often seek causal determination, prediction, and generalization of findings, qualitative researchers look for illumination, understanding, and extrapolation to similar situations (Hoepfl, 1997). In social sciences, researchers undertaking qualitative investigations are governed by a specific paradigm, i.e., the interpretive social sciences paradigm.

With its emphasis on the relationship between socially-engendered concept formation and language, containing qualitative methodological approaches such as phenomenology, ethnography, and hermeneutics, interpretive paradigm is characterized by a belief in a socially constructed, subjectively-based reality, one that is influenced by culture and history.

Nonetheless, it still retains the ideals of researcher objectivity and researcher as passive collector and expert interpreter of data. Gilbert (1993) considers that qualitative methodologies provide us avenues that can lead to the discovery of deeper levels of meaning, i.e., recognition of the importance of the subjective, experiential "lifeworld" of human beings (Babbie, 1995; Blanche et al. 1999).

Yet, research that makes use of a qualitative methodology will draw on data collection methods such as participant observation, interview and/or focus group (Jennings 2001). Due to the fact that it relies on the texts and discourses of participants and involves small numbers of participants in the research process as a result of the process of gathering in-depth information; it is considered as being subjective (Gilbert, 1993).

In this study, the qualitative approach is approximately expected to demonstrate the validity and reliability of claims obtained from the master physics students participating in a technical writing course. It may also serve us to demonstrate the generality of their feelings, impressions, and attitudes towards those lectures to meet their expectations.

Perhaps one of the major limitations of qualitative research and evolution as far as this study is concerned, is the time required for data collection, analysis and interpretation. Indeed, the researcher has to spend a considerable amount of time in the research setting in order to examine holistically and aggregately the interaction, reactions and activities of subjects (Babbie, 1995). The following table summarizes the common differences usually cited between the two approaches:

Table 2.3: Comparison between Qualitative and Quantitative Methods Adopted from (Farrington and Nelson: 1997)

Qualitative Approaches	Quantitative Approaches
Inductive approach to conducting Interviews.	Deductive approach to taking physical counts
Sampling approach related to relative value of data sources.	Sampling approach related to a pre-determined statistical design
Observation recorded in representational form (images, narratives, notes)	Observations recorded as pre classified categories or numbers
Open-form observation approach subject to contextual variables	Closed-form observational approach to meet already-established methodological criteria
Interpretation situation-driven, representing specific situations and difficult to generalize	Interpretation procedure-driven, deriving objective facts and easy to generalize

When it comes to the combination of both approaches ; this fact can improve an evaluation by ensuring that the limitations of one type of data are balanced by the strengths of another. This will ensure that understanding is improved by integrating different ways of knowing. Most evaluations will collect both quantitative data (numbers) and qualitative data (text, images); however, it is important to plan in advance how these will be combined.

Coll and Chapman (2000:28) assert that: *"Some research questions will be readily answered using qualitative means, others quantitative, and some will be best addressed using a combination of the two. What is necessary, is the appropriate research designs".*

In the same vein, Blaikie(1991), Easterby- Smith et al (1991); Creswell, (1994); Decrop, (1999); Bowen (2003); and Massey (2003) emphasize the following benefits of combining qualitative and quantitative methods:

✓ While the quantitative design strives to control for bias so that facts can be understood in an objective way, the qualitative approach strives to understand the perspective of the programmed stakeholders, looking to first-hand experience to provide meaningful data (Easterby-smith et al, 1991).

✓ The accumulation of facts and causes of behaviour are addressed by the quantitative methodology, whereas the qualitative methodology addresses concerns with the changing and dynamic nature of reality (Bowen, 2003).

✓ Quantitative data are collected under controlled conditions in order to rule out the possibilities that variables other than one under study may account

for the relationships identified, while qualitative data is collected within the context of its natural occurrence (Massey, 2003).

In the case of understanding the process of writing scientific papers (the case under investigation in this work), combining both approaches will help the researcher to seek reliable and valid results so that data can be representative of a true and full picture of the problematic situation. In addition, some research questions raised in this study will be readily answered using qualitative means, others quantitative, and some will be best addressed using a combination of the two.

2.4. Data Collection:

Data collection is viewed as a compulsory step and quite essential component to conducting our current case study-based research work. Hence, it is the process of gathering and measuring information on targeted variables in an established systematic fashion, which then enables one to answer relevant questions and evaluate outcomes. The data collection component of research is common to all fields of study including physical and social sciences, humanities and business.

While methods vary by discipline, the emphasis on ensuring accurate and honest collection remains the same. The goal for all data collection is to capture quality evidence that then translates to rich data analysis and allows the building of a convincing and credible answer to questions that have been posed.

Regardless of the field of study or preference for defining data (quantitative or qualitative), accurate data collection is essential to maintaining the integrity of research. Both the selection of appropriate data collection instruments

(existing, modified, or newly developed) and clearly delineated instructions for their correct use reduce the likelihood of errors occurring. A formal data collection process is necessary as it ensures that data gathered are both defined and accurate and that subsequent decisions based on arguments embodied in the findings are valid. The process provides both a baseline from which to measure and in certain cases a target on what to improve.

Thought, generally, conceived as complicated and hard task; O'Leary (2004:150) remarks:

> *Collecting reliable data is a hard task, and it is worth remembering that one method is not inherently better than another. This is why whatever data collection method to be used would depend upon the research goals, advantages, as to the disadvantages of each method.*

The principle collection categories include: participant observation, interviews and focus group (Dalton, Elias et al., 2001). In this study, two techniques as to content analysis will be used: an interview (semi-structured) and a questionnaire. A detailed description of these instruments is provided bellow. But before, the setting as well as the informants (sample population) involved in the study is given.

2.4.1. Setting

The present study has been conducted in the faculty of sciences (department of physics) at the University of Tlemcen. The purpose behind this investigation is to

describe the difficulties encountered by master physics students in writing scientific papers to enhance, enrich, and develop their knowledge and language proficiency, in hope to make the ESP courses of a real value.

2.4.2. Participants' Profile

The students engaged received a *Licence* degree in physics. This first cycle lasted 3 years and prepared them to be future researchers through a variety of courses ranging from Condensed Matter, Modelling of Physical Systems and Information Processing, Physics of gases and plasmas, Polymer Physics, and Energy Physics and Materials. This was for the first cycle.

The students passed successfully to the present two years learning programme, i.e., one theoretical and the other for research work to prepare their master degree. The aim of this second cycle, i.e., *Master* is to develop theoretical and practical knowledge needed for their future career. This was undergone through a rich programme comprising a variety of courses including: Modelling, Simulation and Applications of Physics, Physics of gases and plasmas, Polymer Physics, Energy Physics and Materials, Science and IT materials, and English for science and technology (EST).

EST courses are about developing a rich vocabulary terminology related to science and technology. Moreover, the lectures are given to help those students in ESP situations enlarge their knowledge and be able to differentiate between the social and technical branches when using English.

Since it is about writing in English, gender was not taken into consideration as both genders, i.e., males and females are exposed to the same difficulties while writing scientific papers; which is not the case if it is about speaking (using language) where gender plays an important role.

When it comes to the teachers involved in the study, four teachers were chosen: 2 of them were language teachers and 2 subject specialists. May be the number seems to be small but if looking to the administrative constrains and responsibilities of those teachers, 4 teachers are of great deal in giving a clear idea about the problematic situation of this thesis, i.e., the difficulties encountered by master physics students while writing scientific papers.

2.5. Instruments

As already stated, a semi-structured interview has been addressed to the teachers along this research. Here is a bird-eye view about data collection instruments.

2.5.1. Teachers' Semi- Structured Interview

The Semi-structured interview has been used as data collection instrument or technique. The researcher has a list of key themes, issues, and questions to be covered. In this type, the classification of questions can be changed depending on the direction of the interview. A guide (rubrics) is also used, but additional questions can be asked. (Kajornboon, 2004)

Furthermore, it is a method of research used in the social sciences. While a structured interview has a rigorous set of questions which does not allow one to divert, a semi-structured interview is open, allowing new ideas to be brought up during the interview as a result of what the interviewee says. The interviewer in a semi-structured interview generally has a framework of themes to be explored.

2.5.1.1. General Objectives

This instrument is routed in the history of data collection instruments. Corbetta (2003:270) presents the semi-structured interview as follows: *"The order in which the various topics are dealt with and the wording of the questions are left to the interviewer's direction".* Within a given topic, Corbetta added that:

> *The interviewer is free to conduct the conversation as he thinks, to ask the questions he deems appropriate in the words he considers best, to give explanations and ask for clarification if the answer is not clear, to prompt the respondent to elucidate further if necessary and to establish his own style of conversation.*

The strengths of this type of interview are the additional questions that can be asked and the ones that have not been anticipated in the beginning of the interview. Note taking or tape recording can help the researcher to report the interview. This gives him more opportunities to check out the views and opinions of the interviewees. In this vein, Gray (2004:217) notes that *"probing is a way for the interviewer to explore new paths which were not initially considered"*.

In the same path, David and Sutton (2004:87) argue: *"Having key themes and sub- questions in advance lies in giving the researcher a sense of order from which to draw questions from unplanned encounters"*.

Besides, Cohen (2006) raised the point that many researchers like to use semi-structured interviews because questions can be prepared ahead of time. This allows the interviewer to be prepared and appear competent during the interview. Additionally, the instrument allows informants the freedom to express their views in their own terms. Furthermore, semi-structure interviews can provide reliable, comparable qualitative data and encourages two-way communication.

Those being interviewed can ask questions of the interviewer. In this way it can also function as an extension tool confirms what is already known but also provides the opportunity for learning. Often the information obtained from semi-structured interviews will provide not just answers, but the reasons for the answers. Also, when individuals are interviewed they may more easily discuss sensitive issues help field staff become acquainted with community members. Outsiders may be better at interviewing because they are perceived as more objective, i.e., using both individual and group interviews can optimise the strengths of both.

In sum, the researcher conducting a semi-structured interview is free than the one conducting a structured interview (kajornboon, 2004) in which the interviewer has to adhere to a detailed interview guide. Harrell and Bradley (2009:16) summarize the strengths of this instrument:

✓ Positive rapport between interviewer and interviewee. Very simple, efficient and practical way of obtaining data about things that can't be easily observed (feelings and emotions, for example).

✓ High Validity. People are able to talk about something in detail and depth. The meanings behind an action may be revealed as the interviewee is able to Speak for themselves with little direction from interviewer.

✓ Complex questions and issues can be discussed / clarified. The interviewer can probe areas suggested by the respondent's answers, picking-up information that had either not occurred to the interviewer or of which the interviewer had no prior knowledge.

✓ Pre-Judgment: Problem of researcher predetermining what will or will not be discussed in the interview is resolved with few "pre-set questions" involved, the interviewer is not "pre judging" what is and is not important information.

✓ Easy to record interview (video / audio tapes).

Therefore, the objectives of using a semi-structured interview in the present research is to answer the research questions raised in this investigation, and test the hypotheses derived from them. In addition, it will serve to detect the similarities and differences among those master students in how they respond to technical writing, the difficulties encountered when using this type of lecturing, and to highlight the students' impressions, expectations, and recommendations.

2.5.1.2 Procedures

As far as the semi-structured interview procedure is concerned, the researcher arranged a meeting with each teacher. The meeting was held in the

department of physics and lasted about 20 minutes. In the beginning the researcher explained the rationale behind this semi structured interview, i.e., determining the difficulties as well as the lacuna encountered by master physics students while writing a scientific paper.

Some introductory remarks were developed aiming fundamentally at putting the teachers in the vein of the study. Those remarks were for example: *"you are not obliged to answer all the questions, in case a question is not clearly understood, it can be paraphrased, you can skip some questions till the end ...etc"*. The questions included in this semi structured interview were grouped under three rubrics: (a) Teachers' profile, (b) Issues, tensions, and challenges associated with writing, and (c) Methodologies and techniques to assist students overcome their difficulties in writing scientific papers.

In this sense, very general questions were asked first, primarily related to their field of specialism (language teacher or subject specialist), the degree they hold, and the professional experience. Then, more specific questions about the real issue of the investigation were asked.

Believing that the more the researcher succeeds in recording all the possible details about the answers, the more data will have to be analysed, both audio and video recordings equipments were used. After that, all teachers were thanked for their insightful comments, impressions, and further suggestions as requested. This was processed intentionally to obtain more varied data and recommendations.

2.5.2. The Questionnaire

This part focuses on the questionnaire and how it has been conceived in identifying the problems generated when writing a scientific paper. To do so, a brief overview of the questionnaire and the types of study questions for which it is most suited are highlighted. It is worth mentioning that the greater deal of this part is devoted to a discussion of the steps involved in using the instrument in this study or what is called questionnaire design as well.

The questionnaire is viewed as list of a research or survey questions asked to respondents, and designed to extract specific information. It serves four basic purposes: to (1) collect the appropriate data, (2) make data comparable and amenable to analysis, (3) minimize bias in formulating and asking question, and (4) to make questions engaging and varied.

Moreover, a common understanding amongst scholars is that the questionnaire is an instrument used to collecting and recording information about a particular issue including a list of questions. For the fulfilment of this purpose, the questionnaire can be completed in one of the following two basic ways: (a) with the absence of researcher i.e. the respondents are given the questionnaire to answer with no reference or help of the researcher. (b) with the presence of the researcher. This last is referred to as an interview (structure, semi-structure, or unstructured). This does not deny that the questionnaire cannot be answered with the presence of the researcher.

2.5.2.1. Strengths of Using the Questionnaire

The following Strengths motivated the researcher to use this instrument as a data collection method (Kemper, 2003)

- ✓ Good for measuring attitudes and eliciting other content from research participants inexpensive (especially mail questionnaires and group-administered questionnaires)
- ✓ Can administer to probability samples
- ✓ Quick turnaround
- ✓ Can be administered to groups
- ✓ Perceived anonymity by respondents possibly high
- ✓ Moderately high measurement validity for well-constructed and well-tested questionnaires
- ✓ Low dross rate for closed-ended questionnaires
- ✓ Ease of data analysis for closed-ended items

Furthermore, the main advantages of the questionnaire is that it is relatively easy to analyse and familiar to library staff and managers. Yet, it allows the researcher to get in touch with a large sample of the given population and can be contacted at relatively low cost as it is simple to administer. Additionally, the format of the questionnaire is likely to be familiar to most respondents; which in return make it simple and quick for them to complete it as they will have time to think about their answers and are not usually required to reply immediately

2.5.2.2. Types of Questionnaire

Most of us know the importance of questionnaires in collecting survey data from a large audience, but are uncertain about the placement of different types of

questions in questionnaire. There are different types of questionnaires possible that pollsters can send to their audience, and the format of questionnaire depends entirely on what information is to be extracted from respondents. Two types of questionnaire can be listed here: open-ended and closed-ended. This categorization is – of course- based on the nature of the questions included.

2.5.2.2.1. Open Ended Questionnaire

This format make the participants feel free when expressing their opinions about the topic or the issue they are asked about. In addition to this, the questions used have no predetermined set of answers. This means that the respondent is free to answer whatever he/she feels right. If so, the researcher can obtain true, insightful and even unexpected suggestions. In other words, reliable and visible data can be ensured.

2.5.2.3.2. Closed Ended Questionnaire

In this type, multiple choice questions are used. In other word, the participants are exposed to predetermined number of answers for each question. However, that number is not limited i.e. there is no rule of how many answers should be provided. One of the main advantages of including this type in case studies is the opportunity to perform preliminary analysis as the research will have a bird-eye view about what will be provided as answers.

In this study, i.e., determining the difficulties encountered by master physics students while writing their scientific papers, both types are used to ensure more

validity and reliability of the results and thus, enhancing the quality as to the sustainability of teaching English in an ESP situation.

2.5.2.3. Questionnaire Design

A careful consideration has been given to the design of the research questionnaire. This was to ensure greater validity and reliability of the information obtained. However, it was not an easy task since efforts were needed in developing the different stages of the design. The following figure illustrates more:

- **Initial consedirations**
- **Question content, phrasing and response format**
- **Question sequence and layout**
- **Pre- test (pilot) and revision**
- **Final questionnaire**
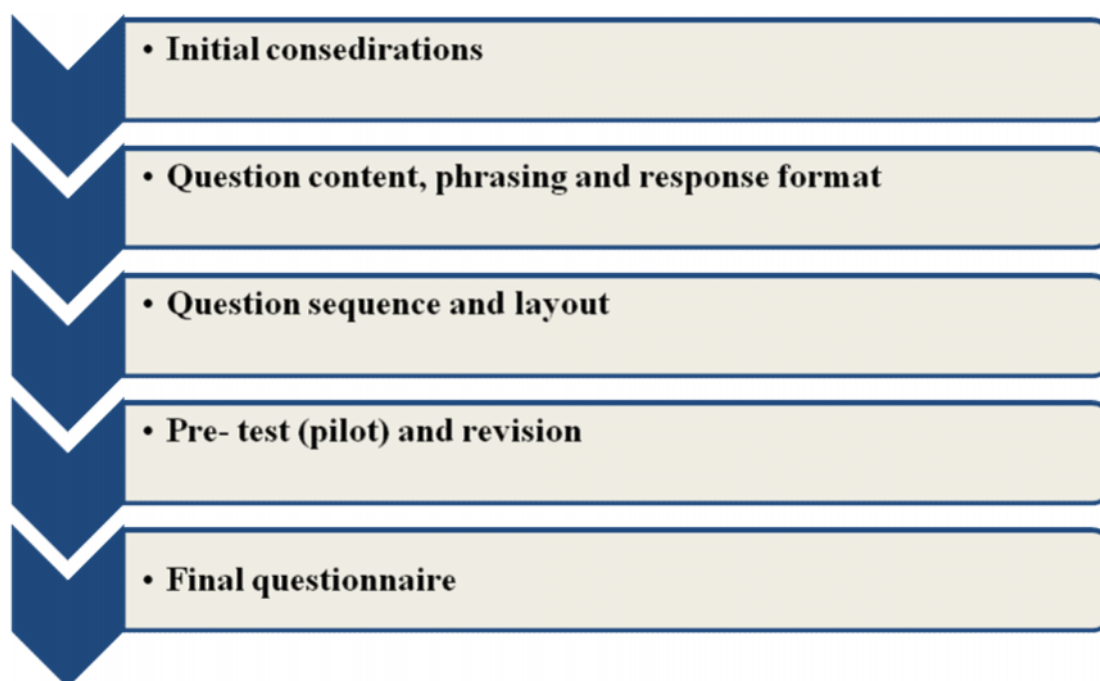
Figure 2.4 Questionnaire Design

This part is about explaining the process of questionnaire design with reference to the main objective of this study, i.e., ESP course concerning writing a scientific paper about physics.

In the first phase, *initial considerations*, was important for the researcher to have a clearer idea about which pieces of information he was in need to collect. Thus, knowing exactly which population is targeted. In addition to this, it is useful

to consider how the findings will be analysed. All this, may have an impact on the design of the questionnaire.

When it comes to the second phase, i.e., *question content, phrasing and response format*, it was significant as it related the core of the process, i.e., the questions themselves. Here the researcher ensured that the questions: First, will add value because if a question is just 'nice to know' and does not add value, it is of great deal to leave it out; second, are apparent and easy to understand; and third, answer what he is asking and do not cause confusion.

Speaking about the third phase, i.e., *question sequence and layout*, it was about how logic could be built. This means that the researcher should number, order and group the questions. this can be handled by: (a) using what is called rubrics, (b) placing simple questions at the beginning, (c) routing some questions , (e.g. if 'no', go to Q5).

Concerning the fourth phase, i.e., *piloting the questionnaire*; one can say that methodologically and academically speaking, it was fruitful to conduct a pilot study or pre-test with a small sample of respondents before addressing it (the questionnaire) to the target population. This helped the researcher in (a) checking whether the questions are understandable as well as easy to answer,(b) highlighting the areas of confusion and any routing errors, (c) providing an estimate of the average time needed to complete the questionnaire.

2.5.2.4. Procedures

Referring to the procedures of administrating the questionnaire; the researcher arranged a meeting with 20 students and gave them the questionnaire to

fulfil. Yet, not all students answered the questions with the presence of the researcher as they asked to take it with them and give it back later on.

As processed with the interview, the questionnaire was also divided into three rubrics: (a) general overview about the students learning career(especially with English), (b) description of the writing course to have a clear image about the difficulties encountered while writing, and (c) description of the scientific writing course which is the core of this investigation.

2.5.3. Content Analysis

In the same line with the semi- structured interview and the questionnaire, content analysis can be used as a data collection instrument. This part provides a general overview about this qualitative analysis method for qualitative social research.

2.5.3.1. Content Analysis Defined

According to Titscher *et al*. (2000:55), content analysis is *"the longest established method of text analysis among the set of empirical methods of social investigation".* Nevertheless, homogenous understanding of this method does not seem to exist at present, but originally the term *"referred only to those methods that concentrate on directly and clearly quantifiable aspects of text content, and as a rule on absolute and relative frequencies of words per text or surface unit"* (ibid).

In the same line with Titscher et al, Babbie (2001: 304-309), argued that: *"content analysis can be defined as "the study of recorded human communications"*

He added that it is *"essentially a coding operation," with coding being "the process of transforming raw data into a standardized form".*

In addition to that, Ryan and Bernard (2000:780) see content analysis as one of the *major coding traditions .*According to them:

> *Content analysis comprises techniques for reducing texts to a unit-by-variable matrix and analyzing that matrix quantitatively to test hypotheses" and the researcher can produce a matrix by applying a set of codes to a set of qualitative data (e.g. written texts etc), with the assumption being that the codes of interest have already been discovered and described beforehand.*

From their definition it is clearly understood that they contend that *coding* forces the researcher to make judgments about the meanings of contiguous blocks and that coding is the heart and soul of (whole) text analysis (ibid.).

2.5.3.2. Procedures

The procedures of conducting content analysis in this study are based on Mayring (2003:42-46) model where he emphasizes the following central points:

✓ Fitting the material into a model of communication: It should be determined on what part of the communication inferences shall be made, to aspects of the communicator (his experiences, opinions, feelings), to the situation of the

text production, to the socio-cultural background, to the text itself or to the effect of the message.

✓ Systematic, rule-based analysis: The material is to be analyzed step by step, following rules of procedure, devising the material into content analytical units.

✓ Categories in the centre of analysis: The aspects of text interpretation, following the research questions, are put into categories, which were carefully founded and revised within the process of analysis (feedback loops).

✓ Subject-reference instead of technique: instead of merely being a set of techniques for text analysis, the connection to the concrete subject of analysis is a very important point for qualitative content analysis. This implies that the procedures of content analysis cannot be fixed but have to be adapted depending on the subject and its context.

✓ Verification of the specific instruments through pilot studies: Due to the subject-reference, fully standardized methods are abstained from. That is why the procedures need to be tested in a pilot study. Inter-subjective verifiability is a case in point here.

✓ Theory-guided analysis: Technical fuzziness of qualitatively oriented research needs to be balanced by theoretical stringency. This means that the state-of-the-field of the respective research subject as well as subjects closely related are required to be taken into account and integrated into the analysis.

✓ Inclusion of quantitative steps of analysis: Quantitative analyses are especially important when trying to generalize results. As a matter of fact,

this notion of triangulation to argue in favour of an integration of qualitative and quantitative methods is not limited to content analysis but has been raised by many researchers(e.g. Diekmann, 2003, p.18; Kelle, 2001; Mayring, 2001;).

✓ Quality criteria of reliability and validity: The procedure has the pretension to be inter-subjectively comprehensible, to compare the results with other studies in the sense of triangulation and to carry out checks for reliability.

To sum up, it may be understood that this forms the foundation for a qualitatively- oriented procedure of text, in this case papers written by master physics students, interpretation. Figure 2.5 shows the basic proceeding of qualitative content analysis from the initial theory to the final analysis and interpretation.

Theory

Coding agenda

Summary

Explication

Structuring

Text

Information

Analysis/
interpretation
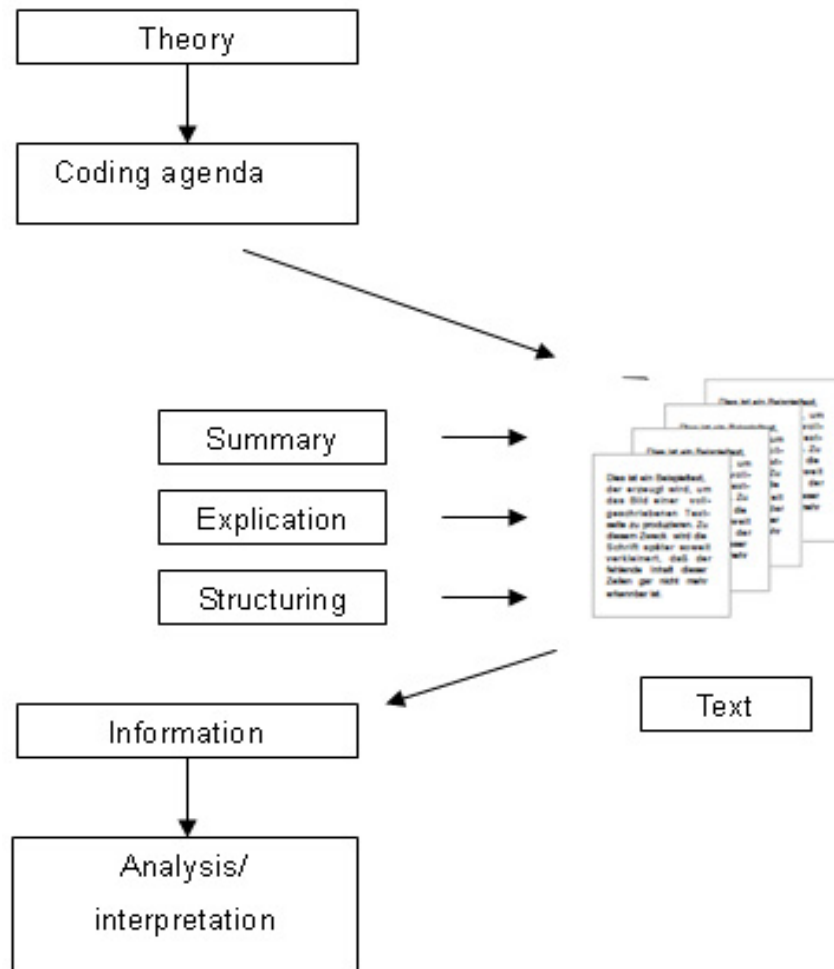
Figure 2.5 Basic Proceeding of Qualitative Content Analysis Adopted

From (Gläser and Laudel, 1999:4)

Speaking about the first element in their process, i.e., *summary*, it refers to the phase where the researcher tries to: (a) reduce the materials in hand in a way that can help him preserving the essential content. (b) Abstraction to create a manageable corpus which still reflects the original material. In other words, this step focuses the idea that the text, i.e., the article is paraphrased, generalized or abstracted and reduced.

