

Meeting the Needs and the Requirements of Future Engineers via a Consistent ESP Course

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Abstract

This study attempts to investigate future engineers' perception towards the ESP course provided in the National Polytechnic School of Constantine. To reach this objective, students' needs and the existing ESP teaching situation were examined via a learners' needs analysis questionnaire and an ESP teachers' interviews to sort out the difficulties that slow down the effective teaching/ learning process. Data analysis revealed the utility of ESP course during students' academic training and in their future job. As speaking and listening were proved to be the mostly needed skills, some beneficial strategies are suggested.

Keywords: Needs analysis, English for Specific Purposes (ESP), engineering students, ESP course.

تلبية احتياجات ومتطلبات مهندسين المستقبل من خلال دورة اللغة الإنجليزية لأغراض

ملخص

تحاول هذه الدراسة دراسة تصور الطلبة المهندسين نحو دورة اللغة الإنجليزية لأغراض خاصة (ESP) المقدمة في المدرسة الوطنية المتعددة التكنولوجية في قسنطينة. لتحقيق هذه الغاية، تم فحص احتياجات وتوقعات الطلاب، وتم فحص الوضع الحالي للتعليم (ESP) من خلال استبيان ومقابلات مع مدرسي اللغة الإنجليزية من أجل حل الصعوبات التي تبطئ عملية التعلم. كشف تحليل النتائج فائدة دورة اللغة الإنجليزية لأغراض خاصة (ESP) خلال التكوين الأكاديمي للطلاب وفي عملهم المستقبلي. وبما أن النتائج قد أثبتت أن قدرات التحدث والاستماع بالإنجليزية من أكثر المهارات المطلوبة، فقد تم اقتراح استراتيجيات مفيدة لتحسينهما.

الكلمات المفتاحية: تحليل احتياجات، لغة إنجليزية لأغراض خاصة ESP، طلاب هندسة، دورة ESP.

Répondre aux besoins et aux exigences des futurs ingénieurs grâce à un cours d'Anglais à des fins spécifiques

Résumé

Ce travail tente d'étudier la perception des futurs ingénieurs du cours ESP proposé à l'École Polytechnique de Constantine. A cet effet, les besoins des étudiants et la situation actuelle de l'enseignement ESP ont été examinés grâce à un questionnaire remis aux étudiants et à un entretien avec les enseignants d'Anglais pour résoudre les difficultés qui freinent le bon déroulement de l'apprentissage. L'analyse des données a révélé l'utilité du cours ESP pendant la formation académique et le futur emploi des étudiants. Parce que parler et écouter se sont avérés des compétences nécessaires, à cet effet, des stratégies bénéfiques ont été suggérées.

Mots-clés: Analyse des besoins, Anglais à des fins spécifiques (ESP), étudiants en génie, cours d'ESP.

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Introduction:

English becomes a fundamental tool in the acquisition of the scientific and technological information for university students. Because most of the scientific documents are written in English, university students need to possess an English knowledge that enables them to read, understand, and acquire information from these scholarly documents. This increasing demand for English knowledge to communicate in academic and professional contexts has led to the development of an English course. The latter is labeled as English for Specific Purposes (ESP). This course aims to satisfy the needs and the exigencies of specific learners whose intention is to use English in professional context and for professional purposes. To reach this target, any ESP course makes use of the underlying methodology and activities of the disciplines it serves to develop learners' language proficiency. Holding these characteristics, ESP becomes the target of a new generation of learners who are aware about the importance of English in their academic and future occupational needs.

The need for English as a professional language in engineering education is beyond doubt. Students of varying engineering specialties need a specific set of language skills to succeed both in their education and future career. Since 2014, Polytechnic School of Constantine (ENPC) initially started offering its courses; its main mission was to ensure among other things the training of highly qualified future engineers to methods of scientific research and technological development. Students' exposure to English at this school extends over the first three years of their training. In the first two years, a high percentage of the English course is devoted to developing students' general English knowledge where a minimum degree of this course has an ESP focus. In the third year, however, the course main objective is teaching English according to students' needs in their field of interest. Hence, students are exposed to a 100% ESP course only in the third year at this school. As facilitating for future engineer the task to understand and express themselves in written and spoken English is the course main goal, to what extent this latter succeeds in meeting engineer learners exigencies? In answering this question, Alsamadani⁽¹⁾ considers that "teaching English for engineering purposes is far from satisfactory in terms of customizing ESP courses by using the real needs of learners or the language situation at the workplace as the input to feed ESP courses". For this scholar, when the learners' needs are not adequately defined prior to the course design, learners may feel disappointed with their language proficiency level in their future workplace. Accordingly, to what extent the ESP course presented for engineer students at Polytechnic School of Constantine satisfied the needs of this category of learners.