Now, concerning *explication*; it involves: explaining, clarifying and annotating the material. To do so some basic steps are to be followed:

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- ✓ Lexico-grammatical definition is attempted,

- ✓ The material for explication is determined,

- ✓ Narrow context analysis and a broad context analysis.

- ✓ Explicatory paraphrase is made of the particular portion of text and the explication is examined with reference to the total context.

When it comes to *structuring*, the text is structured according to content, format, and scaling. To do so, the researcher is likely supposed to go through the following stages:

- ✓ Determining the units of analysis

- ✓ Establishing the dimensions of the structuring based-of course- on a theoretical framework

- ✓ Fixing the features and categories of the system.

- ✓ Formulating definitions and key examples

- ✓ Processing the results.

2.6. Data Analysis:

Data analysis is a process of inspecting, cleaning, transforming, and modelling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making. Data analysis has multiple facets and approaches, encompassing diverse techniques under a variety of names, in different business, science, and social science domains.

So far, data analysis represents the *construction phase* of the study. This process includes: deciding on the suitable analysis to conduct for each question, preparing data for analysis, and summarizing results. From the existing literature - be it qualitative or quantitative analysis- successful data analysis requires the following steps:

- ✓ Understanding the existing data analysis methods.

- ✓ Early planning for data analysis in the study and making revisions in the plan as the work develops.

- ✓ Understanding which methods will best answer the research questions put forward by the researcher.

- ✓ Highlighting the data that have been collected.

- ✓ Once the analysis is finished, recognizing how the weaknesses or the limitations in the data or the analysis affect the conclusions driven.

To conclude, the study questions usually direct the analysis, but the type and value of the data determine what analyses can be established and what can be inferred from them. As cited in the very beginning of the chapter a combination of both quantitative and qualitative methods were used to analyze the obtained data. Mouton and Marais (1990) see such a bridge as necessary, since a single approach cannot succeed in encompassing human beings in their full complexity.

2.6.1. Quantitative Data Analysis

Quantitative analysis is suited to theory testing and developing universal statements, i.e., it is supposed to supply researchers with a *broad* picture of the situation or t context under investigation. It thus produces results that are generalisable across other contexts, although they neglect the reality of situations. Furthermore, quantitative investigation may smooth the task of understanding the topic by using some programs such as the SPSS (statistical package for social sciences).

Hence, the use of graphs (histogramme, secteurs…etc) or smart arts (hierarchie, processus…etc) may give the work a more scientific direction. These techniques have been used to analyze the questionnaire findings. It should be mentioned that this in the problematic situations where the sample size was to a certain extent satisfactory and has been rightfully selected to represent the target population of awareness, the relevance of statistical methods has helped a lot in reaching greater validity to research' conclusions.

2.6.2. Qualitative Data Analysis

Analyzing data qualitatively is essentially a simple process. It consists of three parts: *noticing*, *collecting,* and *thinking* about interesting things. Figure2. 6 represents the process and the relationships among its parts

Notice things

Think about things   **collect things**
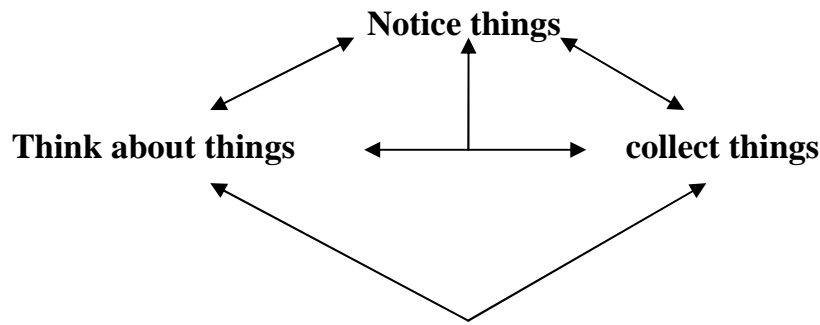
Figure2. 6 Qualitative Data Analysis Adopted From (Seidel, 1998)

The above figure suggests that the process of qualitative data analysis is not linear. This means that when the researcher is engaged in this process, he does not simply notice, collect, think about things, and then write a report but the whole process has the following characteristics:

- ✓ *Iterative and Progressive*: it is a cycle that keeps repeating. For example, when the researcher is thinking about things he may also start noticing new things in the data. He then collects and thinks about these new things. In principle it is an infinite process.

- ✓ *Recursive*: denoting that one part can call the researcher back to a previous part.

- ✓ *Holographic*: meaning that each step in the process contains the entire process. For example, when the researcher first notices things he is already mentally collecting and thinking about those things.

After collecting data, the researcher engaged in a three step process of qualitative analysis, which is appropriate in this study since it focuses on aspects such as interaction, motivation and behaviour:

- ✓ *Data reduction* which refers to the process of selecting, and thus simplifying, the data that appears in written field notes or transcriptions.

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✓ *Data display*, i.e., ways used to display data. These include: matrices, graphs, and charts illustrating the patterns and findings from the data.

✓ *Conclusion, drawing, and verification* that refer to a process of building a preliminary thought about patterns and explanations from the findings. Additionally, verifying them frequently by checking the data, and forming a new matrix. The three steps are presented in the following figure:
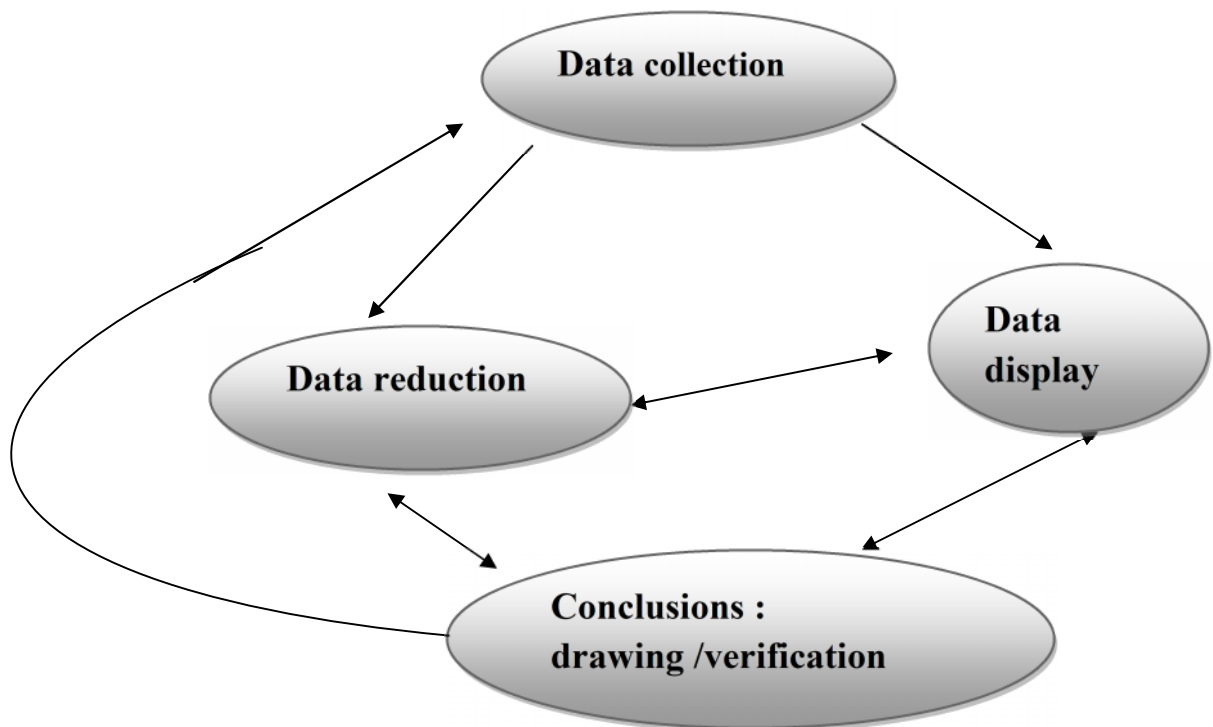
Figure 2.7 Process of Qualitative Data Analysis: An Interactive Model Adopted From (Miles et al., 1994)

In sum, figure 2.8 attempts to summarise the whole process of the mixed-methods research design used in this investigation. This mixed- research process model has the potential to reduce some of the problems associated with singular methods. Besides, by utilizing it within the same framework, it can incorporate the strengths of all the approaches used.

The essential goal of mixed methods research is to tackle a given research question from any relevant angle, making use where appropriate of previous research and/or more than one type of investigative perspective. Sometimes referred to as mixed methodology, multiple methodology or multi-methodology research, mixed methods research offers you the best of both worlds: the in-depth, contextualized, and natural but more time-consuming insights of qualitative research coupled with the more-efficient but less rich or compelling predictive power of quantitative research.

These approaches are far more comprehensive than attacking a problem from only one point of view and, with the emergence of strategies and tools for blending these different types of data, allow for the crossing of disciplinary boundaries like never before.
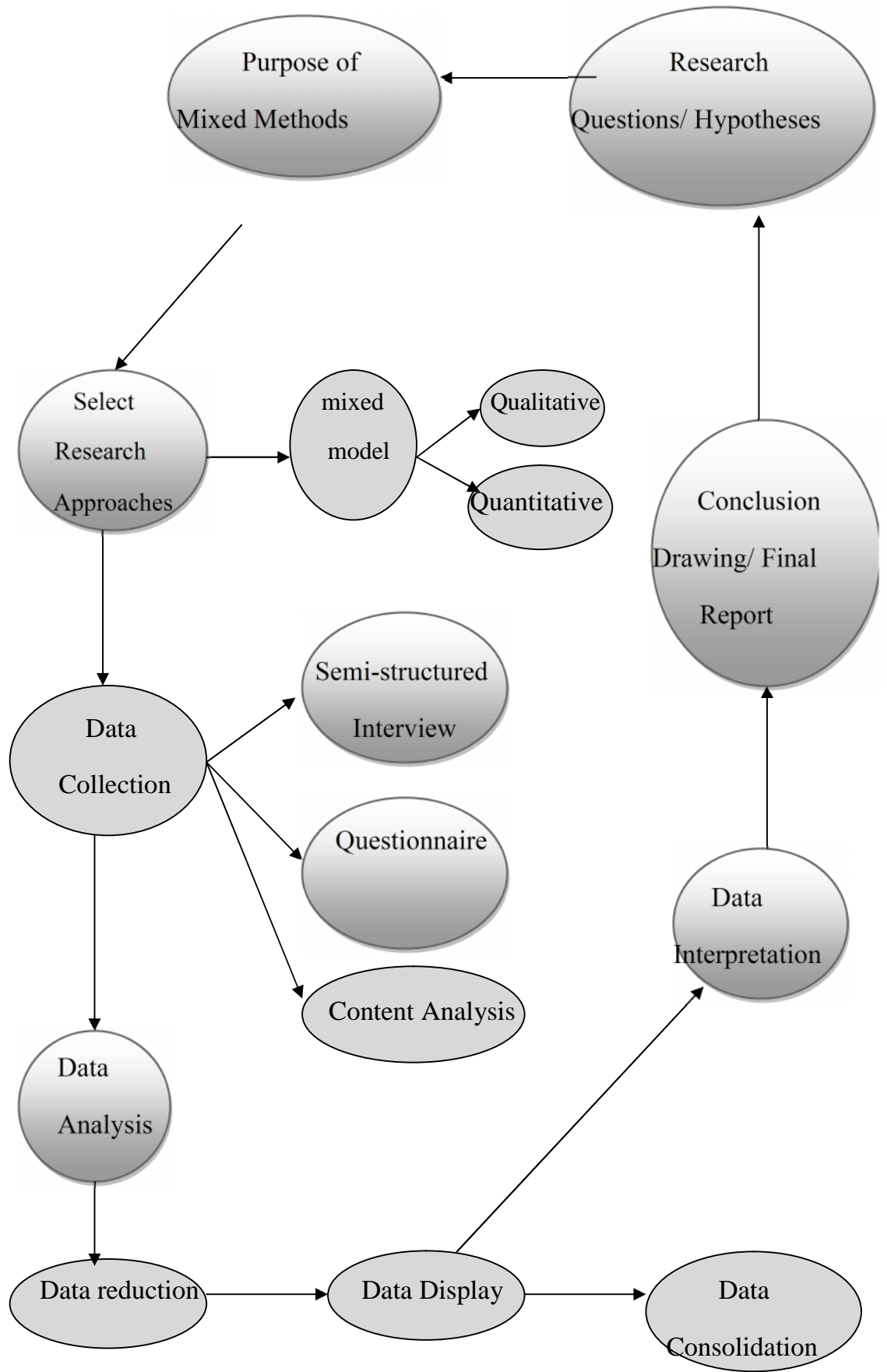
Figure 2.8: Mixed Methods Research Design Adapted from (Burke and Anthony, 2004: 23)

2.7 Piloting the Study

As mentioned previously, a part from a good design of each questionnaire is using what is called pilot study. According to Polit *et al*. (2001: 467): "The term pilot study is used in two different ways in social science research. It can refer to so-called feasibility studies which are "small scale version[s], or trial run[s], done in preparation for the major study".

In the same line with Polit *et al*, Baker (1994: 182-3) added that: "A pilot study can also be the pre-testing or 'trying out' of a particular research instrument". This was a brief overview about what a pilot study means. Regarding the advantages or the motivating factors which push the research to use this technique in this study and more precisely for testing the validity of the questionnaire, Peat *et al*. (2002:123) lists the following ones:

- ✓ Administer the questionnaire to pilot subjects in exactly the same way as it will be administered in the main study

- ✓ Ask the subjects for feedback to identify ambiguities and difficult questions.

- ✓ Record the time taken to complete the questionnaire and decide whether it is reasonable.

- ✓ Discard all unnecessary, difficult or ambiguous questions

- ✓ Assess whether each question gives an adequate range of responses.

- ✓ Establish that replies can be interpreted in terms of the information that is required.

- ✓ Check that all questions are answered.

- ✓ Re-word or re-scale any questions that are not answered as expected.

✓ Shorten, revise and, if possible, pilot again.

The results of the pilot study revealed important aspects about the questionnaire used in the investigation about the difficulties encountered by master physics students while writing a scientific paper. Those results will be exposed and discussed in chapter three.

2.8 Conclusion

Chapter two has tried to offer a discussion of the rationale behind the choice of case study as a research design and the choice of the methodology used to conduct the present work. The range of methods and approaches that were highlighted falls within the paradigms of both quantitative and qualitative research. This was supported by a description of the use of combination and its benefits. Finally, the method of data collection, analysis, sampling (informants), and procedure were also described.

The following chapter will essentially deal with the findings of each instrument and the analysis of data as well as the interpretation of the main results according to the stated objectives, research questions and hypotheses.

Chapter Three

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3.1. Introduction

This chapter reviews the process of data analysis and data interpretation. This involves the combination of both quantitative and qualitative methods to reflect on the research questions and objectives, and to ensure, later on, validity and reliability of findings. The concept of validity involves whether the researcher really observes what should be observed; whereas, reliability is always referred to as the degree between the natural situation of the investigation and data that the researcher recorded or obtained from the instruments used (semi- interview, the questionnaire, and content analysis). This is indeed, preceded by summarising the main results of the pilot study.

3.2. The Main Findings of the Pilot Study

The pilot study, in fact, revealed important results which can be listed below:

✓ A need for translating the questionnaire into French and why not into Arabic. The reason behind is the great impact of Arabic as a mother tongue and the nature of their discipline where French is the main actor. This is chiefly to ensure a better understanding, and thus, reach a better natural feedback.

✓ The presence of the researcher was crucial to clarify what was considered to them as unclear questions. This idea was clearly seen while speaking about concepts such as: formal, informal, training, and the different parts of the scientific paper.

✓ The questionnaire was quite long, that is why students requested to be given an adequate amount of time to answer it. In fact, the status of being long is

quite normal as the research tried to cover almost all the aspects of writing a scientific paper.

It should be stressed here that the students were more collaborative when answering the questionnaire as they gave back the questionnaire in a short time. Furthermore, they showed a desire to know the results of the study for the simple reason that it will help them in their future career in general, and writing scientific papers in particular.

3.3. The Interview Analysis

This part brings into account a detailed description about the semi-structured interview used as a data collection technique. This includes: the findings, as well as the analysis and interpretation of the main results related to the research questions and hypotheses raised by the researcher.

3.3.1. The Results

The results of the semi- structured interview are classified according to the different rubrics already mentioned in the previous chapter.

3.3.1.1. The Teachers' Profile

The results obtained from the questions related to this first rubric can be summarised in the following tables:

Question One

Table 3.1 Years of Experience

Teacher One	Teacher Two	Teacher Three	Teacher Four
2 years	7 years	3 years	4 years

The table above denotes that all teachers engaged in the study have reasonable years of experience. This leads to say that they have acquired adequate knowledge about teaching English both in EGP and ESP situations.

Question Two

Table 3.2 Types of Teachers

Teacher One	Teacher Two	Teacher Three	Teacher Four
Language teacher	Subject specialist	language teacher	Subject specialist

Based on the above mentioned table, and since it is an ESP situation; two types of teachers were engaged in this study: language teachers who received their degree in teaching English, and subject specialist who have developed - by experience-enough knowledge about that language. This knowledge about English was due to the fact they have the opportunity to meet native speakers in the target situation bay taking part in international conferences and study days.

Question Three

Table 3.3 The Stressed Skill

Teacher One	Teacher Two	Teacher Three	Teacher Four
Speaking and listening	Writing and speaking	Reading and writing	Reading and writing

The results summarised above indicate that the four language skills were used while teaching. Nevertheless, the skill stressed or focused on differs from one teacher to the other depending on the teachers as to the needs of both students and situations.

Table 3.4 Teacher Training

Teacher One	Teacher Two	Teacher Three	Teacher Four
No	Yes at CACI with the British Council	Yes ESP teachers' training	No

When it comes to teacher training, the table shows that only two teachers receive training: one at CACI in collaboration with the British council, and the second was an ESP teacher.

3.3.1.2 Issues, Tensions, and Challenges associated with Writing

As far as the first question is concerned, all teachers argue that writing is quite crucial as a productive skill in opposite to the other skills (speaking listening and reading). They added also that it is necessary to integrate it in the very beginnings of the learning career. The reason behind is that the writing skill represents an arena of defeat for many students not only in ESP situation but even in EGP context.

Concerning the second question, the teachers provided a variety of assignments to be handed such as: writing letters, paragraphs, summarizing texts, writing about their future expectations and plans to put into practice what has been learned. They added also that the above mentioned assignments depend deeply on the time devoted to English lectures as to the students' needs. With reference to the third question, table 3.5 summarises the results.

Table 3.5 Teaching about Writing Scientific Papers

Teacher one	Teacher two	Teacher three	Teacher four
No	Yes	Yes	Yes

Regarding the fourth question, here also a range of difficulties was provided including: thinking either in the mother tongue language or French, translating idea rather than producing them in English, lack of methodology (both format and content), lack of vocabulary, poor knowledge about the topic they are writing about. All this seems to have a deep impact on students' achievements while writing as their attention will be dispatched.

For the last question, the following reasons behind difficulties were stated: poor and sometimes the total absence of training, lack of authentic materials (produced in English) either written or spoken, diversity of style to follow (MLA, Chicago...etc). This last was still is and will continue to be critical in clarifying the underlying methodology when writing, especially in the Algerian context.

3.3.1.3 Methodologies and Techniques to Assist Students Overcome their Difficulties in Writing Scientific Papers

The first question clearly reflects the dominance of a positive answer expressed by teachers. When it comes to the second question, the way of motivating students differed from one teacher to another. For example, raising their awareness on the importance of writing, encouraging them to write, telling them that making mistakes or errors is part of the learning process, rewarding them (marks) even if

the paper is not as good as what is expected, etc. This reveals that, the way is not important however reaching or creating a motivating atmosphere is.

For the third question, all teachers argue that theory is not always enough while teaching. This is why; they use previous models or papers and advise their students to check them before even writing their own. Furthermore, teachers highly emphasise the notion of good practice as it leads to perfect. The answers reported by teachers, while the fourth question, were in the line of thought with discussing students' papers. This helped both teachers and students overcome the problems.

For the last question, teachers were very collaborative and provided practical suggestions and recommendations to overcome the difficulties encountered while writing a scientific paper not only about physics but also in other disciplines. Among of which: reading about writing, summarising, avoid thinking in the mother tongue, develop the habit of writing, and group work.

3.4. Analysis of the Questionnaire

In the same line with the semi-structured interview, the results obtained from the questionnaire are listed below.

3.4.1. General Overview about the Students Learning Career

For question one, the average of years mentioned by the students concerning studying English was between 2 to 3 years.
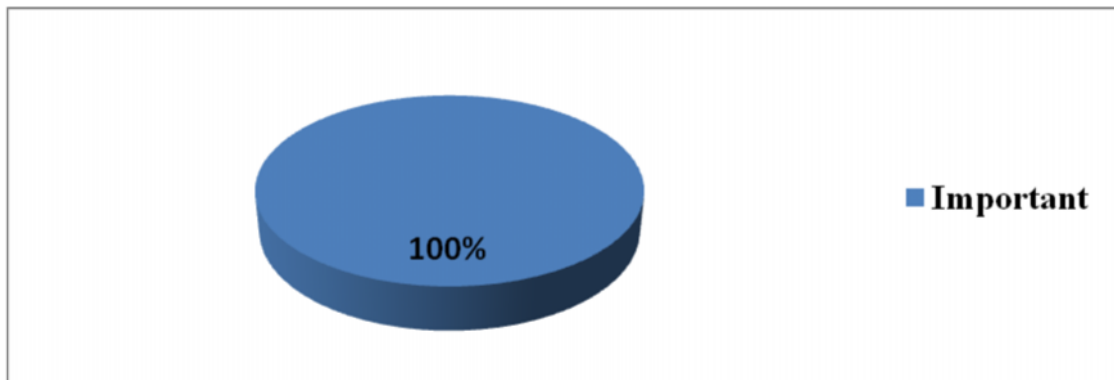
Figure 3.1 The Importance of English

It is clearly noticed from the figure that all students were aware of the importance given to English nowadays in education and their department in particular. This is seen in the increasing demands of integrating English in their discipline as to the efforts they are making to learn it outside the university context.

Question Three
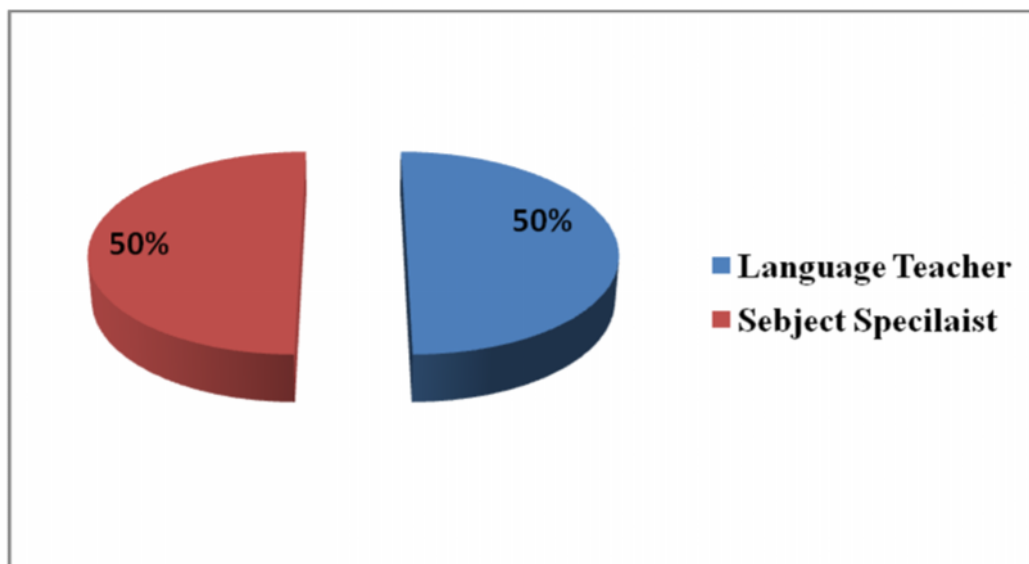
Figure 3.2 the Teacher of English

Here, students raised the fact they were exposed to both language and subject specialist teachers of English. Those teachers did their best to give them as much as possible knowledge about English (be it EGP or ESP).
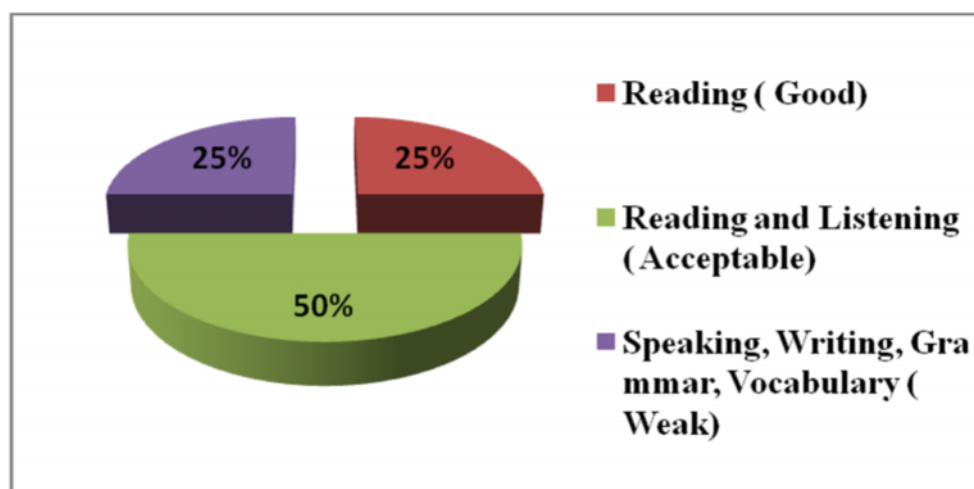
Figure 3.3 knowledge about the Language Skills

When it comes to the knowledge of the four language skills, having an accepted level in reading was the characteristic of some students as they were accustomed with this habit. Listening also was perceived to be accepted. However the big problem was in writing and speaking due to the weak level in grammar and vocabulary.
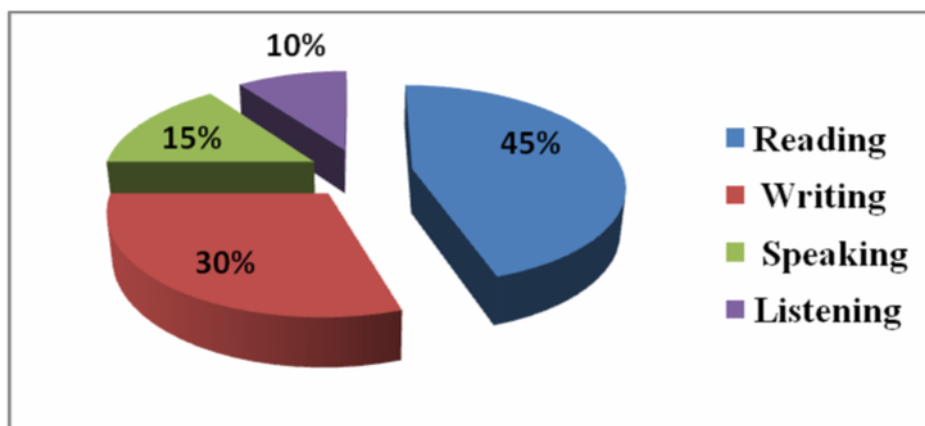
Figure 3.4. The Needed Skills

The previous figure shows that reading, writing and speaking were stressed as they were considered to be the more needed one in the students' career.

Question
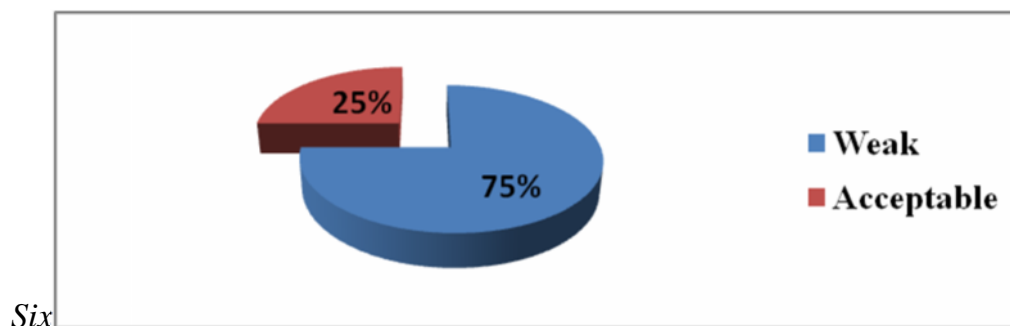
Six

Figure 3.5 the Writing Level

The results obtained from this question reflected the core of the investigation, i.e., there are difficulties while writing not only scientific papers but in English in general. As a result, the majority of students find it academic to say that their level in writing was weak.
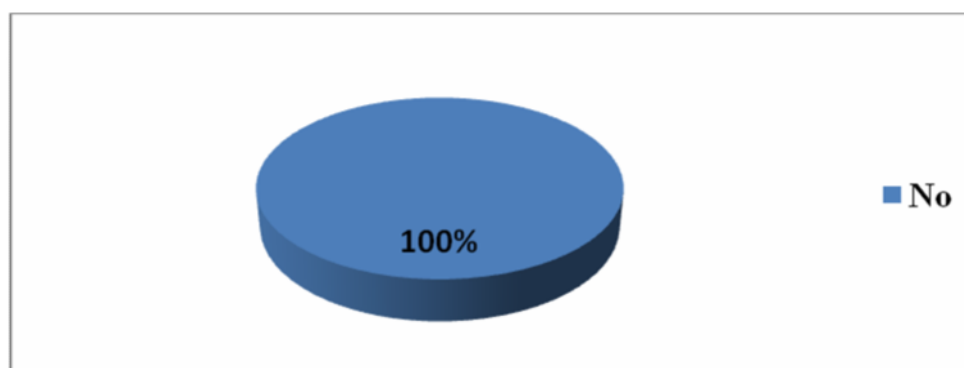
Figure 3.6. The Notion of Formal and Informal Writing

The notion of the two concepts formal and informal was not clearly grasped. Consequently, the students' responses were negative as they did not answer the two questions (7 and 8).

Question Nine
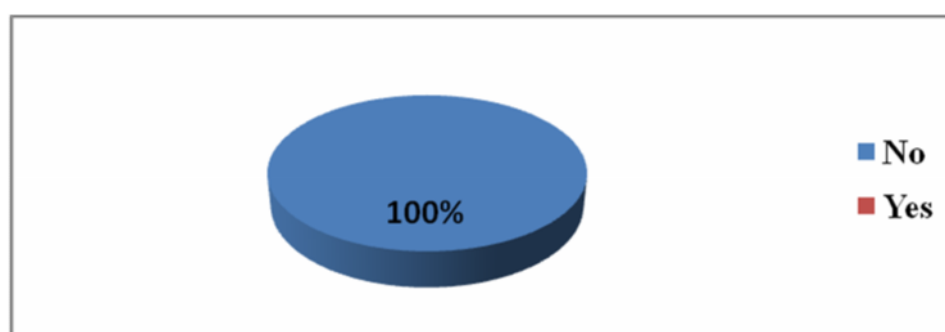
Figure 3.7 Satisfactions about the level of Writing

This figure denotes that a feeling of dissatisfaction about the level of writing was the dominant one amongst all participants in the study. This, is linked with the absence of formality in writing as symbolised in the previous figure.

3.4.2. Description of the Writing Course

Question Ten
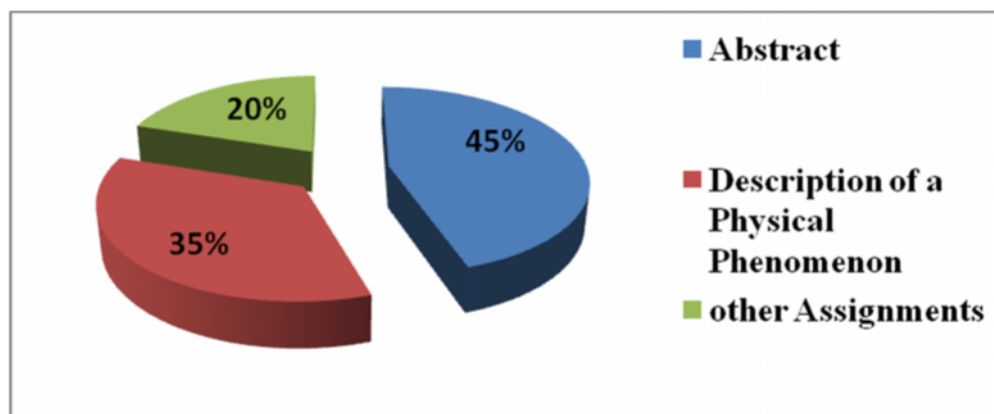
Figure 3.8. Writing Assignments

The figure shows that writing the abstract and describing a physical phenomenon were emphasised more. This was intentionally done by teachers as the abstract reflects the whole work. In the same line with the abstract, describing a physical phenomenon helps a lot in developing students- based vocabulary.

Question Eleven
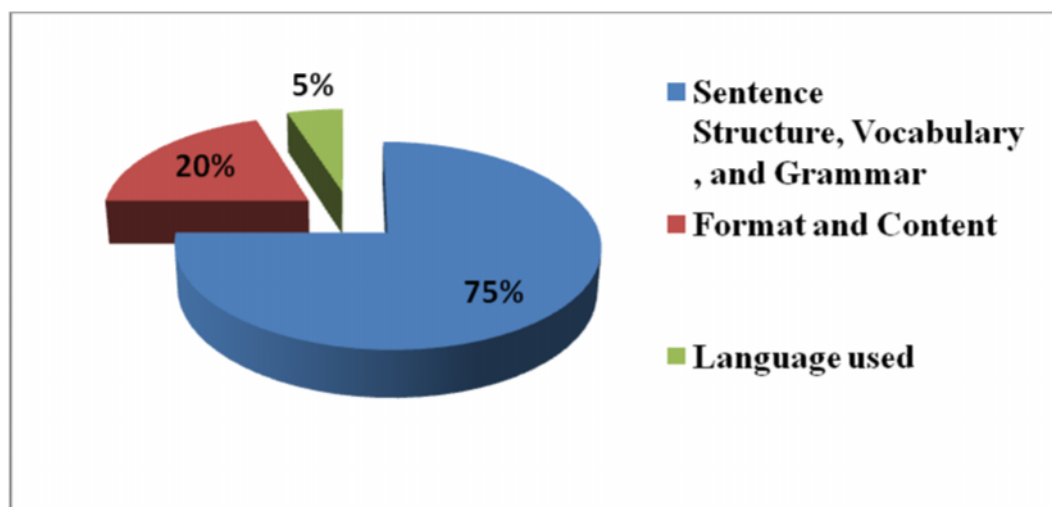
Figure 3.9: Difficulties while Writing

The difficulties students were exposed to while writing include: sentence structure, vocabulary, grammar, and absence of knowledge about both format and content. All of which, resulted in having difficulties in the language used to express their ideas.

3.3.3. Description of the Scientific Writing Course

For question twelve, thirteen, fourteen, and fifteen; the students raised the point that they have received no training on writing about physics as it is left till the second year of the master cycle. However, they were aware of the importance of writing an acceptable paper in both format and content to meet the international norms.

Question Sixteen
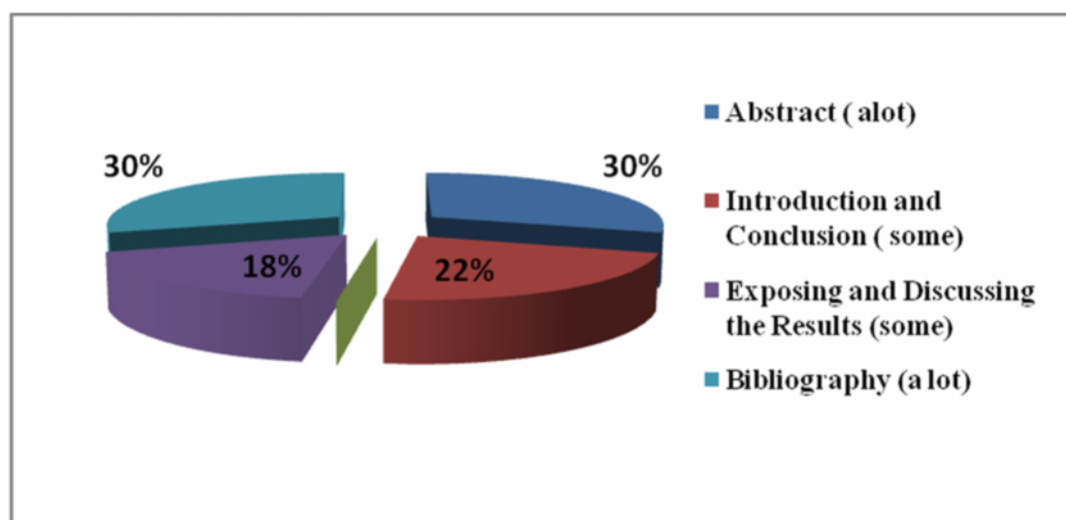
Figure 3.10 the Difficulties in Writing the Paper's Sections

Here again, writing the abstract as well as the bibliography represents an uncomfortable zone for the students. The second part of difficulty is encountered when exposing and discussing the main results. Nonetheless, writing about the

theoretical framework, instruments, and the methods used is quite easy as it is about restating what has already been said or tackled.

3.5. Content Analysis: Data Presentation

Based on the results obtained from the questionnaire in general and question 10 in particular, students were asked to write a summary about a topic related to physics. In case that some students want to write a paper- like, they were welcomed. The only thing they were required to write about their discipline i.e. physics using English. After giving back their pieces of writing, the researcher made some comments. The comments were based on the following levels of analysis: format and content. In addition to this, the comments were based on academic criteria which fall under the international norms put forward by international journals.

Regarding the format, the comments aim at noticing if students are aware of how to organize their summaries or paper in terms of introduction, body, and conclusion. Concerning the content, the following points were stressed: quality and style of writing including (spelling mistakes, grammar, vocabulary, and punctuation).

The main results depicted were that the notion of format (introduction, body and conclusion) is known for the students, i.e., they were aware of the fact of organizing their papers even the summaries in terms of the above three steps. However, what to include inside them, i.e., the content represents an area of difficulty due to many mistakes which are listed below.

3.5.1. Spelling Mistakes

Here is a list of some words students were confused with when writing.

Table 3.6 Some Confusing words between French and English

French	English
Physique	Physics
Capacité	Capacity
Antérieure	Anterior
Rapide	Rapid
Gravité	Gravity
Molécule	Molecule

In the same line with the words mentioned above, the followings also master physics students misspell them when writing: physicist (instead of physician), relaited (instead of related), interests (instead of interested) lecturer (instead of lecture), speeke (instead of speak)...etc.

3.5.2. Grammar Mistakes

Looking at the students' responses with the same line with content analysis; the following grammar mistakes were found:

- ✓ It **is contains** an abstract (instead of: it **contains** an abstract)

- ✓ Only it **to be interests** (instead of: it **has** to be interested)

- ✓ **Be make** during master 2 (instead of: **will be** during master 2)

- ✓ Students **obliged** to know (instead of: students **are** obliged to know)

Moreover, the mistakes were made at different levels. They are listed as follows.

✓ The first is at word level (a verb, a noun, an adverb, an adjective...etc), the confusing words (**accept** i.e. a verb which means to "agree or receive favourably." and **except** which is often used as a preposition that means "excluding, leaving out, but", **adopt/ adapt, advice/ advise**...etc).

✓ The second is at the level of tenses (either not knowing how each tense is structured: present is/are; past was/were, or using different tenses at the same time),

✓ The third is at the level of using modifiers which are part of the sentence' structure. It is true that removing the modifier will not affect the sentence, i.e., it will remain grammatically correct (physics is an **exact** science which studies... or physics is a science which studies...), which is not the case if the modifier is misplaced (The first person to comprehensively describe **gravity** was Isaac Newton but not The first person to comprehensively **gravity** describe was Isaac Newton).

3.5.3. Vocabulary Mistakes

Concerning the vocabulary of physics, here is a list of some words which were misused in the students' pieces of writing and contribute in the problematic situation raised in this study:

✓ The results **gotten** (instead of: the results **obtained**).

✓ To respect the international **shape** (instead of: to respect the international **norms**).

✓ English is the language **accepted at the levels world** (instead of: English is the language **used worldwide/ all over the world**).

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- ✓ Physics is the scientific **learn** of **material** and energy and how they **work** together (instead of physics is the scientific **study** of **matter** and energy and how they **interact** together)
- ✓ **Movement** detection (Instead of: **Motion** detection)
- ✓ **Power** (instead of: **force** in case it is about pushing or pulling on an object)
- ✓ **Force** (instead of: **power** in case it is about of physical system to do a work)
- ✓ **Work** (instead of: **action** in case it is about a movement)

3.5.4. Punctuation Problems

Punctuation is not an exception. Many students wrote long sentences with no punctuation. This made those sentences more complex and difficult to understand. One of the major problems in the vein of punctuation is writing equations. The following different ways of writing an equation, with a special emphasis on punctuation, is crucial in the present master physics situation. The equation provided is about gas law where:

P = absolute pressure,

T = absolute temperature,

V = Volume,

N = number of particles,

k = Boltzmann's constant = $1.382 \times 10{-}23 J/K$.

Table 3.6 Writing Equations

Equation	Explanation
Thus, $p = nkT$.	Not acceptable; no main clause verb.
The pressure p is thus given by $$p = nkT.$$	Accepted. The equation is a noun.
The pressure p is thus given by $p =$.	The same as the above equation, the only difference is that some peer reviewers prefer it with a space between the equation and the full stop
Thus, we find that $p = nkT$. The pressure is given by $p = nkT$, where $$n = N/V.$$	Here is an example using a subordinate clause.

Many students were confused of how to use punctuation while writing either their equations or about scientific facts. This includes capitalizing what should not be capitalised (M /CM instead of m/cm) or the opposite (pa/v instead of Pa/V). In addition to this, using the full stop where not necessary (It is 75 cm. Long instead of: Its length is 75 cm. or It is 75 cm long.). The following sub title addresses all the issues emerged from the results the three data collection instruments revealed.

3.6. Discussion and Interpretation of the Main Results

In this section the focus will be on discussing the main results which emerged from the semi-structured interview, questionnaire, and content analysis.

This is preceded by mentioning and drawing the reader's attention to the three hypotheses developed by the researcher.

The main point which emerged from the evaluation of the first hypothesis, i.e. master physics students encounter great difficulties while writing scientific papers is that the students were generally more concerned with this issue. The main reason behind those difficulties is the nature of the Algerian higher educational system (especially the scientific stream) where all courses tend to be taught in French. This pre-requisite impacted a lot the students' performance in English (in this study writing a scientific paper about physics) as they received all their lectures in both cycles (Licence and Master) in French.

When looking to the historical background and more precisely the colonial period of Algeria which lasted more than 130 years, French is the main actor. The dominance of that language is part of the linguistic situation in Algeria. Though having no official status, French is widely used at different levels. First, the governmental level either spoken (by the ministers and even the president in their speech delivered to Algerians!!) or written (total and sometimes headings of documents). Second, the cultural level especially using French in the daily speech (what is called code mixing). Third the media level: either spoken (channels delivering their programs in that language) or written (daily newspapers such as Quotidian D'Oran, El Watan, and El Moudjahid...Etc).

The last level- the main concern of this discussion- is education where French is integrated in all stages of education starting from the primary school, the

middle, secondary, and higher education. In sum, and though having no official status, French is seen as being a de-facto co-official language of Algeria.

Now, following the globalization process which gave birth to the spread of English; and which is not new as it dated back to the expansion of the British Empire, Algeria was obliged to revise its strategy towards languages within its territory in general and in higher education in particular. This is seen in the desire to make English almost everywhere.

It is true that there are considerable efforts at the level of decision making policies to integrate English in all higher education disciplines, but this is not enough for the simple reason that the teachers of English in those scientific fields are only language teachers. So, the results obtained from notion of language teachers (in both the interview and questionnaire) revealed that they were there to teach language not subject matters. Therefore, training them to cope with ESP situations is more than a necessity. In addition to this, absence of collaboration between language teachers and subject specialist contributes to a great extent in making writing scientific papers an arena of defeat. But where can the collaboration between the two agents, i.e., language teachers and subject specialist be seen?

In the discussion of this question, the following point can be cited: First, collaboration is seen providing authentic materials related to the ESP situation. Second, explaining technical words or what is called terminology. Third, ensuring peer reviewer which is part of teacher development including different techniques such: classroom observation, checking lectures, organizing monthly meetings...etc.

Another factor to speak about here is students' motivation towards learning English. Based on what has been said above, a student who completed 3 years of studies using only French will find the English courses somehow boring as they will turn around reading some excerpts in his or her field or translating words to Arabic or French. This will automatically result in a weak level in the writing skill which is sometimes completely missing from the English courses. So motivation is very important however the way is not. It can be started by just a smile and end with highly academic techniques.

A part from motivating students to write in English is raising their awareness towards that skill. But before, they have to know that English is nowadays more than a necessity. In addition to this, explaining why writing is important in their future career as they will have to publish papers is crucial in motivating them to write. Besides, integrating the writing skill from the first year of the licence degree helps to motivate the students more. When it comes to teachers, the responsibility is heavy when dealing with students' motivation towards writing. All of which, will help overcoming the difficulties while learning English and thus writing an accepted scientific paper to be published in international journals related to physics. All this confirm the first hypothesis. The notion of teacher training and materials development and adaptation will be discussed in the third hypothesis.

The second hypothesis stipulates that both format and content are the levels where the difficulties of writing a scientific paper lie. The questionnaire and content analysis results denoted that the notion of format and content need to be clarified

before asking the students to write their papers. The following discussion summarises the underlying criteria the two concepts are based on.

Methodologically and academically speaking about the format, the term implies to organize any piece of writing (be it scientific or literary) in three phases: introduction, body, and conclusion. This idea was grasped by the students engaged in the study as presented in the questionnaire.

However, most students make a big mistake while writing their introductions providing definitions and illustrations leaving nothing for the body. Whereas, they were supposed to prepare the reader to what follows. It should be mentioned here that the desire behind their mistakes in writing the introduction was spontaneous as they want to give a strong introduction. Nevertheless, while in the body they find themselves in need of what to add and lose control of ideas. Among other characteristics of a good introduction and which were missing in the students' pieces of writing: clarifying the topic sentence, a strong thesis statement, and asking some questions which will be discussed in the body (either in relation to literature review, or the practical phase).

Regarding the body, the results revealed that the students were aware of providing definitions, illustrations, statistics, discussions, interpretations, findings, graphs, and results. One point to focus on at this stage is that students were not aware of the fact of highlighting each idea or sub title in a separate paragraph. Consequently, the researcher finds it quite difficult to understand or follow the logic built. Concerning *consistency* or what is called sometimes *cohesion* and *coherence*

of ideas, and when writing a scientific paper, a common belief among scholars is of great deal i.e. students should go directly to the point they want to speak about.

The third phase in the discussion of the format is the conclusion. The results obtained were in the vein of placing it in the end of the paper. Moreover, the students were aware of its main purpose, i.e., summarising all what has been said in the introduction as to the body. Yet, giving their own point of view concerning the topic they are writing about and why not opening the door for future research by raising new questions (normally this what should be done since it is research and research is always about defining the unknown and redefining the known).

When it comes to content, the previous discussion mentioned some aspects of it. But since it reflects the quality of the paper; one can add the following criteria: avoiding spelling mistakes, taking care of the grammar and punctuation used, and the choice of rich vocabulary.

Spelling mistakes; this nightmare affected negatively students' performance while writing their scientific papers. It should be mentioned here that, the impact of French as stated in the discussion of the first hypothesis, the narrow or even sometimes the total absence of knowledge about how words are spelt in English contribute a lot in this area.

Now, based on what has been said above, spelling mistakes seems to be a real issue among our ESP students in the department of physics; however, knowing some simple techniques on how to avoid them is believed to add, not only master physics students but also other writers, a more value to their papers. For instance,

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this can be interpreted as a lack of checking, on the part of students, the technical words or words that he /she is not sure about using spellcheckers (on PC or mobile); or simply asking others (either teachers or students) as a socio- cognitive strategy which may help them overcome such basic writing difficulties. Besides, since it is writing, the use of dictionary can be also crucial to their corrections.

It is true that the given techniques are not a magic wand to avoid spelling mistakes but, they could be implicitly or explicitly understood that it constitutes one of their acceptable performances. In sum, spelling mistakes was a dominant problem throughout the students' writing process.

Another area of defeat which goes hand in hand with spelling mistakes is grammar mistakes. The reason behind those grammatical mistakes is that if students have learned that grammar is the structural foundation, they will develop the ability to express their ideas, thoughts, and beliefs. If so, they will be more aware of the fact how it works; thus develop the spirit of monitoring the meaning when using a given language be it spoken or written. It is true that it is part of the teacher's responsibility to do, but no one can blame those teachers as they themselves work under the pressure of time.

Moreover, the majority of language teachers claim that they are there to teach about the discipline not loosing time in revising what grammar is including tenses, passive and active forms...etc.; however, it is not the case if they are well trained to cope with this unexpected situations. This will also be discussed in the third hypothesis. The grammar mistakes while writing are interpreted in the absence of clearly understanding the common mistakes made in grammar. So, it is perceived

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that understanding those levels of mistakes will help ESP students overcome their grammar mistakes and ensure a good quality in writing.

The other point to speak about in this discussion of the second hypothesis is the choice of vocabulary which plays an important role in ensuring the quality or the style of the written paper. Before speaking about the vocabulary of physics, it is worth mentioning here to highlight the importance of the term when writing.

The results obtained in this regard raised the point of developing the ability to write effectively depends heavily on having a sufficient vocabulary. Furthermore, if when students were given the opportunity to learn or acquire a rich vocabulary, referred to as *decoding*, related to their discipline, they would determine accurate meanings of unfamiliar words simply by examining the context in which those words were used. This idea was cited by the teachers when they discussed their students' writings and gave them models to follow.

Nevertheless, during the writing process, creating a history of the different words and how they are used in a context is seen to have a vital role in master physics students' papers. This idea was supported by Mayher and Brause (1986) who stated that: *"writing is dependent upon the ability to draw upon words to describe an event"* (sited in Corona, et, al, 1989, p. 18).

Is sum, one can say that the more students are focussing on the vocabulary they use while writing, the more a good quality of papers can be reached. Consequently, meeting the norms put forward not only by international journals but also the department they are belonging to. At this level, the results inspired from the

lectures students are exposed to were rich in terms of vocabulary or new concepts; but their usage is governed by the fact that those concepts are well explained. In the same line, reading as a stressed skill helped developing a rich vocabulary. Thus, ensure high quality writing.

The last point to speak about is punctuation.   Here also, academically and methodologically speaking punctuation is very important while writing not only in general but a scientific paper about physics in particular. This is due to the fact that the term punctuation denotes the ability to master the system of a variety of signs and symbols to help the reader demonstrate how sentences are constructed. In other words from where a sentence start to where it ends and so on.

Based on what has been said above, the reader will easily understand the meaning of the different sentences and thus the whole meaning constructed by them. In other words, writing using good punctuation can be symbolized as follows: the whole meaning is a wall and each sentence is a stone. So the more the stones are well placed the more the wall is stronger.

A common belief amongst scholars is that the notion of having a well constructed sentence in terms of punctuation; entails encompassing a capital letter in the beginning of the sentence, a full stop at the end, an exclamation mark or question mark at the end also. Yet, in the discussion and interpretation of the main findings regarding writing about physics, providing equations was likely perceived as an insightful example to provide when speaking about punctuation. In respect, the equation is considered to be   grammatically part of the text. This is why using

punctuation (such as comma or full stop) at the end of the equation is highly required. If so, the equation will play the role of a noun.