To reach this objective, the current study purports to investigate the ESP situation at Polytechnic School of engineering. This action research enables the researcher to identify students, needs, sort out the teaching inconsistencies, and identify the most important elements in designing a consistent ESP course that meets both students' aspirations and requirements.

1. Literature Review:

1.1. Definitions to ESP:

In a broad way, English for specific purposes (ESP) refers to the teaching/learning of English as a second or foreign language wherein learners' main objective is to use English in a specific domain⁽²⁾. The interest provided to the concept since 1960 makes from ESP a field of investigation where the attention of scholars and researchers is focused on providing a fitful description to the concept.

ESP is regarded by Mackay and Mountford (1978) as the teaching/learning of a foreign language for "clearly utilitarian purposes". Zahid Javid⁽³⁾ considers that in Mackay and Mountford's definition, ESP is not confined to any specific field, discipline or profession; rather, it has a broader area of action. From another scope, Hutchinson and Waters⁽⁴⁾ view it as an approach to language teaching rather than a product. For them, "this teaching approach attempts to meet the needs of specific learners". However, "this approach does not involve a particular kind of language teaching material or methodology", explain Dudley-Evans and St.

John⁽⁵⁾. Nevertheless, other researchers attempt to expand Hutchinson and Waters' perception of the concept.

According to Strevens⁽⁶⁾, whatever the definition provided to ESP is, vital is to know that ESP is "designed to meet specified needs of learners; related to content, to particular disciplines, occupations and activities; and centered on the language appropriate to those activities, in syntax, lexis, discourse, and semantics". ESP main purpose, then, is the teaching of a language as a second or foreign language to certain groups of students to whom the syllabus, tasks and methodology is especially tailored to meet their specific linguistic needs according to their field of interest.

Dudley-Evans and St. John⁽⁷⁾ offered a more modified definition to the absolute and variable characteristics of ESP in which they revised Strevens' suggested list of 1988. For these scholars, a complete definition to ESP should combine between three absolute and the four variable characteristics. In accordance with, ESP is defined to meet specific needs of the learners, to make use of underlying methodology and activities of the discipline it serves, and to be centered on the language appropriate to these activities in terms of grammar, lexis, register, study skills, and discourse. These latter represent the three required Absolute features in an ESP course.

Besides meeting learners' specific needs, making use of the activities of the discipline it serves, and then centering the language to be taught according this discipline in terms of grammar lexis, four different variable characteristics are needed to be regarded while defining the concept. According to Dudley-Evans and St. John (ibid), ESP may be related to or designed for specific disciplines, it may use a different methodology from that of General English, it is likely to be assigned for adult learners, and at last, ESP is generally designed for intermediate or advanced learners. By gathering all these characteristics in an ESP definition, the result will be an appropriate ESP course that aims to creating English language materials and instruction for students with specific language learning objectives in order to meet their current and future academic, professional, or vocational needs.

1.2. ESP Growth:

Teaching English as a second /foreign language has witnessed a radical change since the 2nd World War. With the expansion of science and technology, English evolves into the language that is mostly wanted in the world. As a consequence, new considerations in the English Language Teaching (ELT) methodology were introduced wherein learners' specific language needs were put at the forefront. This gave rise to English for Specific Purposes (ESP).

Additionally, the move from a structural focus in the teaching methodology of the English language to a communicative focus influenced ESP progress as well. Widdowson's theoretical and pedagogical contributions introduced in his book "Teaching Language as Communication" served to the rapid growth of ESP⁽⁸⁾. This book, argues Huckin (1980), is regarded as a source book to anyone engaged in language teaching today and, indeed, should be required reading to anyone teaching ESP. This revolution in linguistics influenced deeply ESP methodology. As the language that people speak and write vary according to the context required to be used in, this paved the way to the view that there are important differences between the English of commerce and that of engineering⁽⁹⁾.

Progress in educational psychology is another factor to count in ESP growth. By introducing Learner-centered approach, then emphasis is given to the learners' role during the teaching/ learning process. "Learners are seen to have different needs and interests, which have an influence on their motivation to learn and therefore on the effectiveness of their learning" explained Hutchinson and Waters⁽¹⁰⁾.