Consequently, overcoming the problem of punctuation is also based on knowing the levels it lies on, and then trying to avoid them when writing. The first level is the full stop which is placed in the end of each sentence and thus the idea. The second level is commas when (a) giving a list (physics is a natural science based on experiments, measurements, and mathematical analysis.) (b) After words such However, Therefore, For example, etc.

The third level is colon when explaining or introducing something (Modern physics can be said to have started around the turn of the 20th century, with the discovery of: X-rays (Röntgen 1895), radioactivity (Becquerel 1896), the quantum hypothesis (Planck 1900), relativity (Einstein 1905) and atomic theory (Bohr 1913). The last level is apostrophes used either in contrastive forms such as: it's (it is /it has), don't isn't (do not/ is not)... or to denote that something is belonging to belonging to something else (Einstein's law of gravity).

The conclusion that can be provided here is that after understanding what has been said concerning the second hypothesis goes hand in hand with the notion of formal and informal writing. The former, denotes that students write in a way where: their words are chosen carefully, the organization of ideas in a systematic way, the use of high quality sentences in terms of length and complexity, and the use of passive as to indirect speech...etc. Whereas, the latter indicates that their writing is quite simple using: direct speech, simple and short sentences, and the use of colloquial words...etc.

It should be stressed here that both types are correct; however, speaking about master physics students while writing their scientific papers, requires a more formal way. This is why, students should train themselves starting by informal writings, and by the time (practice) they will reach the formal status to meet the international norms.

Another point to speak about in the discussion of the second hypothesis is the notion of MLA (Modern Language Association) style is used by the Humanities, APA (American Psychological Association) is used by Education, Psychology, and Sciences, and Chicago style is generally used by Business, History, and the Fine Arts. The present study is about writing a scientific article which will automatically include references as to citations within the text. So, students having no clear idea about them will lead to all kind of difficulties the perception of MLA, APA, and Chicago represents a real issue to think about.

Those types have to do with the way of citing what others (mainly writers, researchers, scholars, educationalists, intellectuals…etc) provided in their works (publications, studies, theories, approach…etc). All this, for the sake of supporting research; hence, endeavour the quality of the papers written about physics and designed for publications. Typically, a citation can include the author's name, date, place and date of publication, using commas, inverted commas, line, and the title of the book, journal, article…etc. The underlying principles of each style are mentioned in appendices C, D, and E. In sum, the second hypothesis is confirmed.

The last hypothesis assumes that ESP teacher training as to the nature of ESP courses help in overcoming the difficulties. The first thing to start with is ESP teacher training. The main concern in this area is language teacher. The training includes: undertaking needs analysis which is a crucial factor in determining the quality as well as the sustainability of the courses provided for master physics students.

Moreover, the elucidation of the results denotes that teachers determine the students' needs especially when writing scientific papers to develop or elaborate the appropriate program or course. Furthermore, the concept of heterogeneous groups, as the results indicate, represent a real issue as different types of students in terms of which of the skills is most needed; and the mastery of each skill contribute in the problematic situation.

Another thing to discuss here is ESP material developments and /or adaptation. Acquiring enough knowledge about how courses are developed; the needed materials including, for instance, the use of textbooks; ICT tool, audio-visual aids, and authentic materials such as written or recorded papers in the domain makes part of the nature of the ESP course provided. This will be discussed in the following part.

In the same vein of teacher training, it has been mentioned in the results obtained from the interview that some of them received training at CACI. It is a good step in teacher training where a department of foreign languages was created in collaboration with the British council. The aim behind this was to ensure training in EGP and ESP. concerning ESP, business English was chosen to meet the

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demands of the local as to the international markets. This is why, generalizing this step and expending it to other branches is more than a necessity.

Likewise, the second part of the hypothesis is the nature of ESP courses. The discussion of the results obtained and which are linked to this part, it is worth mentioning here to say that language teachers in the department of physics were aware of the importance of adjusting their courses in case they are given a ready-made program. This includes focusing on the writing skill as it represents the area of difficulty in this study. The following elements are recognized in their courses: introducing the writing skill in terms of importance, the procedures to follow for both format and content, and how to organize a scientific paper also in terms of format and content. By doing this, the difficulties encountered can be overcome to a certain extent and why not to 100%.

To conclude with, teacher training and the nature of ESP courses will facilitate the path for teachers to be more specialized. Only then, they can meet their students' needs. If so, it is the role of the staff to provide the training at a departmental level. This allows them to have training in the same line with the strategic teaching and learning needs of that department. Therefore staff development should not only be servicing the needs of the individual but also those of the organization. This idea is supported by Gibbs and Blackmore who believe that "… staff development becomes an adjunct to organizational development rather than a personal matter" (as cited by Maier et al (1997).

When it comes to materials development, one can say that this process is of great deal as it will supply the students with the necessary knowledge needed in their discipline (of course in English to fit the ESP situation). Many scholars named the process of material development as material writing or selection. This leads to say that the rationale behind is that teachers – based on learners' needs identification and analysis- end up with textbooks, courses, and syllabi needed to make the teaching and learning of English in the ESP situation more vital. In other words they are i.e. teachers there with no materials to use. Now, what if they were given readymade materials?

In that case, if the existing materials fit the learning needs it is ok; but if not, it is part of their duty to adapt them. This is why the process of materials adaptation is important to facilitate the task for both teachers and learners. Hutchinson and Waters (1994: 125) highlight both processes saying that: *"If their subject area is more general, the likelihood of finding suitable published materials is much higher. Accordingly, ESP teachers will most often select suitable materials from existing printed materials".*

They added also that: "In the case of more specific subject areas, the most widely accepted view is that ESP teachers should also first "question whether the learners' needs are significantly different from those of other groups" and, if possible, select from existing printed materials and resort to writing materials "when all other possibilities of providing materials have been exhausted". Accordingly, the third hypothesis is confirmed. It should be mentioned here that the research provides a brief discussion of this third hypothesis since it represents the

core of the fourth chapter i.e. teacher training and materials developments and adaptation is part of the suggestions and recommendations provided by both teachers and students engaged in this study.

3.7. Conclusion

The overall objective of chapter three was to present the data analysis and discuss results. This includes the procedures of each data collection method, and the analysis of results related to the research questions and hypotheses raised. From all the observations made above, it was obvious that master physics students at the University of Tlemcen found great difficulties while writing scientific papers. Those difficulties lie at the level of format and content due to the nature of English courses they were exposed to during their studies. The last chapter will discuss some of the conclusions derived from this experience attempting at offering some suggestions and recommendations for a better future research on the development of an appropriate English writing course. This will serve in enhancing the quality of scientific papers published not only at the department of physics but also other disciplines.

Chapter

Four

4.1. Introduction

After the discussion of the main results obtained in the present study, this chapter will deal with some suggestions and recommendations for a better understanding of the topic i.e. skills centred approach for an ESP course design case of master physics students writing scientific paper at the University of Tlemcen. Speaking about the suggestions, they will turn around the following titles: ESP teacher training where the focus will be how to help language teacher cope with an ESP situation, ESP materials development and adaptation to meet the students' needs, and a technical writing course including a detailed description of the different sections of writing a scientific paper. When it comes to the recommendations, the staff, teachers, and students are addressed.

4.2. ESP Teacher Training

Before looking at the rationale behind teacher training, it should be mentioned here that there is neither one best way to teach foreign languages, nor a single best set of teaching materials. This is because teachers will vary both in their methods and techniques used while teaching and what they are intended to teach. It follows therefore, that there is no single 'magic bullet' that can be offered to support language teaching across all phases. This means that the more effectiveness is present while teaching, the more students will benefit. This is about teaching English in general, so what about the teaching of ESP? This will be discussed in the following sub title.

4.2.1. Objectives of ESP Teaching

Teaching English to non-linguistic students means achieving a variety of objectives: acquiring knowledge about the language, developing and practicing all four language skills, getting language and cultural awareness, integrating specialist knowledge and communicative skills and even enriching overall knowledge. Recently, many researchers have come to the conclusion that one more aspect of teaching ESP is of vital importance teaching thinking.

In regards of what has been above, four types of ESP teaching objectives can be mentioned: proficiency, knowledge, affective, and transfer (Stern (1989, 1992), cited in: Kaosar 2014:12).The first dimension is proficiency objectives. At this level, the main concern is placed on the mastery of the four language skills i.e. speaking, writing, listening, and reading.

To have complete mastery of the language, individuals must be competent in these four skills. Yet the four skills do not exist as separate entities within the language; to the contrary, all of the skills are interrelated. When students are in a conversation, they are not just speaking, but also listening. When students listen to a lecture in class, they may also take notes. At the same time, it is possible for students to be more competent in one skill than another. Students from some language backgrounds may have no trouble reading and writing in English, but find the sounds of the language more difficult to produce.

On the other hand, students from orally-based cultures may find it easier to speak than to write. Some students can speak a lot, but cannot understand much of

what they hear. The task for the language teacher is to provide instruction that facilitates the development of all four skills.

The second dimension is knowledge objectives. Here, the main concern is the acquisition of both linguistic and cultural information. The former (linguistic knowledge objectives) comprises developing a linguistic competence based on: language analysis and awareness of the systematic aspects of language. Those aspects include: *Phonology* is the study of sounds in a language; *Phoneme* which is the basic unit of sound; *Semantics* which refers to the study of the meaning of language; *Morpheme* which is the smallest unit of sound to carry meaning; *Syntax*, i.e., is the study of the structure of language and how words can be formed to create grammatically correct sentences; and *Pragmatics* which is the study of the use of language as it deals with the intentions behind the utterances.

On the other hand, the latter (cultural knowledge objectives) is about control of socio-cultural rules (mastery of the norms of society, values, and orientations) and also the capability to identify significant facts related to culture i.e. making a clear distinction between what is acceptable and what is not.(Kaosar 2014:12).

The third dimension is Affective objectives. In this area, the main concern is developing positive feelings toward what is studied including: attitudes toward developing second language competence, socio-cultural competence, and language learning. The last dimension is Transfer objectives where the ability to generalize from what has been learned in one situation to other situations is stressed. (ibid)

4.2.2. Roles of ESP Teachers

The changes in the teaching and learning paradigms represent a great deal for teachers to adopt their roles in response to the above mentioned criteria. In other words the ESP teacher's role is multiplied and shifts from being just a transmitter of knowledge - armed with books and papers in hand- to become a facilitator, guide of learning process, integrator of the new ICT media, researcher and designer of suitable learning scenarios, collaborator (with other teachers and learners) orchestrator, learner, and evaluator.(Fitzpatrick et al, 2003)

The first noticeable role ESP Teachers play is facilitators. This means that they need to be aware of a variety of materials available for improving students' language skill, not just one or two texts. Printed materials including Textbooks, handouts, and manuals are no longer the sole source of information. Multimedia programs for instance offer authentic contexts (sound and vision) showing how native speakers interact. Additionally, many references are available in the form of electronic dictionaries, books and encyclopaedias. Also, current -affairs in all domains- in the countries of the target language can be accessed in online newspapers which give students the opportunity to stay updated. (ibid)

Another point to mention here is that students are exposed to official websites which provide direct access to background information on policy and decision making, tourism, political views, and educational reforms...etc. In response, teachers need to know how to teach and facilitate the task for learners while using all the above mentioned materials and facilities effectively. In sum, as facilitators, teachers are required to be flexible. This will help them in responding to their students' needs. This is why teacher training is a key element to ensure success

in this more flexible language class, so that teachers can use multimedia and other resources effectively. (ibid)

Additionally, ESP teachers have to develop the spirit of being collaborators. Collaboration can be seen from two angles: with colleagues and with subject specialists. Speaking about collaboration with colleagues, it will reduce the burden and make the efforts more fruitful and rewarding. Notably, co-operation within a specific teaching institution will establish more professional and produce man-made responses to the local situation. As a result, overcoming the sense of isolation related to many experiences while teaching in ESP situations can be done.

In the same vein with the notion of collaboration with colleagues, new management patterns must emerge to ensure fair distribution of the amount of work to be done, and revised job descriptions will be necessary to assign and bring together the responsibilities in hand. Teachers will also need to develop reasonably management skills. The following figure summarises the different management skills and patterns needed by ESP teachers to cope with their teaching environment as to collaboration between each other. By doing so, they will be able to provide a sort of balance between the different elements which make up the new learning environments.
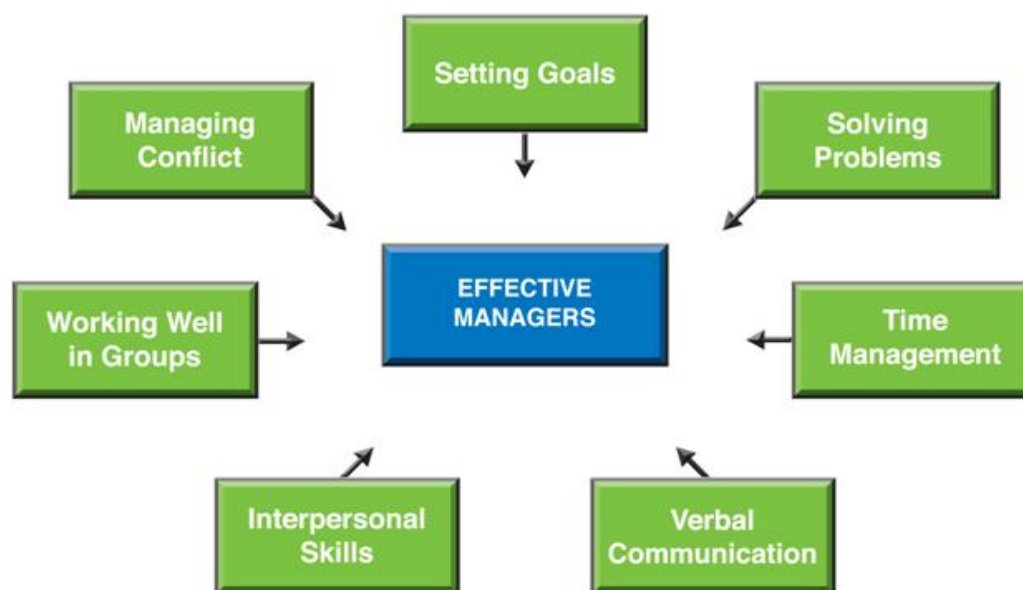
Figure 4.1 Management Skills

When it comes to collaboration with subject specialists, the responsibility is shared between the two agents. This means that it is an important point as ESP teachers will have a clear idea about the subject syllabus in an academic context or the tasks students need to have or to be equipped with in a work or business situation. In addition to this, there is a possibility subject specialists have to do with i.e. to check and comment on the content of teaching materials prepared by the ESP teacher. The feedback of this second dimension of collaboration is to ensure establishing a joint level of a good teaching /learning environment.

Another role of teachers is teachers as learners. This further challenge is often presented to ESP teachers by learners holding more advanced knowledge about the subject area than they do. In fact, this challenge is the fashion in ESP situations where the subject matter is related to the so called applied disciplines (physics, mathematics, chemistry...etc). However, if they are prepared to enter into the quest of an ongoing learning together with their students, they will find it a satisfying and successful experience. A requirement is that they are prepared to act

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as the experienced guide for learners they are teaching and not the one who knows everything.

Speaking about the role of being an evaluator, ESP teachers are facing a variety of evaluations: evaluating their students, evaluating the courses provided or developed, and the teaching materials in hand. Concerning the students, they can use pre, while (during), and post tests to have an idea about their students 'advance regarding knowledge acquisition. What is important here is that this evaluation should be an ongoing one. In other words, ESP teachers should not only focus on the marks or the grades taken during official exams. When it comes to evaluation of courses (provided or developed), the aim behind is to see if they will fit the students needs or not. Concerning the teaching materials, the reason behind; is to assess whether the learners are able to make use of what they have learned or will i.e. to bridge the gap between theory and practice.

Concerning the role of integrators of media, ESP teachers must not only know and understand the functions of the diverse media presented in a media-rich setting, but also know when it is necessary to deploy them. In the joint construction of projects with their learners, they need to demonstrate the exact path for their learners when making use of software programs (Ms Word processor, PPT, and statistic facilities (mainly the SPSS). In sum, the integration of audio-visual aids will make learners aware of the fact that the target environment of the foreign languages is as exciting and multi-faceted as the society in which they live. All what has been said regarding the role of integration of media is summarised in the following idea: teachers should learn about to facilitate learning with technology.

ESP teachers need also to be researchers. Marion and Marian (1999) explain that the term teacher-researcher is an important term to them because it has redefined their roles as teachers. This idea was endeavoured by Fitzpatrick et al, (2003:43) saying that:

> *To keep along with developments in the target language'*
> *countries, and in and increasingly complex world, teachers*
> *need to recognize how and where they can access the*
> *necessary information for their own and their learners' use.*
> *Knowledge and skilled use of exploration engines and reliable*
> *data sources are necessary. For those concerned with*
> *mainstream education, the propriety and reliability of*
> *information sources must figure as one of the central criteria*
> *for the choice of background material.*

Now to fulfil the above task, and while in the ESP situation, teachers need to be in touch with research. By doing so, their needs analysis findings, course design, or writing teaching materials will be of great value. And thus, they will develop their linguistics and professional competences. In addition to the above mentioned roles, teachers are required to be orchestrators. In order to orchestrate successful learning situations, teachers need to learn how to bring together both tasks and materials. By doing so, they can assist and guide their learners to successful implementation and conclusion of the course learned. But first, they need to be designers of new learning scenarios. Unlike working with conventional teaching materials (textbook, audio and video materials), which have been graded, pre-

assembled and collated in a chronological order, designing new learning scenarios is much more difficult. (Fitzpatrick et al, 2003:43)

The reason behind the above mentioned difficulty is the fact that it requires higher skills involving researching and evaluating source materials, setting overall aims and objectives and developing meaningful and manageable tasks' sequences. For teachers tackling this for the first time, the task indeed represents an arena of defeat. Now, and in order to bridge the gap, encouragement, help and advice is needed in terms of examples of good practice which may serve as sources of inspiration for similar courses of action.

Another role to speak about is course designer and material developer. Here, ESP teacher should design courses according to their students needs. In addition to this they have to select the appropriate materials needed to realize the different tasks those courses are turning around. Now, in case the available course and materials do not fit the needs, it is part of their responsibility to adapt them. This point will discussed later on through this chapter.

The last role to speak about is being a teacher. It is obvious that the state of art asks for this role. So being a teacher is not an easy task as it is about helping students develop knowledge. However it should be stressed here that teachers are not the only source of that knowledge enquiry as other sources are available. Now when it comes to dealing with students, ESP teachers need to have considerable flexibility, be willing to listen to learners, take interest in the disciplines or professional activities the students are involved in, and to take some risks in their

teaching.(Bojovi ,2006 :490). The following figure summarises all the above mentioned roles of ESP teachers:

Teacher	Learner	Facilitator
Orchestrator	Collaborator	Evaluator
Integrator of Media	Researcher	Course Designer and Material Developer
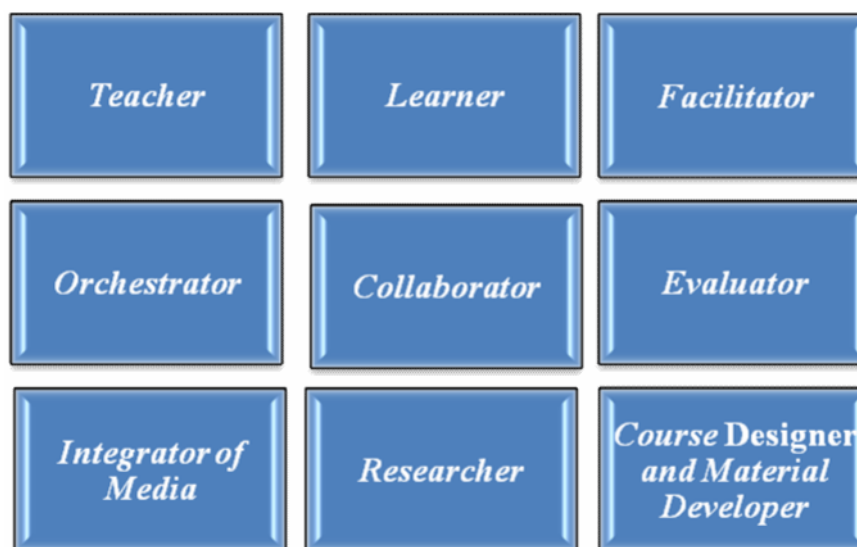
Figure 4.2 Roles of ESP Teachers

(Adapter from Dudley-Evans and St. John 1998)

4.3 ESP Teacher Training Program

Now, and in order to fulfil all what has been stated above, teacher training is the key. The following part will shed light on the process in general and give a suggested program for an ESP teacher training program. Since its introduction to modern science, teacher training represents a turning point in the literature of education in general and ESP in particular. The rationale behind the notion of training is to produce qualified teacher who can help their students in the learning process.

When it comes to an ESP situation- and as mentioned in different parts of this thesis- teachers of English face great difficulties with the a highly specialised context. In other words, they are in the vein armed with language competency but handicap with subject matter knowledge. All this put them in a situation where they find that students are more concerned with adding a value to what they know about

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their field using English rather than the language itself. This will cause an arena of defeat for teachers who will be seen as unskilled ones and thus lose control over their classes.

Teacher training will help those teachers know what to use during their classes (materials, tools, and courses) and what not to use. In addition to this, they will be aware of the methodology to deal with students before, during, and after classes. It should be stressed here that any designed ESP training program should take into account two basic elements: (a) knowledge about what is going to be taught (collecting information about the target situation, concepts or terminology used, and any specific notions related to that environment), (b) knowledge about the target population engaged (collect information about the learners including skills needed, level of proficiency in each level, motivation...etc).

The following programme will help language teachers cope with the ESP situation they are in. It has been developed by the researcher based on his previous experience as an ESP postgraduate student during the academic year 2010-2011; and ESP practitioner in different ESP situations (economic sciences, medicine, and dentistry). It includes notions about ESP and needs analysis highlighted in chapter one and restated as a process not a concept; research methodology since teachers are in continuous research, how to make profit from the ICT revolution to update both knowledge and materials, and how to deal with students in class, i.e., educational psychology. All of these disciplines with suggested references to guide the experience and help adapting the programme depending of the situation.

Tasks	Topics Included	Suggested Refrences
ESP (General Overview)	1. Definition 2. Characteristics 3. Principles 4. Branches 5. Roles of ESP Teachers	✓ Abdulaziz, Maimoona et al. (2012). "Change From A General English Teacher To An ESP Practitioner: Issues And Challenges In Pakistan". Interdisciplinary Journal of Contemporary Research in Business. Vol 4, No 1 ✓ Basturkmen, Helen. (2006). Ideas and Options in English for Specific Purposes. London: Lawrence Erlbaum Associates. ✓ Belcher, D. (2009) What ESP is and can be: An introduction. In D. Belcher (ed.), English for Specific Purposes in Theory and Practice. 1 – 20. Ann Arbor, MI: University of Michigan Press. ✓ Bojovi , Milevica. Teaching Foreign Language for Specific Purposes: Teacher Development. Association of Teacher Education in Europe
ESP Course Design	1. Definition 2. Characterisctics 3. Needs Analysis 4. Approaches	✓ Basturkmen, Helen. (2010). Developing Courses in English for Specific Purposes. Basingstoke: Macmillan. ✓ Douglas, D. (2013). "Needs Analysis and Curriculum Development in ESP". in Brian Paltridge and Sue Starfield (Ed) The Handbook of English for Specific ✓ Flowerdew, L. (2013). "Needs Analysis and Curriculum

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		Development in ESP". in Brian Paltridge and Sue Starfield (Ed) The Handbook of English for Specific Purposes. Oxford: Wiley Blackwell.
Assessment, Evaluation, And Testing	1. Assessment 1.1 Defintion 1.2 Techniques 2. Evaluation 2.1 Definition 2.2 Techniques 3. Testing 3.1 Defintion 3.2 Techniques	✓ Angelo, T. A., & Cross, K. P. (1993). Classroom assessment techniques: A handbook for college teachers. San Francisco: Jossey-Bass. ✓ Apple, D.K, & Krumsieg. K. (1998). Process education teaching institute handbook. Corvalis, OR: Pacific Crest Software. ✓ Bachman, L.F. (1990). Fundamental Considerations in Language Testing. Oxford: Oxford University Press. ✓ McNamara, T. (2000). Language Testing. Oxford: Oxford University Press. ✓ Weiss, C. H. (1972). Evaluation Research: Methods for Assessing Program Effectiveness. Englewood Cliffs, NJ: Prentice-Hall.
Research Methodology	1. What is Research? 2. What is Methodology? 3. Types of Research 4. Data Collection	✓ Tandon, B.C., (1979).Research Methodology in Social Sciences, Allahabad: Chaitanya Publishing House, ✓ Travers, Robert M.W., (1978).An Introduction to Educational Research, 4th ed., New York: Macmillan Publishing Co., Inc., ✓ Young, Pauline V., (1960.) Scientific Social Surveys and Research,

		Techniques	3rd ed., New York: Prentice-Hall,
		5. Data Analysis Techniques	✓ Whitney, F.L., (1950.)The Elements of Research, 3rd ed., New York: Prentice-Hall,
		6. Steps of conducting research	✓ Wilkinson, T.S. and Bhandarkar, P.L., (1979).Methodology and Techniques of Social Research, Bombay: Himalaya Publishing House,
Information And Comunication Technology (ICT)		1. What is ICT? 1.1 What is Information? 1.2 What is Communication? 1.3 What is Technology? 2. Advantages of ICT 3. ICT in Education	✓ International Federation for Information Processing. 2002. IFIP Working Group 3.2: Informatics Education at the University Level. [Online]. Available: http://Poe.netlab.csc.villanova.edu.edu/ifip32/main_page.html [2002, January 24]. ✓ International Society for Technology in Education. 1998. National Educational Technology Standards for Students. International Society for Technology in Education (ISTE). Eugene, Oregon, USA. [Online]. Available: http://www.iste.org [2002, January) ✓ Teacher Training Agency. 2002. Information and Communications Technology (ICT). Teacher Training Agency, London, UK. [Online]. Available at: http://www.canteach.gov.ukinfo/ict/index.htm [2002, January 24].

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The Technology Behind ICT (Computers)	1. Defintion 2. Types 3. Components 3.1 Hardware 3.2 Software 3.2.1 Ms Word 3.2.2 Power Point (ppt)	✓ Subramanian, N., (1986). "Introduction to Computers," New Delhi: Tata McGraw-Hill Publishing Co. Ltd., ✓ Shelly, Gary, et al. "Discovering Computers" 2003 Edition ✓ Automating Managers: The Implications of Information Technology for Managers, John, Moss Jones, London, Printer, 1990 ✓ Computers, Concepts and Uses 2nd ed., Summer M., Englewood Cliffs, New Jersey, Prentice Hall Inc, 1988 ✓ Foundations of Business Systems, David Van Over, Fort Worth, Dryden 1992 ✓ Information systems: Theory and practice 5th ed., Burch, John and Grudniski Gary, New York., John Wiley, 1989 ✓ Online Business Computer Applications 2nd Ed, Eliason A. L.,. Chicago Science Research Associates, 1987
Networks	1. Defintion 2. Creating html Pages 3. Creating a Website 4. How to Search in the Net	✓ Kurose, James; Ross, Kieth (2005). Computer Networking: A Top-Down Approach. Pearson. ✓ Peterson LL, Davie BS. (2011). Computer Networks: A Systems Approach ✓ William Stallings, Computer Networking with Internet Protocols and Technology, Pearson Education 2004.

		✓ Network Communication Architecture and Protocols: OSI Network Architecture 7 Layers Model ✓ Dimitri Bertsekas, and Robert Gallager, "Data Networks," Prentice Hall, 1992.
Educational Psycology	1. Defintion 2. Classroom Management 3. How to deal with Difficults Students 4. How to deal with Students with Special Needs	✓ Borich, G. (1995). Becoming a teacher: An inquiring dialogue for the beginning teacher. Washington, DC/London: Falmer Press Ltd. ✓ Borich, G. (1996). Effective teaching methods. (3rd ed.). Columbus: Merrill/MacMillan (Chapter 3). ✓ Fuller, F.F. (1969). Concerns of teachers: A developmental conceptualization. American Educational Research Journal, 6, 207–226. ✓ Hall, G.E., & Hord, S.M. (1987). Change in schools: Facilitating the process. Ithaca: State University of New York Press. ✓ Hord, S.M., Rutherford, W.L., Huling-Austin, L., & Hall, G.E. (1987). Taking charge of change. Alexandria: Association for Supervision and Curriculum Development.

The above mentioned program can be used for both pre- service and in-service teachers. It will help them have a clear idea about the ESP situation they are in as to the students' needs in general and writing scientific papers in particular. And thus, develop appropriate courses based on the process of needs analysis which will be highlighted in what follows.

4.4. Needs Analysis Process

As stated in the first chapter of this thesis, needs analysis is a crucial mediator in determining the quality as well as the sustainability of ESP course. The following model will be of great deal as it will help ESP teachers show their students the path to follow during their learning process. Besides, it is suggested as it includes both target and learning needs who proposed a simpler categorization); moreover, it represents a framework which can facilitate the task for those ESP teachers in the department of physics. Furthermore, the suggested model is seen to help gaining time and efforts devoted to reading the whole literature already mentioned in chapter one regarding needs analysis as a concept.

Table 4.2 Needs Analysis Framework Adopted from

(Hutchinson and Waters: 1987)

	1. Why is the language needed?
Target Situation **(Necessities, Lacks, and Wants)**	1.1 For study
	1.2 For work
	1.3 For training
	1.4 For a combination of these
	1.5 For some other purposes (status, examination, promotion)

	2. How will the language be used? 2.1 Medium(speaking, writing, reading etc 2.2 Channel (telephone, face to face) 2.3 Types of texts or discourse (academic texts, lectures, informal conversation, technical manuals, catalogues) **3. What will the content areas be?** 3.1 Subjects (medicine, biology, architecture, shipping, commerce, engineering) 3.2 Level (technician, craftsman, postgraduate, secondary school) **4. Who will the learner use the language with?** 4.1 Native speakers or non native 4.2 Level of knowledge of receiver(expert, layman, student) 4.3 Relationship(colleague, teacher, customer, superior, subordinate) **5. Where will the language be used?** 5.1 Physical setting(office, lecture theatre, hotel, workshop, library) 5.2 Human context (alone, meeting, demonstrations, on telephone) 5.3 Linguistic context (in own country, abroad)
Learning Needs **(Psychological, Attitudinal, Material, Motivational)**	**1. Why are the learners taking the course?** 1.1 Compulsory or optional 1.2 Apparent need or not 1.3 Is status, money, promotion involved? 1.4 What do learners think they will

achieve?

1.5 What are their attitudes towards the ESP course? Do they want to improve their English or do they resent the time they have to spend on it?

2. How do the learners learn?

2.1 What is their learning background?

2.2 What is their concept of teaching and learning?

2.3 What methodology will appeal to them?

2.4 What sorts of techniques are likely to bore/ alienate them?

3. What recourses are available?

3.1 Number and professional competence of teachers

3.2 Attitudes of teachers to ESP

3.3 Teachers' knowledge of and attitude to the subject content

3.4 Materials

3.5 Aids

3.6 Opportunities for out-of class activities

4. Who are the learners?

4.1 Age/sex/ nationality

4.2 What do they know already about English?

4.3 What subject knowledge do they have?

4.4 What are their interests?

4.5 What is their socio-cultural background?

4.6 What teaching style are they used to?

4.7 What is their attitude towards English

	or to the cultures of the English speaking world?
	5. Where will the ESP course take place?
	Are the surroundings pleasant, dull, noisy, cold etc?
	6. **When will the ESP course take place?**
	6.1 Time of day
	6.2 Every day, once a week
	6.3 -time/ part-time
	6.4 Concurrent with need or pre-need

When it comes to the techniques of dealing with the above mentioned process i.e. to collect the necessary data to be analysed, teachers can use questionnaires, interviews, observations (classroom or participant), context analysis (gathering texts)...etc.

The above mentioned framework will pave the way for ESP teachers to design a suitable course-in this study a technical writing course about the guidelines of writing w scientific paper. In this vein Hamzaoui (2010:3) emphasise the idea that:

> *...it is quite a complex task which requires the course designer*
>
> *to consider some important questions such as: What are*
>
> *students' weaknesses? What do they need to learn? And what*
>
> *will they do with the learned skill / items?*

The above mentioned quotation was part of her study conducted at the University of Tlemcen with EFL students (2006). The suggestion provided and the

results obtained in addition to the three question raised is seen as a good reference for ESP teachers when design their courses and thus to overcome their students difficulties while writing scientific papers. In the discussion of the first question i.e. what are students' weaknesses? Proficiency level is the core. Table4.3 describes the students' proficiency level.

Table 4.3: Description of Students' Proficiency Levels Adopted from (Ourghi 2002:42.Cited in Hamzaoui 2010:4)

High-intermediate (developing) level	Low-intermediate (basic) level
Abilities:	**Abilities:**
Accurate grasp and use of writing mechanics (fair accuracy in punctuation, spelling and capitalisation). Correct construction of different sentence patterns; ability to write a meaningful text and to convey clear ideas, despite the problem of inadequate vocabulary); Good knowledge of cohesive ties and discourse-organising connectors; Ability to expand short paragraphs into a whole text	Production of short texts; division of texts into two paragraphs; convey ideas with clear difficulty.
High-intermediate (developing) level	**Low-intermediate (basic) level**
Lacks:	**Lacks:**

lack of contextual knowledge (unawareness of readership); Insufficient composing strategies (drafting and revising); A tendency to be prolific (free writing) without monitoring one's performance	Lack of control of basic syntactic structures; inadequate knowledge of writing mechanics; limited vocabulary; Unawareness of useful writing micro-skills and composing strategies.

Based on the above mentioned criteria, ESP teachers will have a bird eye view about some basics of writing such as the mechanics of writing (e.g. capitalisation, punctuation, indentation), grammar (e.g. subject-verb agreement, use of pronouns) and vocabulary (e.g. frequently using anglicised borrowings from French). (Hamzaoui 2010:3)

When it comes to the second question i.e. what do students need to learn? Developing a good command of the linguistic system of English as well as its actual use is needed. This will allow them write different text types respecting the rules and conventions of written English, (Hamzaoui, and 2010:5)

The last question is about what would they do with the learned skill? A good mastery of the writing skill will pave the way to these students to academic success, allow them to transmit this skill to their learners if they are future teachers and enable them to present successfully their findings if they are to undertake research. (ibid)

Believing that the availability of new tools often creates opportunities for change in practice, information and communication technology (ICT) including video conferencing and other networked tools can be effective in creating

constructivist learning scenarios in which students use those tools to create their own solutions to curricular problems. The following part will highlight in a little more details the pedagogical applications of ICT in foreign language teaching in general and ESP in particular.

4.5. ICT and the Teaching of ESP

Since its introduction to modern science, ICT opportunities were considered as being critical. Very heated debates and clear differences took place amongst educationalists on using computers and the Internet in Foreign Language Teaching. The techniques offered, the activities and the degree of application in the language teaching syllabus have undergone a number of serious changes alongside the evolution of technology.

One of the major advantages ICT brings to the literature of ESP teaching is expanding access to authentic materials. This will facilitate the task for teachers and e a joint level of ambition between the three agents of education i.e. teachers, learners, and staff. The following part highlights this task.

4.5.1. Authentic Resources Used in ESP Learning

Noonan and Miller (1995) define authentic materials as those which: *"Were not created or edited expressly for language learners"*. In other words, the term *authentic materials* denotes how native speakers of a given language use it in its natural context. In case of English, the notion of authenticity means that the whole context of target language can be qualified as authentic materials and thus be used not only for general English but for ESP teaching and learning as well.

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Vaiciuniene and Uzpaliene (2010:95) distinguish three broad categories of ESP authentic materials: daily objects such as business cards, bank leaflets, photographs, receipts, catalogues, currency, reports, financial statements, instructions, bank accounts, application forms, pictures, registration forms, letters/emails, diagrams, agreements, etc; broadcast texts such as newspapers, journals, TV and radio programmes, films, documentaries, general or special literature, etc; and websites. (Cited in Gabriela 2011:29)

In sum there are indefinite authentic resources; it is simply a matter of searching creativity (Vilhelmina& Daiva, 2009). However; one of the most challenging tasks ESP teachers regularly face is how to capture the students' interest and stimulate their motivation to learn. This endeavour the idea that the materials derived from the real world, and then brought to classroom by ESP teachers helps students to reflect on authentic language use and may contribute to the overall learning process. Alongside with the advantage of the world websites, ESP teachers/students have at their disposal a large amount and variety of material available: texts, visual materials, newspapers, magazines, live radio and TV recordings, video clips and much more.

Additionally, embarking the ESP students in deeper authenticity makes them develop their own strategies when dealing with actual language and on the other hand prevents them from being dependent on simplified language. Easily accessible websites can help students find relevant authentic task-based materials. Thus the role of the learner is important, because in the day to day learning/teaching the exposure to authentic materials can make the task more interesting and motivating.

Which gets to the point is that looking at the current provision of language teaching, and at the future languages strategy, there are a number of key roles that ICT have the potential to promote language teaching: first, it can increase motivation to learn languages. This can be done through enabling language learning across institutions and outside formal educational contexts. Second, it offers opportunities for meaningful practice of language in authentic contexts. This may result in offering opportunities for maximal progress in language acquisition through responsive diagnostic and feedback systems. The third role is that ICT helps providing innovative language engineering devices which provide just-in-time support in language use. Finally, it enables information and resource sharing between language teachers. (Owen and Facer2004)

One of the examples EGP, ESP teachers as to students can benefit a lot from is the use of video conferences. This agent- despite some lacuna- gave positive results when introduced in the department of English with ESP postgraduate students. So why not integrating it in the ESP situations in general and when teaching master physics students in particular? The following part will discuss this point.

4.5.2. Video Conference

As it was seen in the previous sections, advances in technology challenge the traditional paradigms of teaching and learning. The evolution of distance education has been recognized as one of the little areas in education where technology has been central to the teaching task (Bates, 1995). In addition to distance education, E as to blended learning are there. One of the current areas of overlap between the

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three different forms of education mentioned and which represent an interesting way of content delivery is video conferencing.

4.5.2.1. The concept of *Video Conferencing*

Being in use since the early 1960s, video conferencing is a communication means used for lectures, tutorials, workshops, project reviews, remote site visits, etc. It can be either two ways (point -to- point) i.e. between just two locations, or multipoint which is technically more demanding, linking three or more sites with sound and video in real time.

Depending on the system and type used, VC may include data sharing facilities that can help reaching the task put forward by teachers and learners. They include electronic whiteboard that all participants can draw on, or text based real time 'chat' (like e-mail but it appears instantly on recipients' screens) and application sharing such as word processors, spread sheets, PowerPoint, Computer-aided design (CAD) packages where computers technology is used for the process of design and design-documentation.

Laurillard (2000) defines VC as a "One-to-many medium, making it a sensible way to provide access for many sites to a remote academic expert." According to another definition by the British Educational Communications and Technology Agency (BECTA, 2003), VC allows people in different locations to see and talk to each other. It may also support the electronic exchange of files, sharing of computer applications and co-working. In fact VC is a function which can rely on a variety of technologies which have been developed and updated through different phases.

This is why it is not the technology in itself. However, the term is- in fact- applied to a wide range of situations from live video lecturing devoted to small or large size audiences, to a point-to-point and/or individual-to-individual desktop communication chat over the internet using Skype, Yahoo, and MSN.

Those mentioned forms of video conferences can be classified under one feasible categorization: large and small scale. The majority of large scale VCs is currently satellite-based. This allows broadcasting from a central point to many different locations regardless of distance. However, small scale refers to VC between relatively few points for small meetings. Both forms use ISDN i.e. Integrated Services Digital Network link for the fulfilment of those functions.

According to BECTA (2003): Three types of VC system are available: desktop units, roll-about, and room systems. Desktop video conferencing involves each individual using a computer, with one onscreen window for each site whereas roll-about system stores all the equipment required in a wheeled cabinet. However, a room system includes the same equipment, but housed in a permanent installation. Based on what has been said above, the following part will shed light on the pedagogical implications of video conference to facilitate both teaching and learning.

4.5.2.2. Pedagogical Use of Video Conference

Recently, educational facilities have begun supporting university students taking advantages of video conferencing technology. Its equipments, i.e., video conference can help facilitate instruction and provide distant learners with a host of resources and access to content providers, teachers, and librarians. Moreover, adopting video conferencing as a method of content delivery will help enhancing

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communication and instruction. This can be done through connecting the local students with others outside the country and producing networks carrying large volumes of video and text data.

Other benefit students may have from video conferencing technology includes librarians who can use video conferencing to develop strategies, provide resources and improve the quality of their service and delivery. Additionally, video conferencing facilitates learning by allowing remote or distant learners to meet regardless of their location (the example of the GVC program at the English department). Bo doing so, more opportunities are given to students as they can take classes at multiple universities. In other words, it may appear that some classes are not available at the leaving location for a reason or another but may be available at another through video conferencing.

Amongst the other pedagogical benefits of Video conferencing is that it can be used as a career or employee training tool by offering a chance of learning for non traditional students who are not able to attend classes during normal hours. This idea is nowadays endeavoured by many companies in collaboration with higher education institutions and universities. However, ensuring the presence of both teachers and students represents a tiresome issue in addition to the good functionality of video conferencing facilities.

Another key benefit of video conferencing is that it is almost like being there. This is referred to as an interactive communication medium. The visual link and communication among participants enhances understanding and helps participants connected to each other, supporting cooperation among traditionally isolated

institutions. Also, video conferencing can improve preservation and appeal to a variety of student learning styles by including varied media such as video or audio clips, graphics, animations, computer applications and break-out discussions.

One of the benefits of video conferencing seminars is that students have a chance to meet experts to share their specific research interests. They can also attend presentations on a range of topics related to their areas of interest they might not otherwise engage with. Another valuable outcome of the video conferencing seminars is that students have a chance to discuss issues from different perspectives, which helps break down assumptions about related fields they may not realize they had. The video conferences enable students to exchange information and ideas in real-time at a distance.

In sum, these moments come up in face- to- face learning but video conferencing enables more meaningful relations between two sites at a distance. The experience launched at the English department with ESP postgraduate students (who are teachers nowadays) is the best illustration of what video conference can bring to education. The following table summarises the video conferences session taken at the English department as ESP teacher training program. Besides, it may help overcome the difficulties encountered by master physics students while writing their scientific papers if designed in a way to facilitate meetings with experts in the domain via video conferences.

Table 4.4: Video Conferences Session

Video Conference	Topic	Teachers in the far-end Location	Date
1	Learning Languages	Professor from Sorbonne-Paris 3	16/03/2010
2	Key Parameters Affecting Learning	Professor from Nantes	06/04/2010
3	Task-Based Approaches & ESP	Professor from Sorbonne-Paris 3	04/05/2010
4	Course Design in ESP	Professor from Sorbonne-Paris	11/05/2010
5	Task And ICT	Professor from Sorbonne-Paris 3	18/05/2010
6	Dealing with Large Numbers of Students: A Blended Learning Environment in a French University and its Impact on SLA and Student Satisfaction.	Professor from : Nantes	25/05/2010

The last point this chapter will deal with is a suggested course about writing a scientific paper. This will include a detailed description of what to include in each

section of that paper. All this, to help not only master physics students but also others master the writing skills in their discipline.

4.6. Some Guidelines to Writing a Scientific Paper

Here are the guidelines put forward while writing a scientific paper and which meet the demands of the international norms. It should be mentioned here that both format and content are included in the following sub-titles. But before, here are some general rules are commonly followed in scientific writing. (Based on Maloy's model: 2010:1-5)

The first point is linked to the notion that the writer is likely required to ensure what is called *flow*. In the case of reading a prose, interpretation is quite easy when it flows smoothly, from background to rationale to conclusion. Furthermore, the rationale behind the topic is expected to be clearly stated; which is not the case when forcing the reader to figure out the logic built. In other words, it is much easier for the reader when the logic behind any transition from one idea to another is explicitly declared.

The Second tip is associated with one of the common strategies used to avoid redundancy, i.e., *abbreviations*. At this level, the writer is supposed to utilize standard abbreviations such as *hr, min, sec, etc* instead of writing complete words. This fact is conditioned defining all abbreviations when cited for the first time, and then subsequently use the abbreviation, e.g., *AmpR for Ampicillin resistant*.

In the same vein of abbreviations, and as a general rule, abbreviations are used when the term they refer to is used at least three times in the manuscript; however, with two exceptions (the degree symbol and percent symbol), leaving a

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space between numbers and the accompanying unit is needed. Likewise, abbreviations should not be written in the plural form, e.g., *1 ml or 5 ml, not mls*.

The third hint is connected with the use of *tenses (past, present, and future)*. At this stage, the past tense is devoted to describe the results obtained based on the experiments done and which are still in the phase of being prepared to be real facts. When done so, i.e., they are now based upon the assumption of becoming *facts* and published in papers; the present tense is suitable to speak about them. For the future, it is clear that it is appropriate when predicting or planning further experiments in the future.

The fourth criterion is the notion of *third vs. first person*. No doubt that making use of the first person in scientific writing is accepted; however, it is governed by the fact of reserving it for things the writer wants to emphasize on. This denotes that the third person is often required to avoid sounding like an autobiographical account marketed by a selfish author. Here are some examples where the third person can fit: *It is possible to ...* rather than *One could ...* and inanimate objects like *genes*, *proteins*,... etc.

The fifth norm is the perception of *empty phrases*. Many reviewers argue the idea of avoiding the use of phrases which do not contribute to understanding or add value. For example, the following phrases could be shortened (or completely deleted) without altering the meaning of a sentence: *the fact that ...* which can completely be deleted; *In order to ...* that can be shorten to simply *To ....* In short, the writer is asked to go directly to the point he/she wants to present.

The sixth dimension is being *specific*. It is true that the writer will make use of a variety of expressions modifying the same word; but, they should be arranged

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in a way to clearly declare which word they modify. At this level, it is common to use a pronoun such as *it* or *they* to refer to a concept from the previous sentence. This is ok as long as there is only one concept that *it* or *they* means. However, if there are more than one concepts it is easy for the reader to get confused about what the pronoun is meant to specify (even if you know which one you mean). It is better to error on the side of redundancy by repeating the concept in subsequent sentences, than to take the chance of confusing the reader. Here again, the writer is supposed not to make the reader guess what he/she means.

The last aspect to speak about in this part is *spell-check.* After finishing the whole draft, carefully proofread for paper before its submission is of great deal. It encompasses checking spelling, grammar, and punctuation mistakes. One of the techniques used is reading the paper as if be it out loud to ensure that the wording and sentence construction is not clumsy. Regarding the guidelines commonly cited by experts when writing a scientific paper, there are listed as follows

4.6.1. Abstract

An abstract is usually provided in a form of one long paragraph summarizing of the whole paper. It is placed at the beginning of the paper, but written after the paper is completed. Furthermore, it includes the following parts (a) description of the question or the problematic situation the paper is about; (b) the methods used to answer that question, (c) exposing the main results obtained, and (d) the main findings as to the conclusions. One of the strengths of writing the abstract is that the reader can easily figure out the major points of a paper by reading the abstract.

4.6.2. Introduction

In the same line with the abstract, the introduction represents a little bit detailed phase of the point mentioned in the abstract. This incorporates (a) describing the question tested by the experiments the paper went through; (b) explaining importance as to the scientific contribution of question, (c) depicting the approach used in sufficient details which allow those reader who are not familiar with the technique understand what was done and why; and (d) mentioning the conclusions the paper ends with.

4.6.3. Materials and Methods

In this section, the writer has to concisely describe what was actually done. It include description of the techniques used the reader can comprehend what experiments were actually done. Besides, the relevant information and solutions regarding those experiments are indicated. All this with reference to what experts refer to as the details of a published protocol, e.g., *the experiment was done as described by Hughes et al*; however, any changes from the published protocol should be described.

4.6.4. Results

The results are to be summarized in accompanying text; however, in the presentation of the results, it highly academic to start each paragraph with an opening sentence telling the reader what question is being tested in the experiments those paragraphs are about. Hence, and to emphasis the opening sentence, it can be written in bold. Furthermore, the use of tables or figures is crucial in case the reader

comes cross evaluating experiments with critical results that include multiple data points. When referring to a particular table or figure, they capitalization is needed, *e.g., Table 1, Figure 6, etc.* Yet, a brief text about the results section is necessary to provide the reader with a summary of the results of each table or figure.

A course of action in the presentation of results is that not all results deserve a separate table or figure. In this sense, and as a rule of thumb, if there are only a few numerical results or a simple conclusion; it is of great deal to describe the results in the text instead of in a table or figure.

4.6.5. Tables and Figures

When designing tables and figures a contextual framework in the corresponding text is suitable; however, each of the already mentioned sections includes a specific categorization. For instance, in the section of materials and methods a table of strains is likely used; a table of results is placed in the section of results; the section devoted to the discussion will automatically include a figure showing a biosynthetic pathway;... etc.

Furthermore, tables and figures fit in the process of presenting information in a format that is easily evaluated by the reader. Therefore, it is recommended that those tables and figures contribute in making it possible to figure out the meaning of without referring to the manuscript or text. Besides, they ought to usually summarize results, not present large amounts of raw data.

Among the other underlying criteria in the vein of tables and figures; the writer has to ensure that all his/her tables and figures are: sequentially numbered;

having a title above the table according to the APA style and which describes the point of the table. If necessary to interpret the table, specific descriptions about what a result represents or how the results were obtained can be described in a legend below the table.

The last point to speak about is that depending on the methodology used, tables and figures may be printed on separate pages that follow the reference section or integrated into the paper; however, if they are integrated into the paper the writer have to make sure that there is not a page break in the middle of a table or figure.

4.6.6. Discussion

This section is crucial as it reflect the personality of the writer. If so, it is of great deal of not simply restating the results; but, explaining the conclusions developed and interpreting of the results. The following questions are perceived to help in that process: How did the results obtained compare with the expected ones? And, what further predictions can be gleaned from the results?

4.6.7. Citations and Reference lists

It is essential to credit published papers for work mentioned in the manuscript. There are a variety of ways of citing references in the text since the style used depends upon the policy of the journal. Yet, one of the common principles regarding references is that in- text citations should refer to a reference list.

The following table summarises the above mentioned steps or procedures in the form of program to be a reference for both teachers and students later on.

Another point to mention here is that it is elaborated from existing published papers and laboratories reports.

Table 4.5 Scientific Paper Procedures

Section	Description
Title	❖ It should be concise and precise ❖ Narrow down the scope of your research ❖ Avoid too general titles ❖ Capitalise the first letter of each word except for prepositions (in, at , of, the...etc) ❖ Centre your title
Name of Author and Institution	❖ Write your name ❖ Write the name of the institution and the department you are belonging to
Abstract	❖ One long paragraph ❖ Placed at the beginning of the paper i.e. after the title and name ❖ Provide the summary of the whole work (introduce the topic i.e. the scope of your research, its importance ❖ Objectives of your study including the problem observed ❖ Procedures including what was done (the experiment) ❖ How it was done (the method (s) used) ❖ The main results obtained ❖ The main conclusions
Key Words	❖ They are alphabetically ordered ❖ The important concepts the work is turning around

Section	Description
	❖ Write them in bold
Introduction	❖ Definition of the topic ❖ The scope of research Background information so that the reader will understand the problematic situation ❖ The research questions ❖ Hypothesis
Methods	❖ Clear description of the methods used as to the procedures ❖ It also includes previous studies related to your own
Results	❖ Give the main results ❖ Use equations (but be careful of the mathematical presentation of them) ❖ Present your results using tables, graphs, and figures if necessary
Discussion	❖ Discuss the results par port the research questions and hypothesis raised ❖ Conform or disconfirm the hypothesis based on the main conclusions drown
Conclusion	❖ Provide a summary of all what has been done ❖ Open the door for future research
References (Bibliography)	❖ List all the references mentioned in the text ❖ They should be alphabetically ordered ❖ Use one standard when providing the references in terms of authors' name and he style (MLA, APA...)

4.7. Forms of ESP Materials Adaptation

All what has been said above was in the vein of ESP materials development or writing to fit the ESP situation. The following part will be devoted to one of the related task when speaking about ESP materials (both authentic and simplified ones) which is adaptation.

Adaptation denotes that languages teachers while in the ESP situation should look for the best of their classes. To do so, the following forms will be of great deal when opting for the process of materials adaptation. First Modifying the content by Adding or deleting some parts to the material be it a textbook, a manuscript, or a recording. Second, reorganizing the content in terms of tasks; either by modifying or extending them according to the needs.