In brief, the revolution in linguistics and the need for English that fits specific fields of education where the learner's interest and needs are advanced contributed to a large extent in the development of ESP.

1.3. ESP vs. EGP:

The ESP course is not designed unless learners' specific needs are identified through needs analysis process. However in EGP (English for General Purpose) course, English is taught as a second language along with other subjects for educational purposes. The awareness of the learners' needs, then, distinguishes ESP from EGP (Hutchinson & Waters, 1987). For these scholars, "the tradition persists in general English that learners' needs can't be specified and as a result no attempt is usually made to discover learners' true needs"⁽¹¹⁾. Meaning that when we dig deep into learners' expectation from studying English where the aim is teaching this language for communicative purposes according to their field of interest, the result is an ESP course. Nevertheless, when English is part in a whole educational program where learners are studying this language being impoverished from using it for any real communicative purposes either in the present or in the future; the consequence is an EGP course.

1.4. ESP Types:

When regarding the different faces of ESP, a good reference is Hutchinson and Waters' (1987). Hutchinson and Waters divided ESP into three branches: English for Science and Technology (EST), English for Business and Economics (EBE), and English for Social Studies (ESS). And each field of specialty is again subdivided into English for Academic Purposes (EAP), and English for Occupational Purposes (EOP). Hutchinson and Waters' diagram (1987) with the specificity included in EAP and EOP divisions is of a great utility in an ESP course (Dudley-Evans and St-John, 1998). For these scholars, "these distinctions are very important as they will affect the degree of specificity that is appropriate to the course"⁽¹²⁾. In other words, the different English language purposes set for each of these categories are determined by the learners' learning needs. In that what is chosen to fit the learning' needs for English for Economics purposes will differ from the one opted for English for Medical Studies purposes etc.

1.5. ESP and Needs Analysis:

Since determining the learning needs prior to any teaching/learning process is a prerequisite; yet, undergoing this process in ESP is quite divergent. Kubota and Chiang⁽¹³⁾ admit that in an ESP course, the awareness towards specific needs existing in a particular institution, profession, or individual is put at the forefront. Accordingly, the major feature characterizing ESP is that both the teaching methodology and the material used are founded on the results of needs analysis investigation⁽¹⁴⁾. Via needs analysis, "specific sets of skills, texts, linguistic forms, and communicative practices that a particular group of learners must acquire are identified"⁽¹⁵⁾. The ESP course, then, is framed according to certain language needs expressed by a group of learners according to their field of interest. And to collect the needed data for the design of this course, all to be done is undergoing a Needs Analysis procedure.

According to Nunan⁽¹⁶⁾, "these techniques and procedures for collecting information to be used in syllabus design are referred to as needs analysis" (p.13). To generate the needed data upon which important decisions are taken, argues Dudley-Evans⁽¹⁷⁾, a set number of questions are to be requested; (a) What do students need to do with English?, (b) Which of the skills do they need to master? And how well?, and (c) Which genres do they need to master, either for comprehension or production purposes?

Needs Analysis procedure can be approached from two ways: Target Situation Analysis and Learning Situation Analysis. Whereas in the former the researcher seeks to explore "what learners are required to do with the foreign or second language in the target situation"⁽¹⁸⁾ in order to function effectively in this context; in the latter, he seeks to establish the pedagogical and methodological factors which affect decisions about the language learning course. However, before making any decision, investigating students' strengths and weaknesses before starting the course is crucial. This important step that seeks to establish what the students are like at the beginning of their language course is referred to as the Present

Situation Analysis. According to Flowerdew⁽¹⁹⁾, “a present situation analysis draws attention to the gap between what students are able to do with language at the beginning of the course and what they need to do at the end of the course; sometimes referred to as their Lacks”.

All in all, needs analysis investigation may be conducted in three different areas which are- Target Situation Analysis, Present Situation Analysis and Context Analysis. These can be done via a close examination to either quantitative or qualitative data generated through various research tools such as: questionnaires, interviews, case studies...etc.

1.6. ESP Course Characteristics and Materials:

In a regard to the characteristics of an ESP course, Paltridge and Starfield⁽²⁰⁾ highlight the main aspect to consider while designing this latter in terms of objectives, content, activities, and learners ‘characteristics. For these scholars, whereas the content and aims of the ESP course are oriented to satisfy the learners’ specific learning needs; yet, the focus of the course should be on the language, skills, and genres appropriate to the specific activities the learners need to carry out in English.