Now, the governing condition of all what has been said above is- as stated by Marand (2011:552 citing Graves 1996) -that abundant factors need to be taken into account while adapting materials. The most pivotal are: effectiveness in achieving the course objectives and appropriateness which encapsulates "student comfort and familiarity with the material, language level, interest and relevance".

The last point to speak here is a frequent question asked by many ESP teachers or practitioners i.e. what are the ways of materials adaptation? But before, it should be stressed here that any material adaptation is based on an important previous process i.e. material evaluation. This last aims at investigating the deficiencies as well as the lacuna of ELT as to ESP materials. Coming back to the answer of the above question, it is summarised in the following table.

Table 4.5 Ways for Material Adaptation adopted from (Maley, 1998:281. Cited in Tomlinson, 1998)

Way	Description
Omission	The teacher leaves out things deemed inappropriate, offensive, unproductive, etc., for the particular group.
Addition	Where there seems to be inadequate coverage, teachers may decide to add to textbooks, either in the form of texts or exercise material.
Reduction	Where the teacher shortens an activity to give it less weight or emphasis.
Extension	Where an activity is lengthened in order to give it an additional dimension. (For example, a vocabulary activity is extended to draw attention to some syntactic patterning.)
Rewriting/ Modification	Teacher may occasionally decide to rewrite material, especially exercise material, to make it more appropriate, more "communicative", more demanding, more accessible to their students, etc.
Replacement	Text or exercise material which is considered inadequate, for whatever reason, may be replaced by more suitable material. This is often culled from other resource materials.

Way	Description
Re-ordering	Teachers may decide that the order in which the textbooks are presented is not suitable for their students. They can then decide to plot a different course through the textbooks from the one the writer has laid down
Branching	Teachers may decide to add options to the existing activity or to suggest alternative pathways through activities (an experiential route or an analytical route.)

In sum, one can say that all the above mentioned programs starting from teacher training , needs analysis, guidelines of writing a scientific paper, and materials adaptation aim at facilitating the task for both teacher and students in ESP situation. Based on this, the following part will shed light on some recommendations.

4.8. Some Suggested Recommendations

This part will give some recommendations for administration (staff), teachers, and students to better understand the idea behind teaching ESP. In addition to this, those recommendations are seen by the researcher as a tool to overcome problems generated while writing scientific papers.

4.8.1. Recommendations for ELT Staff

It is part of their responsibility to ensure training programs for their teachers. Those programs will be either for pre or in- service teachers. All this aims to ensure a good quality of both ESP teaching and learning.

- ✓ Facilitate collaboration between subject specialist and language teachers. The desire behind collaboration is: first, to help those language teachers cope with the ESP situation, and second, overcome the dilemma that their students are more professional in the discipline. Now to ensure what has been said, organising continuous meeting between the two agents through the whole year can fit. In this area, designing a responsible for the module is of great deal as it will make it easy for the collaboration to occur.

- ✓ Ensure the availability of ICT facilities for both teachers and learners. In other words providing them with internet access, computer and or data shows in class. The simple reason behind the use of information and communication technology in ESP situations is to develop more student-centred learning settings. In addition to this, the aim behind this is to create a motivating atmosphere to teach and to learn.

- ✓ Ensure the presence of a technician in case teachers or students face a technical problem with the ICT tools. In other words, the notion of functionality while using ICT facilities is very important; otherwise, the ESP course will take another direction. In sum, ensuring functionality with the help of a technician is important for the simple reason that it is technology

and we cannot rely on it to 100% (bad quality of sound or image, bed internet connectivity which can cause a delay).

✓ If the staff is opting for video conferences with experts- in fact they have to as the use of video conferences proves its benefits with ESP postgraduate students in the department of English-the ground should be well prepared for this including: checking the functionality of equipments and good internet access. Lighting and data sharing facilities (data show, document show) are also important.

4.8.2. Practical Suggestions to ESP Teachers

✓ Teachers are requested to be more aware of their responsibility towards students. They should keep in mind that they are there to help, guide, and supply them with the necessary elements to develop their knowledge. A part from their responsibility is to motivate those ESP students despite all the difficulties encountered. In other words motivation is very important in ESP situations as it represents a critical factor in either pushing students to an ongoing learning or slowing down- and sometimes- stopping that whole process.

✓ They have to try to be specialised in the field they are teaching in. This can be done by: making extra reading and asking experienced teachers. Because the more teachers have knowledge about the subject area they are in, the more the message will be clearly transmitted. All this is part from a continuous teacher's development. This last can be of great deal as it will

help language teachers update their knowledge- not only in ESP but also in EGP- as new techniques are developed as to materials.

✓ Teachers are also recommended to develop the spirit of collaboration with subject specialist. As it is said "two heads are better than one", "the more the merrier", and "more hands make for lighter work". A point to mention here is that collaboration is not necessary limited to subject specialist i.e. it can extended even to other language teachers. This is referred to as team work. Team work is crucial as it may help exchanging knowledge, experiences, and avoid mistakes.

✓ No one can neglect the fact that collaborating in groups helps teachers share ideas, increases student achievement, creates a positive campus climate and increases community involvement. Collaboration is not just for teachers, though, as students also can benefit from learning together in small groups.

✓ Make use of technology to facilitate their job because, teachers coming to the class armed with books and papers in hand, is no more the fashion. This means that using technology- especially in a scientific filed- will help in making illustrations using image, graphs, figures, equations...etc.

✓ Yet, it should be noticed that teachers and instructors play an important role in using ICT for teaching and as guides and facilitators when providing background material and guiding principles for research (Kuechler, 1999). They need to monitor the process, particularly for adult students, who have a tendency to browse the web, rather than follow prearranged search plans. They are also instrumental in helping students to split unreliable sources

from the reliable ones; and make sense of the huge number of information that may overwhelm them.

✓ Try to understand their learners' needs and thus develop courses accordingly. However, they should have a deep vision about the existing methodologies which govern the process of course design; because if they miss the point in doing so, the course may take another direction. The present thesis highlights the whole process in designing course and syllabus. Thus develop materials according to the needs.

✓ Believing that the changes in the teaching and learning paradigms represent a great deal for teachers to adopt their roles in response to the above mentioned criteria; teachers should clearly understand their roles as ESP teachers. Because if done so, the path to follow will clear, the required skills will be obvious, and what is needed will be apparent.

✓ Update their approaches, methods, and techniques of teaching. This -of course- is governed by knowing first the difference between the three concepts. And then moving to their application in real world situations.

2.7.3. Proposals for ESP Students

It is true that the present thesis focuses on teachers and staff responsibility while teaching ESP in the department of physics. However one cannot neglect that even students can help overcoming the problem. They are recommended not to rely only on teachers but also to do extra efforts outside the university context (all what has been said above is –of course- with reference to their teachers). This idea is endeavoured by the fact that they are:

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✓ Part of the ministry of higher education and scientific research, this imposes doing further research about how to write scientific papers. This is now an easy task with the ICT revolution.

✓ Part of the LMD system which opts for a more learners-centred approach rather than a teacher- centred one. In other words, they have to keep in mind that those language teachers are there to guide them, show them the path, and they have to be the path finders.

✓ They have also to develop the spirit of working in groups to correct each others. Besides, they are likely required to build a kind of collaboration. By doing so, the task of overcoming their difficulties will be much more easer; and thus, writing a good scientific paper in terms of format and content can be accomplished.

4.9. Conclusion

Which gets to the point, this chapter shed light on some suggestions and recommendations for an ESP course design (writing scientific papers). It should be mentioned here that the suggested courses including: teacher training program, needs analysis framework, guidelines for writing a scientific papers, and the video conferences sessions were based on two criteria. The first one is flexibility i.e. they are not restricted to just one field or discipline but they are interdisciplinary ones. The second one is they are both theory and practice based i.e. they include a collection of a variety of theories and examples of good practices in the field of education. The last point to speak about in this conclusion is that the present thesis witnessed some limitations. They are pointed out in the general conclusion.

General Conclusion

General Conclusion

The researcher in this thesis tried to investigate the rationale behind skills centred approach for ESP course design case of master physics writing scientific papers at the University of Tlemcen. This was done by trying to understand their difficulties and thus designing an appropriate course to overcome them. It was clearly seen that this area represents a serious problem in the discipline of the teaching of ESP.

To clearly understand all the above mentioned tasks, the researcher used a case study research design, and a combination of both qualitative and quantitative methods for data collection and analysis. The main objective was to find answers to the following research questions:

1. Which type of difficulties master physics students encounter while writing their scientific papers?
2. At which level those difficulties lie?
3. How can ESP teacher training and course design help overcoming those difficulties?

And thus confirm or infirm the formulated hypotheses

1. Master physics students seem to come across different kinds of difficulties while writing scientific papers.
2. It appears to be at both format and content the difficulties are found.

3. Harmonizing the ESP teacher training with the target course design may help our learners of physics overcome the difficulties of writing their scientific papers

Regarding the general layout, this research work comprised four distinctive chapters: Chapter one was a review of literature where previous studies as to theories and approaches in the same vein of the topic are provided. This includes English for specific purposes (ESP) where definitions are exposed along with the underlying principles of the ESP approach. In addition to this, needs analysis wee carefully highlighted. Then, ESP course design with its different approaches was discussed with a special emphasis on skills- centred approach. The last part of the chapter was about writing in general, technical writing, and major phases to write a scientific paper designed for publication.

Chapter two was the empirical phase of the study where it described the research design, approaches, data collection and analysis procedures. It did so by giving the rationale behind using the case study. Then, an overview of the quantitative and qualitative approaches was essentially presented. This was followed by a full description of the combination method, i.e., both quantitative and qualitative approaches are used in this study to analyze data. In this regard, a semi-structured interview, a questionnaire, and content analysis have been used as research instruments. This chapter is concluded by a pilot study undertaken to test the reliability and the validity of the designed tools.

Chapter three reviewed the process of data analysis and interpretation. This involves the combination of both quantitative and qualitative methods. The

methodology followed in this research work was to expose the results of each rubrics the questionnaire as to the interview were divided to. By the end, a detailed account of data discussion and interpretation was given to reflect on the research questions and objectives, test the hypotheses

Chapter four dealt with a practical proposal and some suggested recommendations as a remedial work to the targeted situation. This includes the rationale behind teacher training, ESP materials development and adaptation, needs analysis grids, the use of ICT- based techniques, and a course of action about the different steps when writing a scientific paper. It ended, of course, with stating some limitations of this study.

This work used a research design which relied on a case study as it enabled the researcher to have an in-depth vision about the situation. Then a combination of both qualitative and quantitative approaches for the analysis and interpretation was used. The results obtained and the discussion drown from them confirms the three hypotheses. In other words, master physics students faced great difficulties while writing their papers in both format and content. This is why; an ESP teacher training program and a designed course based on needs analysis are needed.

Since it is research, the present thesis suffers from some limitations. Those limitations will be taken into consideration for future research. First, the sample size was relatively small, and limited to master physics students (option: Physics of gases and plasmas) at the department of physics/ Tlemcen University, thus affecting generalisation of the results. Second, the problem of being objective while analyzing, interpreting, and discussing the results is there. This due to the fact that

the researcher is an ESP teacher and have already experienced those difficulties with other students in other departments (department of dentistry and the department of commerce).Third, access to documents (papers, essays, articles) written by students was quite difficult (administratively speaking). The last limitation is that organizing the meeting with teachers for the interview and with students for the questionnaire was really hard (as it was by the end of the year.

Now despite the above mentioned limitations, the present work end up with important suggestions and recommendations related to the topic chosen i.e. ESP course design. This last represents the effect of the worldwide interest in the study of English which is gaining more and more importance. In addition to this the approach used (skills centred approach) is seen to be important as it looks to the end when designing ESP courses.

Besides, it views language in terms of how the mind of the learner processes it rather than as an entity in itself; tries to build on the positive factors that the learners bring to the course, rather just on the negative idea of 'lacks', and frames its objectives in open-ended terms, so enabling learners to achieve at least something.

Now for a better understanding of the topic , this study emphasises the idea that ESP teachers not only teaches but also provides materials, design syllabus, collaborate with subject specialists, conduct research and evaluate the course and the students. This is why a professional ESP teacher must be able to switch from one professional field to another without being obliged to spend months on getting started. He/she simply brings the necessary tools, frameworks and principles of course design to apply them to new material. The last word to say is that it should

always be remembered that the ESP teachers are not specialized in the field, but in teaching English.

Another point to mention here is that using skills-centred approach as a framework of ESP, ESP teachers are provided with the necessary knowledge and tools needed to cope with their students' needs in the specialized arena. However, it is of great deal to emphasise the idea that ESP teachers are not specialists in the field, but in the teaching of English. In other words, their duty is English for the profession but not the profession in English. This is done by helping their students, who know their subject better than the teachers do, develop the essential skills in understanding, using, and/or presenting authentic information in their discipline.

Regarding the writing course, the study ended with insightful remarks about the difficulties encountered by master physics students when writing their scientific papers. Amongst of them, stressing the writing skill from the beginning of the learning career, i.e., the university one will help not overcome the difficulties but reduce the negative effects. Besides, the availability of a pre- determined scientific writing course with guidelines and references is of great deal in this arena.

Now speaking about the future of ESP teaching as a whole and further research out of this present investigation, the following questions are seen to be of great value if addressed in future research: what are the underlying criteria to cope with the lack of adequate teaching materials in ESP and the necessity to design a needs-oriented ESP syllabus;? How to bridge the gap between theory and practice regarding the teaching of ESP? How teachers deal with the necessity to pick up teaching materials suitable for mixed-ability groups of learners as well as for groups of learners with different individual needs?

The last thing to mention in this conclusion is that researchers hope that applied linguists' insights and the undiminished motivation of teachers and language learners will contribute to the enhancement of ESP teaching methodologies because learning language is always learning with a purpose.

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Appendices

Appendix A
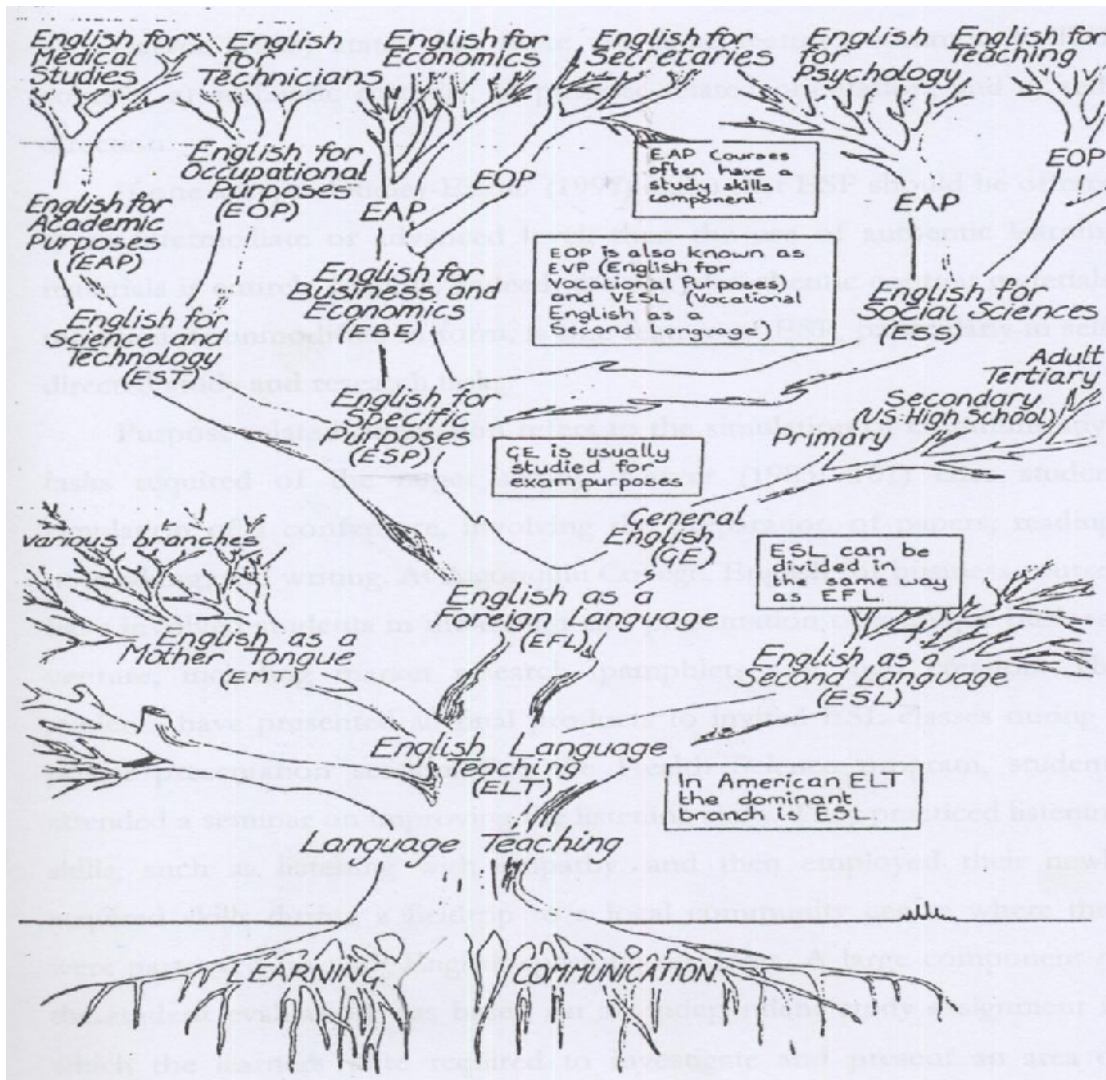
ELT Tree (Hutchinson and Waters 1987, p. 17)

Appendix B: the Deaf Blind Manual Alphabet.

- For A, Touch the tip of your friend's thumb.

- For E, Touch the tip of the index finger.

- For I, Is the middle finger.

- For O, Is the ring finger.

- For U, Is the little finger.

The Complete Alphabet

A	Touch the tip of your friend's thumb.
B	Bunch the tips of your fingers and place them on your friends palm.
C	Use your index finger to make a circular movement that starts on

	the inside of your friend's thumb and ends at the top of their index finger.
D	Form a D shape using your thumb and index finger and placing it on your friend's index finger.
E	Touch the tip of the index finger.
f	Form an F shape using your first two fingers together, place across your friend's index finger.
G	Clench your fist and place it on your friend's palm, little finger downside.
H	Lay your open hand across your friend's palm and move it over the fingers and off the hand
I	Is the middle finger
J	Touch the tip of your friend's middle finger and draw your finger down to the palm and up the thumb. (Think of this as the letter I with a tail).
k	Bend your index finger and lay the top half of it against your friend's index finger.
L	Just lay your index finger across your friend's palm.
M	Lay your first three fingers across your friend's palm.
N	Lay your first two fingers across your friend's palm.
O	Is the ring finger.
P	Hold the tip of your friend's index finger between your finger and thumb.
Q	Completely circle the base of your friend's thumb with your thumb and index finger.
R	Bend your index finger and lay it across your friend's palm.
S	Grasp your friend's little finger with your index finger.
T	Touch the edge of your friend's palm, at the side away from the thumb.
U	Is the little finger.
V	Make a V shape with your first two fingers and lay it on your

	friend's palm.
W	Grasp the upper edge of your friend's fingers, bending your fingers around them.
X	Make a cross by laying your index finger over the top of your friend's index finger.
Y	Place your index finger in the joint between your friend's thumb and index finger.
Z	Either: place your finger tips against your friend's palm. Or place the outer edge of your hand across your friend's palm.

And now two quick signs that come in handy.

- For YES, Just tap twice on your friend's palm.

- For NO, (or cancelling what you just said) do a rubbing out movement

on your friend's palm.

Appendix F: Teachers' interview

Dear teachers, the following interview is addressed to gather information about the difficulties master students of physics encounter for writing their research papers.

I.   Teachers' profile

1.   How many years have you been teaching English?

2.   Are you a language teacher or a subject specialist?

3.   Which skills do you most focus on while teaching English in the department of physics?

Reading   writing   speaking   listening

4.   Have you received any training in teaching English for students of physics?

II.   Issues, tensions, and challenges associated with writing

1.   According to you, what is the importance of the writing skill compared to the other language skills?

2.   Which assignments do you generally suggest to you students?

3.   Do you teach your students about writing a scientific paper?

4.   What are the common difficulties your students often experience while writing their papers about physics?

5.   What are the possible reasons you may list for those difficulties your students face?

III.   Methodologies and techniques to assist students overcome their difficulties in writing research papers.

1.   Do you raise your students' awareness about the necessity to make efforts to writing a research paper?

2.   In what ways do you motivate your students and realize that their writing skills are important for their future careers?

3.   While teaching about writing; do you use any model of a research paper to follow? If yes explain

4.   Do you read and discuss with your students their research papers in your class?

5.   Based on your own professional experience, what would you please suggest particular recommendations or activities for you students to overcome their difficulties to writing their research papers?

Thanks for your collaboration

Appendix G: Students' Questionnaire

Dear students, the following questionnaire is addressed to gather information about your difficulties in writing and thus design the appropriate writing course in the future to help you write scientific paper to be published in scientific journals. So would you please answer the following questions.

A.   General Overview about the Learning Career

   I.   How many years have you been studying English in the department?

   …………………………………………………………………………

   II.   Do you think that English is important in your studies(**choose one of the following answers)**

   ☐ **Yes**   ☐ **no**   ☐**to some extent**

   III.   Your teachers of English, have they been subject specialist or language teacher?………………………………………………………

   IV.   How do you rate your knowledge of the following skills? **(use X to choose the right column)**

	weak	acceptable	good	Very good
Reading				
Listening				
Speaking				
Writing				
Grammar				
vocabulary				

V. What do you most need in your studies? (**circle the needed skill**)

       Reading   **listening**   **speaking**   **writing**

VI. What do you consider your writing skill? (**circle the right answer**)

       Weak   **acceptable**   **good**   **very good**

VII. Do you have an idea about the following concepts: **formal and informal**

       ☐ **No**   ☐**yes**

       If yes explain

....

....

....

VIII. What about the level of formality in your writing? (**cycle the right answer**)

       Formal   **informal**

IX. Are you satisfied with your level in writing? (**Use X to choose**)

       ☐**Yes**   ☐ **no**

B. **Description of the writing course**

X. Which type of writing assignments your teacher gives you? (**Use X to choose**)

Paragraph	
Essay	
Abstract	
Summary	
Description of a physical phenomenon	
Analysis of a theory	
Others... (mention them)	

XI. What are the difficulties you generally encounter while writing? **(Use X to choose)**

sentence structure	
Lack of vocabulary	
Grammar	
Format	
About the content	
Organizing the content	
Language used	

C. **description of the scientific writing course**

XII. Have you ever written a scientific paper?

☐ **No**

☐ **Yes,** how many?..

XIII.   What do you know about how to write a scientific paper?

....

....

....

XIV.   Are there any particular criteria to writing a paper about physics?

☐ **No**

☐ **Yes (please explain)**...

....

....

XV.   Have you received any training on writing about physics?

☐ **No**

☐ **Yes, please explain**

....

....

....

XVI.   How much difficulty you experience in writing the following sections

of the scientific paper in English. **(Use X to choose)**

Section of the paper	none	little	some	quite a lot	a lot
1. The abstract					
2. The introduction					
3. The theoretical framework					
4. Instruments and methods					

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5. exposing the results					
6. discussion of results					
7. Other sections					
8. conclusions					
9. acknowledgements					
10. The response to peer reviewers' comments.					

Ca

n you please suggest any further recommendations or comments?

....

....

....

....

....

....

Thank you for your collaboration

Appendix H: Questionnaire Pour Les Etudiants

Chers étudiants, le questionnaire suivant est adressée pour recueillir des informations sur vos difficultés à l'écriture en Anglais et donc élaborer le cours d'écriture approprié pour vous aider à écrire un article scientifique qui sera publié dans des revues scientifiques. Alors voulez-vous s'il vous plaît répondre aux questions suivantes.

A. Vue General

I.   Combien d'années avez-vous étudié l'anglais dans le département?

....

II.   Pensez-vous que l'anglais est important dans vos études (choisir une des réponses suivantes)

   Oui   non   dans une certaine mesure

III.   Vos enseignants d'anglais, ont-ils été enseignants de spécialisé ou bien des enseignants de la langue?

....

IV.   Comment évaluez-vous votre connaissance des compétences suivantes? (utiliser X pour choisir la colonne appropriée)

	Faible	Bonne	Acceptable	Très Bon
Lire				
Ecouté				

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Parlé				
Rédaction				
Grammaire				
Vocabulaire				

V. **Que pensez-vous le plus besoin dans vos études? (Circuler la compétence nécessaire)**

Lire   écrire   parlé   écouté

VI. **Que considérez-vous votre habileté d'écriture? (circuler la bonne réponse)**

Bon   acceptable   faible   très bonne

VII. **Avez-vous une idée sur les concepts suivants: formel et informel ?**

Non   Oui

Si oui, expliquer :

....

....

VIII. **Qu'en est-il le niveau de formalité dans votre écriture? (Circuler la bonne réponse)**

Formel   informel

IX. **Êtes-vous satisfait de votre niveau d'écriture? (Utilisez X pour choisir)**

Oui   Non

B. Description du cours d'écriture

X.   **Quel type de tâches d'écriture votre enseignant vous donne? (Utilisez X pour choisir)**

Paragraphe	
Essai	
Abstrait	
Résumé	
Description D'un Phénomène Physique	
L'analyse D'une Théorie	
Autres ... (Les Mentionner)	

XI.   **Quelles sont les difficultés que vous généralement rencontrez lors de l'écriture? (Utilisez X pour choisir)**

structure de phrase	
Manque de vocabulaire	
Grammaire	
Format	
À propos du contenu	
Organiser le contenu	
Langue utilisée	

C. description du cours de rédaction scientifique

XII. **Avez-vous déjà écrit un article scientifique?**

Non

Oui, combien? .... …………….................................

XIII. **Que savez-vous sur la manière d'écrire un article scientifique?**

....

....

....

XIV. **Ya t-il des critères particuliers à la rédaction d'un article sur la physique?**

Non

Oui (s'il vous plaît expliquer) ....

....

XV. **Avez-vous reçu une formation sur l'écriture concernons la physique?**

Non

Oui, s'il vous plaît expliquer

....

....

....

XVI. **Combien de difficulté que vous rencontrez pendant l'écrit d'un article scientifique en anglais. (Utilisez X pour choisir)**

Sections de L'article	Aucun	Un petit peu	Um peu	Beaucoup	Beaucoup plus
L'abrégé					
L'introduction					
Le cadre théorique					
Instruments et méthodes					
Exposant les résultats					
Discussion des résultats					
Autres sections					
Conclusions					
. Remerciements					
répondre a des commentaires					

XVII. **Pouvez-vous s'il vous plaît suggérer d'autres recommandations ou des commentaires?**

Merci de votre collaboration

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استبيان للطلبة   **Appendix I**

عزيزي   يهدف الاستبيان التالي   الأكاديمية

المنهاج   في المجلات العلمية. لذلك هل من

الممكن الإجابة على الأسئلة التالية.

اللغة الإنجليزية في كليتك

....

هل تعتقد أن اللغة الإنجليزية مهمة في دراستك (من الأجوبة التالي)

ما صفة أساتذة اللغة الإنجليزية الذين عرفتهم خلا   (أستاذ اللغة الإنجليزية أم أستاذ

.... **(**

كيف تقيم معرفتك   مهارات التالية؟ (X لاختيار   )

	ضعيف		جيد	جيد جدا

أي من المهارات السابقة لها (دائرة حول المهارات اللازم)

كيف تقيم مستواك في (دائرة حول الإجابة الصحيحة)

ضعيف جيد جيد جدا

هل لديك فكرة عن المفاهيم التالية: الرسمية وغير الرسمية (دائرة حول الإجابة الصحيحة)

....

....

(دائرة حول الإجابة الصحيحة)

غير رسمي

هل أنت راض عن مستواك في الكتابة؟ (**X** لاختيار)

اع التالية يحرس الأستاذ على إعطائك (**X** لاختيار)

	وصف لظاهرة فيزيائية
	تحليل نظرية
	مفاهيم أخرى

ما هي الصعوبات التي تواجهها عادة أثناء الكتابة؟ (X لاختيار)

	بنية الجملة
	تنظيم المحتوى

منهاج الكتابة العلمية

هل سبق لك

....

ماذا تعرف عن كيفية كتابة

....

....

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هل هناك أي معايير خاصة لكتابة   حول الفيزياء؟

(يرجى التوضيح............ ....

....

....

هل تلقيت أي تدريب فيما يخص الكتابة عن الفيزياء؟

نعم، يرجى توضيح

....

....

. ما درجة الصعوبات التي تواجهها أثناء كتابة الأقسام التالية   علمي باللغة الإنجليزية.

(**X**لاختيار)   )

		قليلا		كثيرا	كثيرا جدا
.					

الأساليب					
وتحليل					
شكر وتقدير					
تعليقات					

هل يمكنك رجاء اقتراح أي توصيات إضافية أو تعليقات؟

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Summary:

The present study endeavours to empirically investigate an ESP situation where master physics students at the university of Tlemcen encountered difficulties while writing scientific papers. Based on the results obtained from the mixed methods of data collection and analysis, this work has argued that the main difficulties lie in terms of format and content. This is why rethinking about the ESP course is more than needed. In addition to this, training language teachers to cope with those difficulties should alert the staff to ensure that training as well as clarify the underlying methodology of materials developments and adaptation.

Key Words: ESP- Materials Development and Adaptation- Teacher Training- Writing Scientific Papers.

Résumé:

L'étude actuelle cherche à investigué empiriquement une situation d'ESP où les étudiants de master physique à l'Université de Tlemcen ont rencontré des difficultés lors de l'écriture d'un article scientifique. Basé sur les résultats obtenus à partir des méthodes mixtes de collecte et d'analyse des données, ce travail a fait valoir que les difficultés ont une relation directe avec la forme et le contenu. C'est pour sa, repenser le cours ESP est plus que nécessaire. En plus de cela, les enseignants de langues doivent recevoir une formation pour faire face à ces difficultés. Cette formation devraient alerter les responsables au niveau de département pour l'assurer ainsi clarifier la méthodologie concernons l'évolution et l'adaptation des matériaux.

Mots Clés: Développement et Adaptation des Matériaux- ESP - Formation-Ecriture d'Articles Scientifiques.

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تسعى الدراسة الحالية إلى تحقق تجريبيا   ية ESP (الإنجليزية للأهداف الخاصة) حيث يواجه فيزياء في جامعة تلمسان   علميي.   نتائج التي تم الحصول عليها من جمع البيانات وتحليلها،   أن الصعوبات الرئيسية تكمن . هذا السبب إعادة التفكير حول برامج تدريس ESP   تكوين أساتذة   الإنجليزية حتميا. كل هذا وذاك يزيد من واجب الجهات المعنية   وين توضيح المنهجية الكامنة وراء تطوير و تكيف البرامج لحل كل المشاكل ضمان جودة التعليم.

الكلمات الرئيسية: ESP (الإنجليزية للأهداف الخاصة) تكوين الأساتذة   - تطوير وتكيف البرامج.

The advance of the 21st century has resulted in a huge expansion of technology, and thus, English in particular. Accordingly, what is generally viewed as the *Americanisation* of the world under the concept of *globalization*. This process is aiming at unifying the world under the same political system (Democracy), the same economic system (Capitalism and the Free Market System), the same religion (Monotheism or to believe in one God), and the same educational system (the LMD).

Apparently, the above mentioned issues gave birth to the spreading of English all over the world and through all domains. In other words, English nowadays has been given the status of being the first international language; or also known as the universal language; the global language; the language of technology, and a lingua franca, i.e., a language used to communicate between two persons whose native language is not the same). This is why most countries are obliged to rethink about the position of that language within their jurisdictions where Algeria, as our case study, is not an exception.

Speaking about Algeria, expending the use of English is more than a necessity to meet the demands of the target as to the international job markets. Moreover, overcoming the dilemma of the linguistic situation in Algeria which is characterised by the dominance of the French language gave birth to English. At the level of education, lot of attempts are continuously made at the highest level of the political decision making process. Consequently, English is nowadays taught almost

at all stages of education (primary, middle, secondary, and university). This is referred to as EGP or English for general purposes.

Furthermore, the introduction of English within the Algerian educational system faces many challenges among of which; the strong existence of French. This last is the main actor due to the colonial period which lasted more than 130 years. It is observed almost everywhere in Algeria both its spoken and written form; at different levels (governmental, media, daily speech, and education as well). This gives it a position of being a *de-fact co official* language (though having no official status).

Regarding English and more precisely within higher education districts, a new branch is integrated namely ESP or English for specific purposes. This new discipline is fundamentally based on needs specification and thus, process adaptation, i.e., the English taught in the ESP situation should mainly based on learners' needs in terms of skills notably: reading; speaking; listening; and writing which, in fact, represent many difficulties encountered by our EFL students at both EGP situation and ESP context.

These kinds of challenges deeply motivated the researcher to undertake this study which revolves around the following problematic situation: how to overcome the difficulties encountered by master physics students at the University of Tlemcen while writing their scientific papers. Therefore, it has been thought to conduct this investigation through skills- centred approach to ESP course designs. Hense, the overall aim is to diagnose those difficulties using a triangulation process for data collection and analysis to systematically design the appropriate writing course.

To deal with this problematics, the following research questions have been proposed:

4. Which type of difficulties master physics students encounter while writing their scientific papers?

5. At which level those difficulties lie?

6. How can ESP teacher training and course design help overcoming those difficulties?

Thus the following hypothesis are formulated to guide the study

4. Master physics students seem to come across different kinds of difficulties while writing scientific papers.

5. It appears to be at both format and content.

6. Harmonizing the ESP teacher training with the target course design may help our learners of physics overcome the difficulties of writing their scientific papers.

Regarding the general layout, this research work comprises four distinctive chapters:

The overall objective of chapter one was to contextualise the reader about the soul of the topic this thesis is about i.e. skills-centred approach for ESP course design in general and writing a scientific paper in particular. Skills - centred approach or skills eentred focus in course design really looks toward the end. But this means it is best for course designers using a skilled centred approach to worry about the process yet they don't worry about the road or the trail that the individual

student is going to take to get to the end, they are really only worry about the goals as the results.

For example, if you are teaching a class of students who are studying medicine you will certainly have to set of certain goals for the students, things that they will need to get done by the end of the course, and rightfully so, but you don't necessarily have plan, or clear plan for getting get there. Of course there are activities and chains of activities that you have designed and will have the students do, but those will be designed for the entire class without really thinking at all about the individuals.

So, the skills centred courses focuses on goals and the road that the students will take to get there, but only as a group and not his individuals. Such syllabi are often filled with chains which have focuses on skills or necessities for reaching major goals and these are often listed and charted together.

To do so, the rationale behind ESP as an approach not a product was dealt with (including definitions, needs analysis and approach to design a course). Then how to write a scientific paper was given (including first what is writing in general and technical in particular).

Which gets to the point is that the ESP approach is built on an assessment of purposes needs analysis, and the functions for which English is required. In fact, as a general rule, when teaching EGP, the four skills i.e. listening; reading; speaking; and writing are stressed equally. However in an ESP context needs analysis plays a

vital role in determining which of them is most needed by the student and consequently the syllabus will be designed accordingly.

Regarding writing about science or scientific papers, it is not an easy task. To do, a good rule of thumb is to write as if your paper will be addressed to someone who already knows about the field you are writing about. Now, to be sure that your paper will be at the norms required a simple step to start with before writing the paper is to read some already written scientific papers. This will help in understanding the forma, the content, and the style.

Chapter two has tried to offer a discussion of the rationale behind the choice of case study as a research design and the choice of the methodology used to conduct the present work. The range of methods and approaches that were highlighted falls within the paradigms of both quantitative and qualitative research. This was supported by a description of the use of combination and its benefits. Finally, the method of data collection, analysis, sampling (informants), and procedure were also described. Two main concepts were present throughout this chapter: validity and reliability of findings. The concept of validity involves whether the researcher really observes what should be observed; whereas, reliability is always referred to as the degree between the natural situation of the investigation and data that the researcher recorded or obtained from the instruments used (semi-interview, the questionnaire, and content analysis).

Furthermore, a pilot study was conducted. The main objectives were:

- ✓ To administer the questionnaire to pilot subjects in exactly the same way as it will be administered in the main study

- ✓ Ask the subjects for feedback to identify ambiguities and difficult questions.

- ✓ Record the time taken to complete the questionnaire and decide whether it is reasonable.

- ✓ Discard all unnecessary, difficult or ambiguous questions

- ✓ Assess whether each question gives an adequate range of responses.

- ✓ Establish that replies can be interpreted in terms of the information that is required.

- ✓ Check that all questions are answered.

The objective of chapter three in particular was to present the data analysis and discuss results. This includes the procedures of each data collection method, and the analysis of results related to the research questions and hypotheses raised. From all the observations made above, it was obvious that master physics students at the University of Tlemcen found great difficulties while writing scientific papers.

Those difficulties lie at the level of format and content due to the nature of English courses they were exposed to during their studies. The last chapter will discuss some of the conclusions derived from this experience attempting at offering some suggestions and recommendations for a better future research on the development of an appropriate English writing course. This will serve in enhancing the quality of scientific papers published not only at the department of physics but also other disciplines.

Chapter four shed light on some suggestions and recommendations for an ESP course design (writing scientific papers). It should be mentioned here that the suggested courses including: First, teacher training program, which can be used for both pre- service and in- service teachers. It will help them have a clear idea about the ESP situation they are in as to the students' needs in general and writing scientific papers in particular. And thus, develop appropriate courses based on the process of needs analysis.

Second, needs analysis framework as a crucial mediator in determining the quality as well as the sustainability of ESP course. The aim is to help ESP teachers show their students the path to follow during their learning process. It includes both target and learning needs (based on: Hutchinson and Waters's (1987) who proposed a simpler categorization). And, third, guidelines for writing scientific papers which meet the demands of the international norms were proposed.

All the programmes were based on two criteria. The first one is flexibility i.e. they are not restricted to just one field or discipline but they are interdisciplinary ones. The second one is they are both theory and practice based i.e. they include a collection of a variety of theories and examples of good practices in the field of education. The last point to speak about in here is that the present thesis witnessed some limitations.

The main results obtained revealed that the difficulties lie in terms of format and content. This is why; it is strongly believed that rethinking about the ESP course is more than needed. Besides, training language teachers to cope with those difficulties should alert the whole staff to ensure that training.

Since it is research, the present thesis suffers from some limitations. Those limitations will be taken into consideration for future research. First, the sample size was relatively small, and limited to master physics students (option: Physics of gases and plasmas) at the department of physics/ Tlemcen University, thus affecting generalisation of the results.

Second, the problem of being objective while analyzing, interpreting, and discussing the results is there. This due to the fact that the researcher is an ESP teachers and have already experienced those difficulties with other students in other departments (department of dentistry and the department of commerce).Third, access to documents (papers, essays, articles) written by students was quite difficult (administratively speaking).

The last limitation is that organizing the meeting with teachers for the interview and with students for the questionnaire was really hard (as it was by the end of the year. And you know the rest!!).

Now despite the above mentioned limitations, the present work end up with important suggestions and recommendations related to the topic chosen i.e. ESP course design. This last represents the effect of the worldwide interest in the study of English which is gaining more and more importance. In addition to this the approach used (skills centred approach) is seen to be important as it looks to the end when designing ESP courses.

Now for a better understanding of the topic , this study emphasises the idea that ESP teachers not only teaches but also provide materials, design syllabus,

collaborate with subject specialists, conduct research and evaluate the course and the students. This is why a professional ESP teacher must be able to switch from one professional field to another without being obliged to spend months on getting started. He/she simply brings the necessary tools, frameworks and principles of course design to apply them to new material. The last word to say is that it should always be remembered that the ESP teachers are not specialized in the field, but in teaching English.

Another point to mention here is that using skills-centred approach as a framework of ESP, ESP teachers are provided with the necessary knowledge and tools needed to cope with their students' needs in the specialized arena. However, it is of great deal to emphasise the idea that   ESP teachers are not specialists in the field, but in the teaching of English. In other words, their duty is English for the profession but not the profession in English. This is done by helping their students, who know their subject better than the teachers do, develop the essential skills in understanding, using, and/or presenting authentic information in their discipline.

Now speaking about the future of ESP teaching as a whole and further research out of this present investigation, the following questions are seen to be of great value if addressed in future research: what are the underlying criteria to cope with the lack of adequate teaching materials in ESP and the necessity to design a needs-oriented ESP syllabus;? How to bridge the gap between theory and practice regarding the teaching of ESP? How teachers deal with the necessity to pick up

teaching materials suitable for mixed-ability groups of learners as well as for groups of learners with different individual needs?

To the different tasks this work dealt with, a rich bibliography was used comprising books, article, and theses. Therefore, it is seen to add a stone in the EFL enterprise in general; and the ESP teaching and learning throughout the Algerian higher education jurisdictions.

Introduction

The 21st century has resulted in a huge expansion of technology, the spread of English based on what is generally viewed as the *Americanisation* of the world under the concept of *globalization*. Globalization is seen as a process of interaction and integration among the people, companies, and governments of different nations, a process driven by international trade and investment and aided by information technology. This process has effects on the environment, on culture, on political systems, on economic development and prosperity, and on human physical well-being in societies around the world.

Many scholars argue that the process is aiming at unifying the world under the same political system (Democracy), the same economic system (Capitalism and the Free Market System), the same religion (Monotheism or to believe in one God), and the same educational system (the LMD).

Apparently, the above mentioned issues gave birth to the spreading of English all over the world and through all domains. In other words, English nowadays has been given the status of being the first international language; or also known as the universal language; the global language; the language of technology, and a lingua franca, i.e., a language used to communicate between two persons whose native language is not the same). This is why most countries are obliged to rethink about the position of that language within their jurisdictions where Algeria, as our case study, is not an exception.

Speaking about Algeria, expending the use of English is more than a necessity to meet the demands of the target as to the international job markets. Moreover, overcoming the dilemma of the linguistic situation in Algeria which is characterised by the dominance of the French language gave birth to English. At the level of education, many attempts are continuously made at the highest level of the political decision making process. Consequently, English is nowadays taught almost at all stages of education (primary, middle, secondary, and higher). This is referred to as EGP or English for general purposes.

Furthermore, the introduction of English in the Algerian educational system faces many challenges namely the strong existence of French. This last, is the main actor due to the colonial period which lasted more than 130 years. It is observed almost everywhere in Algeria both its spoken and written form; at different levels (governmental, media, daily speech, and education as well). This gives it a position of being a *de-fact co official* language (though having no official status).

French is the most widely studied foreign language in the country, and a majority of Algerians can understand it and speak it, though it is usually not spoken in daily life. Since independence, the government has pursued a policy of linguistic Arabization of education and bureaucracy, which has resulted in limiting the use of Berber and the Arabization of many Berber-speakers. The strong position of French in Algeria was little affected by the Arabization policy.

All scientific and business university courses are still taught in French. Recently, schools have begun to incorporate French into the curriculum as early as children are taught written classical Arabic. French is also used in media and

business. After a political debate in Algeria in the late 1990's about whether to replace French with English in the educational system, the government decided to retain French. English is taught in the first year of middle schools.

Regarding English and more precisely within higher education districts, a new branch is integrated namely ESP or English for specific purposes. This new discipline is fundamentally based on needs specification and thus, process adaptation, i.e., the English taught in the ESP situation should mainly be based on learners' needs in terms of skills notably: reading; speaking; listening; and writing which, in fact, represent many difficulties encountered by our EFL students in both EGP situation and ESP context.

The situation under study is related to the writing courses designed to Master physics students at the University of Tlemcen. In that context, the nature of the courses seems to be a demotivating factor to learn English. Thus, affecting students' achievements in ESP in general; and writing scientific papers in particular. The task of writing a scientific paper and submitting it to a journal for publication is a time-consuming and often daunting task.

Barriers to effective writing include lack of experience, poor writing habits, writing anxiety, unfamiliarity with the requirements of scholarly writing, lack of confidence in writing ability, fear of failure, and resistance to feedback. However, the very process of writing can be a helpful tool for promoting the process of scientific thinking, and effective writing skills allow professionals to participate in broader scientific conversations.

Furthermore, peer review manuscript publication systems requiring these technical writing skills can be developed and improved with practice. Having an understanding of the process and structure used to produce a peer-reviewed publication will surely improve the likelihood that a submitted manuscript will result in a successful publication.

These kinds of challenges deeply motivated the researcher to undertake this study which revolves around the following problematic situation: how to overcome the difficulties encountered by master physics students at the University of Tlemcen while writing their scientific papers. Therefore, it has been thought to conduct this investigation through skills- centred approach to ESP course designs.

Hence, the overall aim is to diagnose those difficulties using a triangulation process for data collection and analysis to systematically design the appropriate writing course.

To deal with this problematic situation, the following research questions have been proposed:

1. Which type of difficulties master physics students encounter while writing their scientific papers?

2. At which level those difficulties lie?

3. How can ESP teacher training and course design help overcoming those difficulties?

Thus the following hypotheses are formulated to guide the study

1. Master physics students seem to come across different kinds of difficulties while writing scientific papers.

2. It appears to be at both format and content the difficulties are found.

3. Harmonizing the ESP teacher training with the target course design may help our learners of physics overcome the difficulties of writing their scientific papers.

Regarding the general layout, this research work comprises four distinctive chapters: Chapter one is a review of literature where previous studies as to theories and approaches in the same vein of the topic are provided. This includes English for specific purposes (ESP) where definitions are exposed along with the underlying principles of the ESP approach. In addition to this, needs analysis is carefully highlighted. Then, ESP course design with its different approaches is discussed with a special emphasis on skills- centred approach. The last part of this chapter is about writing in general, technical writing, and major phases to write a scientific paper designed for publication.

Chapter two is the empirical phase of the study where it describes the research design, approaches, data collection and analysis procedures. It will do so by giving the rationale behind using the case study. Then, an overview of the quantitative and qualitative approaches is essentially presented. This is followed by a full description of the combination method, i.e., both quantitative and qualitative approaches are used in this study to analyze data. In this regard, a semi-structured

interview, a questionnaire, and content analysis have been used as research instruments. This chapter is concluded by a pilot study undertaken to test the reliability and the validity of the designed tools.

Chapter three reviews the process of data analysis and interpretation. This involves the combination of both quantitative and qualitative methods. The methodology followed in this research work is to expose the results of each rubric the questionnaire as to the interview were divided to. By the end, a detailed account of data discussion and interpretation is given to reflect on the research questions, objectives, and test the hypotheses.

Chapter four deals with a practical proposal and some suggested recommendations as a remedial work to the targeted situation. This includes the rationale behind teacher training, ESP materials development and adaptation, needs analysis grids, the use of ICT- based techniques, and a course of action about the different steps when writing a scientific paper. It ends, of course, with stating some limitations of this study.

Conclusion

The researcher in this thesis tried to investigate the rationale behind skills centred approach for ESP course design case of master physics writing scientific papers at the University of Tlemcen. This was done by trying to understand their difficulties and thus designing an appropriate course to overcome them. It was clearly seen that this area represents a serious problem in the discipline of the teaching of ESP.

To clearly understand all the above mentioned tasks, the researcher used a case study research design, and a combination of both qualitative and quantitative methods for data collection and analysis. The main objective was to find answers to the following research questions:

1. Which type of difficulties master physics students encounter while writing their scientific papers?

2. At which level those difficulties lie?

3. How can ESP teacher training and course design help overcoming those difficulties?

And thus confirm or infirm the formulated hypotheses

1. Master physics students seem to come across different kinds of difficulties while writing scientific papers.

2. It appears to be at both format and content the difficulties are found.

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This work used a research design which relied on a case study as it enabled the researcher to have an in-depth vision about the situation. Then a combination of both qualitative and quantitative approaches for the analysis and interpretation was used. The results obtained and the discussion drown from them confirms the three hypotheses. In other words, master physics students faced great difficulties while writing their papers in both format and content. This is why; an ESP teacher training program and a designed course based on needs analysis are needed.

Since it is research, the present thesis suffers from some limitations. Those limitations will be taken into consideration for future research. First, the sample size was relatively small, and limited to master physics students (option: Physics of gases and plasmas) at the department of physics/ Tlemcen University, thus affecting generalisation of the results. Second, the problem of being objective while analyzing, interpreting, and discussing the results is there. This due to the fact that

the researcher is an ESP teacher and have already experienced those difficulties with other students in other departments (department of dentistry and the department of commerce).Third, access to documents (papers, essays, articles) written by students was quite difficult (administratively speaking). The last limitation is that organizing the meeting with teachers for the interview and with students for the questionnaire was really hard (as it was by the end of the year.

Now despite the above mentioned limitations, the present work end up with important suggestions and recommendations related to the topic chosen i.e. ESP course design. This last represents the effect of the worldwide interest in the study of English which is gaining more and more importance. In addition to this the approach used (skills centred approach) is seen to be important as it looks to the end when designing ESP courses.

Besides, it views language in terms of how the mind of the learner processes it rather than as an entity in itself; tries to build on the positive factors that the learners bring to the course, rather just on the negative idea of 'lacks', and frames its objectives in open-ended terms, so enabling learners to achieve at least something.

Now for a better understanding of the topic , this study emphasises the idea that ESP teachers not only teaches but also provides materials, design syllabus, collaborate with subject specialists, conduct research and evaluate the course and the students. This is why a professional ESP teacher must be able to switch from one professional field to another without being obliged to spend months on getting started. He/she simply brings the necessary tools, frameworks and principles of course design to apply them to new material. The last word to say is that it should

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always be remembered that the ESP teachers are not specialized in the field, but in teaching English.

Another point to mention here is that using skills-centred approach as a framework of ESP, ESP teachers are provided with the necessary knowledge and tools needed to cope with their students' needs in the specialized arena. However, it is of great deal to emphasise the idea that ESP teachers are not specialists in the field, but in the teaching of English. In other words, their duty is English for the profession but not the profession in English. This is done by helping their students, who know their subject better than the teachers do, develop the essential skills in understanding, using, and/or presenting authentic information in their discipline.

Regarding the writing course, the study ended with insightful remarks about the difficulties encountered by master physics students when writing their scientific papers. Amongst of them, stressing the writing skill from the beginning of the learning career, i.e., the university one will help not overcome the difficulties but reduce the negative effects. Besides, the availability of a pre- determined scientific writing course with guidelines and references is of great deal in this arena.

Now speaking about the future of ESP teaching as a whole and further research out of this present investigation, the following questions are seen to be of great value if addressed in future research: what are the underlying criteria to cope with the lack of adequate teaching materials in ESP and the necessity to design a needs-oriented ESP syllabus;? How to bridge the gap between theory and practice regarding the teaching of ESP? How teachers deal with the necessity to pick up teaching materials suitable for mixed-ability groups of learners as well as for groups of learners with different individual needs?

The last thing to mention in this conclusion is that researchers hope that applied linguists' insights and the undiminished motivation of teachers and language learners will contribute to the enhancement of ESP teaching methodologies because learning language is always learning with a purpose.
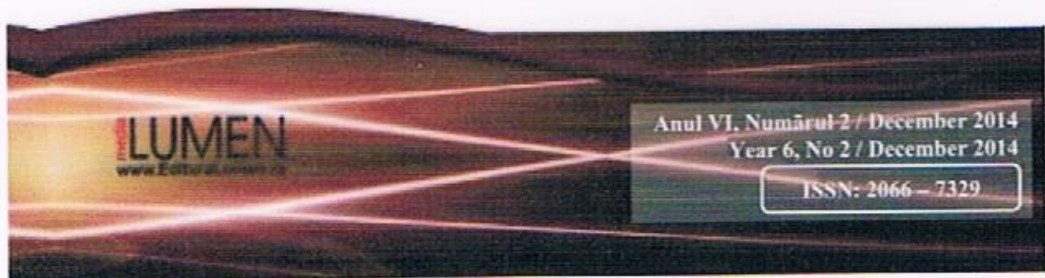
USING VIDEO CONFERENCES FOR ESP POSTGRADUATE STUDENTS: AN EXAMPLE OF DISTANCE LEARNING AT THE UNIVERSITY OF TLEMCEN/ ALGERIA

Abdelkader BENSAFA

Using Video Conferences for ESP Postgraduate Students: An Example of Distance Learning at the University of Tlemcen/ Algeria

Abdelkader BENSAFA[1]

Abstract

Information Communication Technologies (ICT) is becoming part of our everyday life, and this fact is indisputable. It is gaining more and more ground in the worlds of business, administration and education. This motivated the researcher to undertake this work. The main objective of this paper is to look at the following problem statement, i.e., the role of video conferences in improving the quality and the sustainability of higher education. It will do so by investigating the potentials and effects of using internet-based desktop video conferences to improve ESP postgraduate students' language learning outcomes and examine their perception of using online video conference as an alternative to face-to face interaction. For this purpose, a case study research design was used. To obtain and analyze the necessary data from ESP post-graduate students in the department of foreign languages (English section) at Abou Bekr Belkaid University, a combination of both qualitative and quantitative methods was used. The main results obtained from both semi-structured interview and participant observation revealed that the internet connectivity was a key factor in determining the effectiveness of video conference as an alternative to face-to-face teaching, the context of video conference determined the pedagogical benefits of this new technique, and there were many difficulties related mainly to the quality of sound and image. Moreover, the use of this technology necessitates a good preparation on the part of teachers and students.