These criteria keep controlling the whole teaching/learning process, and will be referred to them while evaluating the course effectiveness. In his description to the ESP course for engineer learners, Dudley-Evans⁽²¹⁾ sees that this course requires the use of engineering situations to present relevant language and discourse besides some problem-solving activities such as calculations...etc because it represents some students’ possessed skills and abilities. ESP, then, relies on topics related to the target discipline or profession in order to present English language skills. Not only the ESP teacher is a course designer but he is also a material provider.

Materials represent the backbone in any course because they facilitate the teaching and learning of a foreign language. Whether these materials are needed in an ESP course or in a GE course, their choice is almost controlled and guided by the course objectives. The fact that ESP and GE courses have divergent objectives, the selected materials will be distinctive. As material selection in a GE course is not the concern of this paper, the focus is to dig deep into the main characteristics of ESP materials.

ESP teaching materials are identified by Graves⁽²²⁾ as “tools that can be figuratively cut up into component pieces and then rearranged to suit the needs, abilities, and interests of the students in the course” (p.27). Since then to attract and motivate students, ESP materials must be varied. Moreover, they should have rich input and include the language structures and content information to make tasks as realistic for the learners’ language goals as possible⁽²³⁾. Yet, the hardship in selecting materials that meet learners ‘needs nowadays is almost diminishing. Advances in technology have provided teachers with the opportunity to select materials without any difficulty. The internet with its unlimited number of websites makes possible for teachers the task of meeting the requirements of their course objectives and expectations of their learners. “Teachers may find specialized websites, podcasts and many other internet resources that can provide them with audiovisual prompts and content to enrich, adapt and develop materials for their courses” (p.104), argues Laborda⁽²⁴⁾.

2. Methodology:

To explore the ESP target situation at the four Engineering Departments in ENP of Constantine (Mechanical Engineering, Materials Engineering, Process Engineering, and Electronic and Automatic Engineering) via identifying future engineer’ ESP needs, and then suggesting some learning/teaching strategies as a remedy to the existing ESP course, we are guided by the following research questions:

- 1- What do students at Polytechnic School of engineering need English for?
- 2- What are the teaching/learning impediments that slow down teaching/ learning process?
- 3- What are the components deemed essential in a beneficial ESP course?

3.1. Participants:

Two research tools: a questionnaire and an interview were utilized as a way to respond to the above listed questions. Whereas the former was administered to 3rd year engineer

university students, the latter was provided to the ESP teachers at the same university. Forty(40) Engineer students were invited to respond to a Needs Analysis Questionnaire. Students at the ENP of Constantine are expected to receive an ESP course for three years; yet, it is during their third year that they receive 100% ESP training. Accordingly, third year students represent the target population. Additionally, a teachers' interview was undergone with the two ESP teachers in charge of the ESP course at the same higher institution. The need to reinforce and/or compare the results obtained from the students' questionnaire makes from the teachers' interview the effective 2nd research tool .

3.2 Research Procedure:

3.2.1. Students' Questionnaire:

The questionnaire as a data collection tool was utilized to explore through it the ESP situation at four Engineering Departments at ENP of Constantine. Selecting this research instrument has its advantages and disadvantages. Besides being a widely used tool in different researches, a questionnaire is a time- saving tool that can be used both with a large, or a small number of subjects providing a great deal of information⁽²⁵⁾. Students' questionnaire was conducted during the third term of the academic year 2017-2018. It was translated to Arabic to avoid any confusion and enable the participants to answer the questions as clearly as possible.

The twenty two (22) items of the questionnaire investigate three different research areas. Whereas in the first one we inspected the target situation of the subjects, in the second we ought to highlight students' lacks via enumerating the English learning difficulties. In the last one, we inquired about students' needs and wants concerning the ESP course. The informants, responses intended to elicit, not only, the ESP teaching/learning problems; but, mainly, to suggest some learning/teaching strategies as a remedy to the existing ESP course in order to meet future engineer academic and vocational needs.

3.2.2. Teachers' Interview:

The semi-structured interview was designed to evoke some data about the different practices of ESP teaching in this higher education institute. The subjects, answers were recorded, and then, transcribed stating explicitly all what was said, word to word transcription. The transcriptions were analyzed to provide answers to the aforementioned research questions. The interview items turned around (i) the teaching methodology and the materials used, and degree of students, satisfaction towards the current course content; (ii) the various problems encountered when teaching ESP; (iii) students, motivation and attitude towards the course content (iv) and teachers' opinions and suggestions about the main components in an ESP course that help in improving the teaching/learning situation.

4. Results and Discussion:

The presentation and the discussion of the study results are displayed in two parts. In the quantitative analysis, the questionnaire data is analyzed and discussed in terms of the factors that are behind students' need to study English, the learning obstacles faced, the skills and activities mostly focused on in ESP classes, and their perception towards the components deemed essential in a beneficial ESP course.

As the aim of the interview is to compare / to reinforce the questionnaire data, our focus in the analysis of the teachers' interview is on their testimonies about the importance of English for engineering students, students' learning motivation, the most important skills that students need, the difficulties faced when teaching field-specific English, and teachers, suggestion for a practical ESP course at the engineering departments in the ENP of Constantine.

4.1 Students' Questionnaire Analysis:

4.1.1 Target Situation Analysis:

When investigating the subjects' Target Situation, results revealed that twenty six (26) of the respondents who returned back their feedback belonged to the age group 20-23 years old. These respondents are assigned to three different specialties: ten (10) of them are studying Automatic engineering, nine (09) are specialized in Electro-Technic engineering while the

remaining five (05) are studying Electronic and Automatic Engineering. These students have been studying this language for 9 to 10 years. As far as the importance of English in their studies, students' responses are displayed in the below table.

Table n°1: The Importance of English

The Importance of English	Percentage
Very Important	88.5%
Important	11.5%

From **Table 1**, we notice that the majority of the students (88, 5%) regarded English as very important; yet, few of them (11, 5%) ranked it as important. To justify their stand, they rely on a number factors such as “English facilitates for them getting in touch with the advances in science and technology” (42, 3%), “it assists helps them during their academic training by enabling the understanding field related documentations, tutorials, and books” that related to their field of interest” (46.2%), “it will be used in their future careers” (11, 5%).

When investigating students' perception towards “how far the English course is beneficial”, the total number who manifested a positive attitude (100%) displayed a number of arguments that are presented in Table two.

Table n°2: Factors behind the Importance of English Course

Why it is	Percentage
Improve the Oral skills	46. 2%
Express themselves in English	42, 3%
Develop their mastery of the language	11.5%

It is noticeable from **Table 2** that for many respondents (46, 2%), “this course will help them improving their oral skills mainly speaking as one of their major difficulties”; for others (42, 3%), “English course creates opportunities for students to express themselves in a real to like world under the teacher's supervision and guidance”; still for few (11, 5%), “it helps them to improve their mastery of the English language”.

Students' degree of satisfaction towards the current English course content was divergent. As it is presented in Table three, the degree of satisfaction is only 25% for twelve (12) students. For the other 9 students, it was 50%; still, 5 respondents were highly satisfied manifesting a degree of satisfaction that equals 75%.

Table n 3: Degree of Satisfaction towards the Current English course

Degree of Satisfaction	Number of students
25%	12
50%	9
75%	5

In arguing their stands, students attributed their dissatisfaction towards the course content to a number of reasons as the length of the training and the weekly allocated time. Students were aware that one year of ESP training could not help them to develop their English knowledge according to their field of interest. Besides the problem of the training duration, students considered that one hour and a half per week prevented from practicing this language. More importantly, the content they were provided did not satisfy their needs as it did not help them to get rid of their speaking weaknesses.

Students' motivation towards studying this language was manifested when they were asked about their attendance to the course. Table four shows clearly that the majority of learners (77%) could not miss this session; still, few of them (23%) do not attend the session regularly.

Table n 4: Students' Learning Motivation

Students' Attendance	Percentage
Yes	77%
No	23%

When asked about the motives behind, those who did not attend the course related it to the unsuitability of the time table. They preferred to study English in a morning session. Their participation during the session is valued important. Most of students (65. 4%) regarded the English session as a space to practice the language via interacting with their peers and their teacher. Still, those who do not participate (34. 6%) related this behavior to some factors such as: lack of speaking skill, fear to making mistakes, and shyness.

4.1.2 Present Situation Analysis:

Engineer students revealed their awareness towards the importance of the four skills in the development of their English proficiency. When they were requested to classify these skills, speaking and then listening comes at the forefront. The oral skills preceded the writing skills. Therefore, Reading and Writing took the third and fourth position. This classification is displayed below (Table 5).