Keywords

Video conferences, distance learning, information communication technologies;

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Introduction

Information and communication technologies (ICT) have become commonplace entities in all aspects of life. Education is one of these aspects. Within education, ICT has begun to have a presence but the impact has not been as extensive as in other fields. Additionally, the quality of education has traditionally been associated with strong teachers having higher degrees of personal contact with learners; whereas, in today's information age, learning is no longer confined within the four walls of a classroom. The instructor armed with a textbook, is no longer the sole source of educational experience. Information resources are everywhere, often separated from the learner by time and space. The use of ICT in education lends itself to more student-centered learning settings often this creates some tensions for some teachers and students. But with the rapid movement of the world into the information society, the role of ICT in education is becoming more and more important and its development will be continued through distance learning. It is one of the most rapidly growing fields of education which is becoming accepted and indispensable in the educational system in both developed and developing countries.

One of these technologies used is Video conferencing. It is a powerful alternative that educators can use to deliver instruction across distances. It can reduce barriers such as travel safety, costs and time that can impede trips designed for intellectual exchanges as it offers a viable means to develop a framework for addressing social and work place changing. The above mentioned criteria motivated the researcher to undertake this research work and examine the use of video conferences in higher education to enhance the quality and flexibility of the teaching programme offered to the ESP postgraduate students at Abou Bekr Belkaid University (Tlemcen). Indeed, the University of Tlemcen has programmed a series of lectures in the field of ESP provided by many experts from the universities of La Sorbonne- Paris 3, Nantes and Le Havre. The aim was to examin how these video conferences were organized, developed, upgraded and adapted to students'needs as well as whether they answered those needs with the ever increasing costs of travel (plane ticket and accommodation), and the constrain of planning a meeting with the visitor teachers in terms of time and place. The institution faces many problems which make it difficult to ensure those lectures. Consequently, the solution to bridge that gap, facilitate the

meetings, and save time and money on travel and accommodations is to use video conferencing which is becoming increasingly popular.

The objective of this research work is to look at the role of video conferences in today's education. It will do so by investigating the potentials and the effects of using internet-based desktop video conferences to improve ESP postgraduate students' language learning outcomes and examine their perception of using online VC as an alternative to face-to face interaction. Attention will be given to showing that the importance of ICT in general and VC in particular is context dependent.

Three research questions are formulated to guide this study:

- How do ESP postgraduate students perceive the use of oral – video talking with experts of ESP via internet- based videoconferencing?
- Can video conference be used as an alternative to face-to-face teaching to improve their knowledge and language proficiency?

- What are the technical difficulties encountered during the link with those experts?

The research hypotheses that were derived are:

- ESP postgraduate students benefit from the use of oral-video talking with experts of ESP via internet-based video conferencing.

- The use of video conferences as an alternative to face-to-face teaching can help a lot in promoting the knowledge and language proficiency of the ESP postgraduate students.
- Some difficulties such as internet connectivity, the quality of sound, the quality of image, and lack of interaction may impede the appropriate use of video conferences related to.

1. Research Design, Approaches, and Procedures.

This part describes the research design, approaches, and procedures. It will do so by giving the rationale behind using the case study. This is followed by a full description of the combination method i.e. both qualitative and quantitative approaches used in this study to analyze the obtained dat. To do so, semi-structured interview and participant observation will be used as instruments. The whole process

ı be summarized by mentioning that in order to satisfy the
ormation needed in any investigation or research project, an
ropriate methodology needed to be well chosen. Additionally suitable
ls for both data collection and analysis have to be selected.

1.1. Research Design

This research was conducted under the umbrella of case study
arch design. The reason for choosing this type of research is that it
uses on understanding the phenomenon -in this case the use of video
ference in higher education- within its natural settings. In addition, it
he most common qualitative method used dealing with information
ems (Myers, 2003).

The discipline of information system is characterized by
tinuous, often revolutionary change. Due to the fact that researchers
regularly unable to provide guidance on how to supervise new
ems at their introductory phase, they often rely on practitioners in
moting and/or evaluating such change, and find themselves
estigating how those practitioners implemented and managed change,
s developing theories for it. This is why the case study can be implied
capture and formalize the knowledge of practitioners, develop
ories from practice, and move on the testing stage (Benbasat et al.,
7). Another reinforcing aspect for the use of the case study is that it
es on multiple sources of evidence and multiple data collection
niques.

Case study, as defined by Yin (1994), Eisenhardt (1989), and
ers, has well-defined steps. However it is significant, at this level, to
e down that it does not involve the use of a particular sort of
lence. Yin (1994) lists six most important sources of evidence:
uments, archival records, interviews, direct observation, participant
ervation, and physical artifacts. Additionally, it can be accomplished
g quantitative and/or qualitative methodologies. A frequent
fusion is that case studies are solely the result of ethnographies or of
icipant observation (Yin, 1981).

In spite of how it is used, for either theory building or theory
ng, case study research is an essential research methodology for
lied disciplines. It is a process of scholarly inquiry and exploration
se fundamental objective is to create new knowledge (Herling et al,
)). It can also be considered as a research strategy aiming at

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examining an existing phenomenon and the associated contexts that are not clearly apparent. For example, experiments vary in that they focus on isolating the phenomenon from its context; histories as well vary in that they are limited to past phenomena.

All the above mentioned strengths of case study justify its choice in this work. For example, it enables the researcher to have an in-depth vision of the use of video conferences as a means of content delivery for the ESP postgraduate students at the University of Tlemcen and the series of events related to it (the way those lectures were delivered and received by the audience). It also allows data crosscheck as many sources of evidence were used such as interviews, direct observation, participant observation, and physical artifacts.

1.2. Research Approach

The present study opts for a combination of quantitative and qualitative methods regarded as a worthy method in improving understanding. In practice, both methods are frequently considered to be appropriate within a single investigation. It is up to the researcher to choose specific methodologies which will allow him to obtain a somehow clear understanding of the topic.

In the case of understanding the use of video conferences for ESP postgraduate students (the case under investigation in this work), combining both approaches will help the researcher to seek reliable and valid results so that data can be representative of a true and full picture of integrating ICT in general and VC in particular in tertiary education. In addition, some research questions raised in this study will be readily answered using qualitative means, others quantitative, and some will be best addressed using a combination of the two.

1.3. Data Collection:

Data collection is an essential component to conducting research. It is, generally, conceived as complicated and hard task. This is why O'Leary (2004:150) remarks:

> Collecting reliable data is a hard task, and it is worth remembering that one method is not inherently better than another. This is why whatever data collection method to be

used would depend upon the research goals, advantages, as to the disadvantages of each method.

The principle collection categories include: participant observation, interviews and focus group (Dalton, Elias et al., 2001). In this study, two of the above mentioned techniques have been used: an interview (semi-structured) and participant observation.

1.4. Instruments
In this study a semi-structured interview will be used and addressed to the students as well as participant observation, i.e. the same students will be observed while in a video conference session.

1.4.1. Semi- structured Interview:
The Semi-structured interview is frequently used as data collection instrument or technique. The researcher has a list of key themes, issues, and questions to be covered. In this type, the classification of questions can be changed depending on the direction of the interview. A guide (rubrics) is also used, but additional questions can be asked. Corbetta (2003:270) presents the semi-structured interview as follows:

> The order in which the various topics are dealt with and the wording of the questions are left to the interviewer's direction. Within each topic, the interviewer is free to conduct the conversation as he thinks, to ask the questions he deems appropriate in the words he considers best, to give explanations and ask for clarification if the answer is not clear, to prompt the respondent to elucidate further if necessary and to establish his own style of conversation.

The strengths of this type of interview are the additional questions that can be asked and the ones that have not been anticipated in the beginning of the interview. Note taking or tape recording can help the researcher to report the interview. This gives him more opportunities to check out the views and opinions of the interviewees. In this vein Gray (2004:217) notes that probing is a way for the interviewer to

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explore new paths which were not initially considered. In the same path, David and Sutton (2004:87) argue:

Having key themes and sub- questions in advance lies in giving the researcher a sense of order from which to draw questions from unplanned encounters.

1.4.2. Participant observation

It has been generally acknowledged among specialists that participant observation is a qualitative method with roots in traditional ethnographic research. Becker and Gree (1969:322) define participant observation as follows:

By participant observation we mean that method in which the observer participates in the daily life of the people under study, either openly in the role of researcher or covertly in some disguised role, observing things that happen, listening to what is said, and questioning people over some length of time. Generally speaking, by engaging in participant observation, the researcher tries to learn what life is like for an "insider" while remaining, inevitably, an "outsider".

Despite all the problems associated with participant observation and in particular the claim that it only produces subjective or individual views of social behavior, it remains along with unstructured and semi-structured or structured interviews, a vital part of many case studies. This is due to the fact that it is useful in a variety of ways: first, it allows for insights into contexts, relationships, behaviors as it can provide information previously unknown to researchers that are crucial for project design, data collection, analysis and interpretation of other data. In addition, it gives the researcher the ability to check the nonverbal expression of feelings. This may help in determining who interacts with whom and grasp how participants communicate with each other.

Moreover, there is a general agreement among educationalists that this technique is often referred to as a naturalistic approach i.e. it gives researchers a method to view the world through the eyes of other people, and look at them in their natural environment. In other words, the researcher does not artificially interfere with people's lives and they are free to act naturally. This allows him to gain insights which surveys cannot produce. This is illustrated by Whyte (1981; 44):

"As I sat and listened, I learned the answers to questions I would not have had the sense to ask if I had been getting my information solely on an interview basis."

In the present study, participant observation is used as data collection instruments to observe the informants in real world context. Another objective is to develop a deep understanding of the use of video conference in its natural context. In addition, it is designed to provide insights into the behavioral, interactional, and communicative aspects of using technology in Algerian higher education.

1.5. Data Analysis:

Data analysis represents the "construction phase" of the study. This process includes: deciding on the suitable analysis to conduct for each question, preparing data for analysis, and summarizing results.

1.5.1. Qualitative Data Analysis

Analyzing data qualitatively is essentially a simple process. It consists of three parts: *Noticing*, *Collecting* and *Thinking* about interesting things. Figure2. 1 represents the process and the relationships among its parts
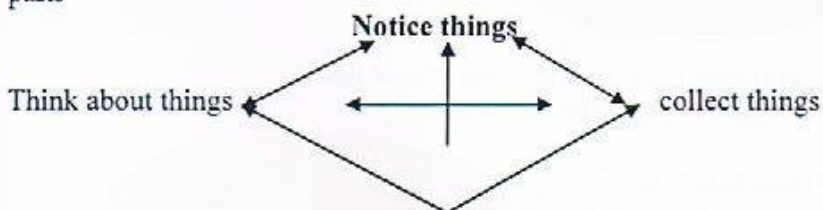
Figure2. 1 Qualitative Data Analysis (Seidel, 1998)

After collecting data using participant observation, the researcher engaged in a three step process of qualitative analysis, which is appropriate in this study since it focuses on aspects such as interaction, motivation and behavior:

- *Data reduction* which refers to the process of selecting, and thus simplifying, the data that appears in written field notes or transcriptions.

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- Data display i.e. ways used to display data. These include: matrices, graphs, and charts illustrating the patterns and findings from the data.
- Conclusion: drawing/ verification that refers to a process of building a preliminary thought about patterns and explanations from the findings. Additionally, verifying them frequently by checking the data, and forming a new matrix.
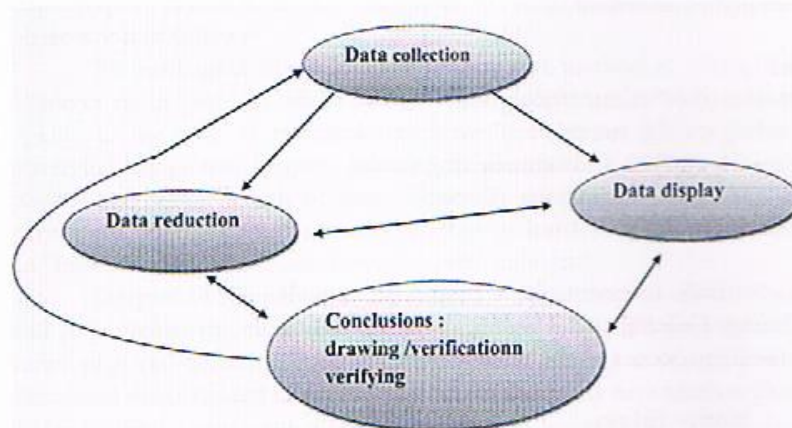
The three steps are presented in the following figure

Figure 2.2 Process of Qualitative Data Analysis: An Interactive Model (Miles et al., 1994)

1.5.2. Quantitative Data Analysis

Quantitative analysis is suited to theory testing and developing universal statements i.e. it provides a "general" picture of a situation or the context under investigation. It thus produces results that are generalisable across other contexts, although they neglect the reality of situations. In addition quantitative investigation may smooth the task of understanding the topic by using some programs such as the SPSS (statistical package for social sciences). Thus, the use of graphs (histogramme, secteurs…etc) or smart arts (hierarchie, processus…etc) may give the work a more scientific direction. These techniques will be used to analyze the interview findings. It should be mentioned that in

situations where the sample size is satisfactory and the sample has been suitably selected to represent the target population of awareness, the relevance of statistical methods will provide greater validity to research' conclusions.

2. Results

The results of the semi- structured interview are classified according to the rubrics announced above:

2.1. The Technology Used in the Video Conferences

The first question dealt with the quality of both the video and sound as the central issue. The participants engaged in this study declared that the image was not very clear as to meet their expectations. But this did not seem to disturb them. In fact, the sound (audio) was much more important since it represents the main part of the technology which failed i.e. there were many interruptions. The previous described circumstances caused a lack of motivation, lose of attention, misunderstanding of content, and made the informants feel bored. Figure 2.1 summarizes and gives a quantitative representation of what have been said above concerning the first question of the first rubric.
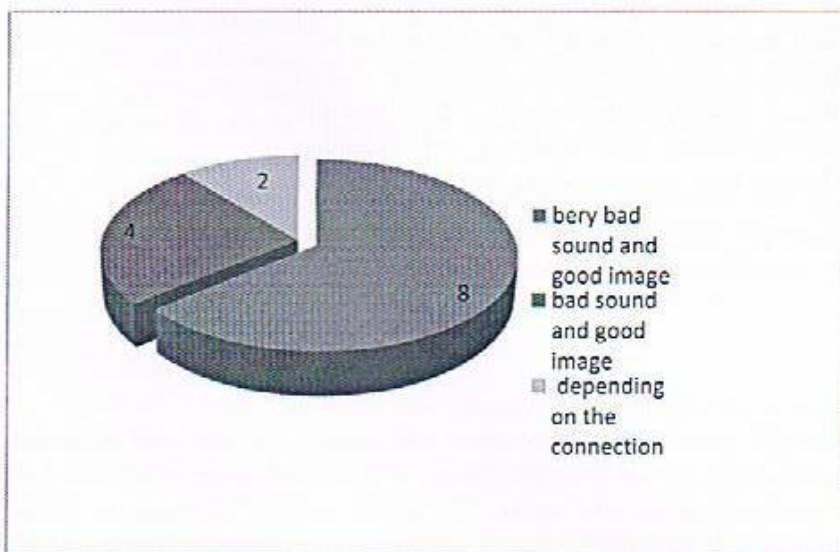
A. (2014). Using Video Conferences for ESP Postgraduate Students: An Example of Distance Learning at rsity of Tlemcen/ Algeria. Revista Romaneasca pentru Educatie Multidimensionala, Volume 6, Issue 2, December, Year 2014, 79-95.

Figure 2.1 The quality of sound and image

To facilitate the task of transmitting data, data sharing facilities were used. This includes power point, typing some sentences on the Skype and showing some documents like figures, graphs and tables....etc. Figure 2.2 highlights the preference of students for the use of those data sharing facilities.
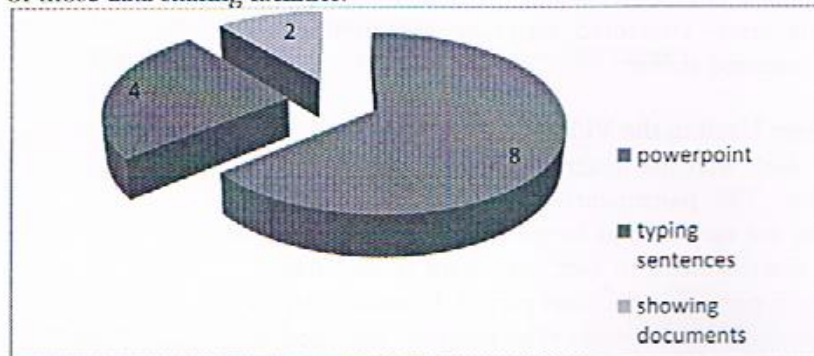

Figure 2.2 Students' preference for the use of data sharing facilities

Figure2.3 deals with the different types of VC including: desktop [1] and laptop [2]. This question was necessary as it gives insights that ICT skills[3] are highly needed before even thinking about integrating ICT in language teaching and learning. The students' answers reflect that the term desktop was not known for them. After clarifying and explaining the term by opposing it to laptop, they understood the idea and felt more confident.
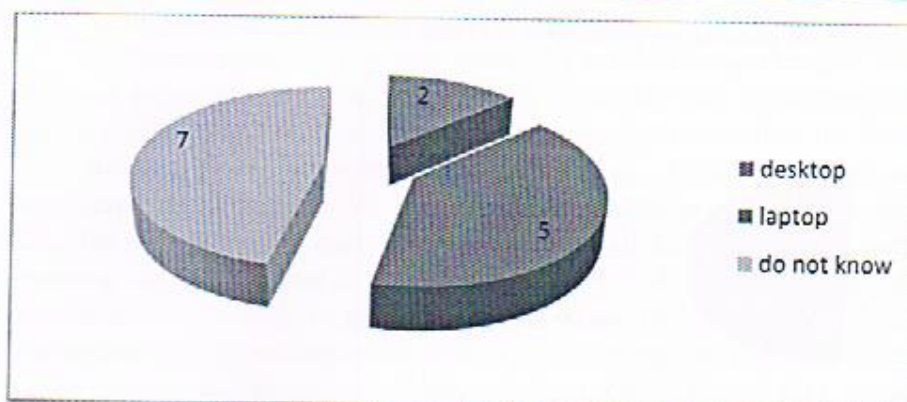
Figure2.3 Types of video conference

- A small unit, which includes the camera connected to a computer. The unit may include echo cancellation to control the sound and will usually incorporate the microphone and camera and may include the speakers. These units are primarily used for network-based conferencing. Suitable for personal one-to-one conferences or small group use.
- A laptop, also called a notebook, is a personal computer for mobile use. It integrates most of the typical components of a desktop computer, including a display, a keyboard, a pointing device (a touchpad, also known as a track pad, and/or pointing stick) and speakers into a single unit. It is also powered by mains electricity via an AC adapter, and can be used away from an outlet using a rechargeable battery.
- This helps them become familiar with the equipment and learn how to make best use of it. This comes quickly with experience and is absolutely essential for the success and sustainability of any video conferencing initiative

2.2. Content Delivery

At this level the focus was on one of the pedagogical issues related to the video conferences as a mean of content delivery. Figure2.4 suggests there was a disagreement among the participants on the use of video conferences. Some refused it taking into consideration the problems encountered during the link. Others argued that if it has been

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designed appropriately it could be used as an alternative to face- to- face content delivery.
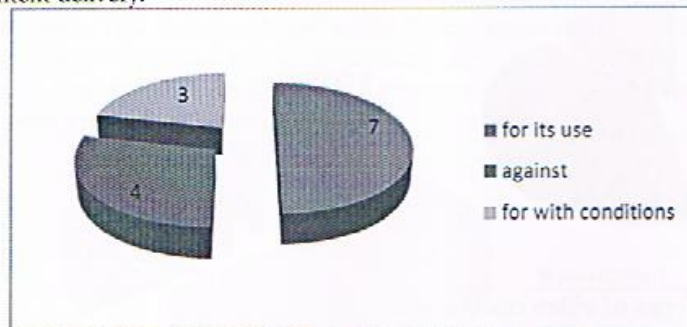

Figure2.4 Video conference and content delivery

Figure2.5 illustrates that most participants agreed on the fact that the video conferences were effective as a means of communication as they gave them the opportunity to talk to experts and test their knowledge on ESP. only one student did not find video conference effective and thus preferred face- to- -face lectures.
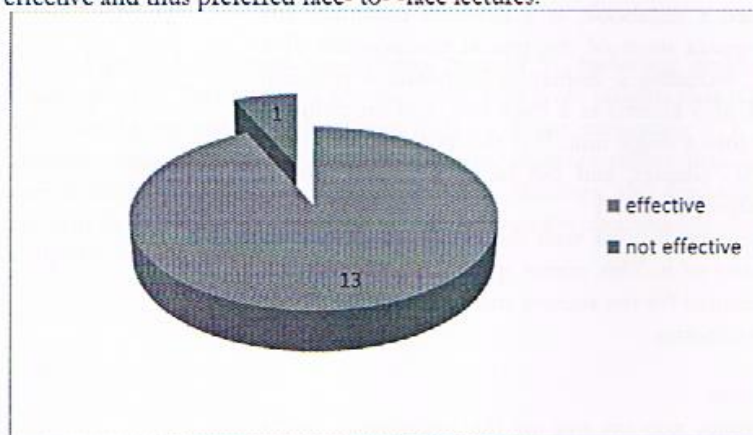

Figure2.5 The effectiveness of video conference

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2.3 Students' Attitudes and Perceptions

When it comes to this third rubric the results brought insights on the real value of the video conferences sessions. The strengthening points which endeavored the above mentioned results related to the first two rubrics were: Interaction and motivation. Interaction was a significant component in the whole video conferences sessions. It was also the key factor in supporting a more social learning, negotiating meaning with the teacher in the far-end location, and forming a sense of community using this technology. In the same line with interaction, motivation played an important role in determining the success of the video conference experience. Many students claimed that they were highly motivated only in those sessions with less sound and image delays. Concerning the use of technology in education, the participants welcomed the idea and insisted on its spread since it gives more opportunities and creates an authentic environment for both teachers and learners.

The participants' answers also indicated that video conferences worked for them as follows: It introduced them to technology (ICT) i.e. computers, microphones; digital camera…etc, provided them with knowledge about ICT and ESP, gave them the opportunity to talk to experts outside Algeria, met their expectations such as breaking the routine of the traditional learning classroom, expressing their ideas and asking questions online which stands for them as a new experience. Consequently, all participants were ready to engage and repeat the experience and suggested a better internet connection, more time devoted to each video conference, i.e. to schedule the sessions for more than one hour and a half , and generalization of the experience at all levels of university instruction (starting from 1st year of under-graduation).

Conclusion

The researcher in this thesis tried to investigate the use of video conferencing by the department of foreign languages (English section) at the University of Tlemcen. This was done by observing ESP postgraduate students in a series of video conferences. It was clearly seen that this new pedagogical method is still at a very early stage in Algeria and yet the recognition of its potential for educational interaction between remote participants is well established. However, video

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conferencing is not confined to a single mode of teaching, but it provides an avenue for delivery of traditional pedagogies as well as for exploring new ways of educating children and adults.

However, the success of video conference relied on the availability of a well equipped room and adequate bandwidth each of which requires a significant capital investment. The researcher was increasingly concerned with the impact of network bandwidth on desktop video conferencing. He noticed that stepping up from a voice call to a video one means using a lot more bandwidth per call. This helps in minimizing the length of delays which is considered as a critical factor in slowing down and even stopping communication between the two locations. Additionally, as an alternative to face- to -face learning this technology has good potential. It represents a revolution in the domain of higher education which is characterized by its sustainability and flexibility and this confirms the second hypothesis. Some shortcomings and lacks were encountered during the sessions when the room was not well prepared in terms of the equipments and the internet connectivity i.e. there are some difficulties facing the appropriate use of video conferences related to internet connectivity was confirmed. As with all teaching and learning environments, there will be issues to be dealt with and challenges to overcome. For example, some consideration needs to be given to: Multi-site timetabling, access and equity at remote sites, suitable teaching approaches, potential for less content to be covered, more structure when planning sessions, and added layer of complexity.

In today's world, it is a fact that technology is driving progress on many fronts. Education is no exception. How this is going to affect students and teachers will have to be investigated on a much wider scale. Video conferences over IP (internet protocol) - from the desktop or small group size- are only a small part of this convergence. We are aware of the shortcomings in validity and reliability of the results identified in this paper, but one cannot neglect that it discussed important aspects that may help to overcome those problems related to internet connectivity, quality of both sound and image; and developed a new framework to modify net-based learning environments in the future. Greater consideration should be given to gaining a better understanding of the interaction between technological and human factors. It is clear that research has to consider both the pedagogical point of view as well as the technological one. Future research should also consider whether

attitudes towards videoconferencing are uniformly developed across organizational boundaries and within other institutional contexts. Therefore, the following questions open the door to future research to better understand the availability of ICT –video conference in particular- in Algerian higher education: Can the video conferences sessions experienced in the small size group (14) be expended to large scale students? If so, will it be appropriate as a content delivery method? How can synchronous communication stimulate the tradition of seminars and how can asynchronous and synchronous tools be integrated in order to find a balance between them for different learning situations and for different groups of students?

Acknowledgment

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