Table n 5: Students' Perception towards the English skills

Language Skills Importance	Percentage
Speaking	65.4%
Listening	46.2%
Reading	38.5%
Writing	38.5%

As far as the encountered learning difficulties, an important number of the informants (65.4%) found difficulties in writing scientific articles, others regarded speaking with foreign colleagues as an obstacle (46.2%), understanding foreign colleagues speaking about science and technological engineering development stood as a second problem for some of them (42%). Additionally, reading documents in their area of interest is another problem for others (19.2%).

Table n° 6: Learning Difficulties

Area of Difficulty	Percentage
Writing scientific articles	65.4%
Speaking with foreign colleagues	46.2%
Understanding foreign colleague speaking about science and technology	42%
Reading documents in their subject area	19.2%

These difficulties are mainly due to numerous factors argued the students. The lack of practice stands as the major reason for most of them (77%), followed by the lack of reading (65.4%). For others these impediments are mainly caused by the insufficient period of instruction they are exposed to (34.6%). No one of them opted for the lack of motivation and Will as a factor leading to their language difficulties.

As far as the domains where English may be used more, the following table highlights these domains.

Table n° 7: Areas of English Usage

English Usage	Percentage
Internet	80.7%

Making researches	61.5%
Studies	58%
International Conference	30.7%

We notice that English is used more when engaging in an internet surfing (80.7%), when undertaking researches (61.5%), in studies (58%), and sometimes in international conferences (30.7%). Besides, results revealed that English is also used in other contexts such as gaming, phone language, music...etc.

4.1.3 Context Analysis:

As far as the introduction of an ESP course that meets engineer students' language needs is concerned, all respondents welcome the suggestion (100%). When asked about the reasons behind, the most frequently cited reason is that they felt a strong need to develop their English in the ENP of Constantine; hence, they valued this course as an important subject in their academic training. Because of the importance of this course in their studies, the majority of the respondent (80.7%) found that the current allocated time for the English course, one hour and a half, was insufficient; accordingly, they suggested the expansion of this period in the future ESP course. Students' suggestions are displayed in the below table.

Table n°8: Suggestions about the ESP Allocated Time

ESP allocated time	Percentage
6 hours	48%
5 hours	30%
More than 3 hours	28%

As we notice from **Table 8**, students expressed their wants to increase their exposure to this foreign language. The least suggested is to multiply their exposure to English in more than three hours (28%). Some suggested 6 hours (48%), for others 4 to 5 hours per week is the ideal (30%).

When requested about the number of years they recommend for an ESP training course, students' responses varied between those who opted for more than two years and not less than three years (88.4%). However, few of them desired this course during their whole academic training at the ENP of Constantine (11.6%). On what concerns the type of English they want to learn via this course, the majority wanted to study a mixture of general English and technology terminology. Students' proposal is summarized in the below table.

Table n°9: Type of English

Type of English	Percentage
Technology terminology	5%
General English	10%
Mixture of the two	85%

Concerning the objectives students want to achieve through this course, developing their speaking abilities was put at the forefront by the majority. Respondents, stated objectives are displayed in Table Ten.

Table n°10: Students' Learning Objectives

Learning Objectives	Percentage
Developing speaking and listening	72.5%
Developing reading and writing	16.5%
Improving English proficiency	13%

For a large portion of the informants, developing a mastery of the oral skills by being able “to speak English fluently, and understand what others are saying in English” is necessary. Yet for some others (16.5%), “developing reading and writing” come first. Still, for few learners (13%) “Improving their English proficiency” is the target.

Studying English in the language lab was another raised issue. For the majority of students, this latter helps in developing their English skills. Table 11 displays the results.

Table n°11: the Importance of the Language Lab

The Language lab is beneficial	Percentage
Yes	92.3%
No	7.7%

A large portion of learners (92.3%) considered that the language lab creates a suitable learning condition. However, to benefit more from this latter, they suggested that teachers should be trained on how to use the lab features. Still, few of them felt that the language lab is not so important without arguing their stand (7.7%).

4.2. Interview Analysis:

The analysis of data revealed that the two teachers in charge the English course at the Polytechnic school of Constantine hold higher educational degrees (Master degree or a doctorate degree) in applied linguistics. Yet, their teaching experiences vary. Whereas one of them has been teaching English for ten (10) years including a period of five (05) years as an ESP teacher in the department of Arabic, and different engineer departments at the ENP of Constantine; the other teacher is teaching English for eight (08) years including a period two (02) years in teaching ESP for engineer students at ENP of Constantine.

Concerning the syllabus and the teaching materials they work with, both teachers affirmed that apart from First and Second year syllabi which is not subject of this study, no syllabus or teaching materials that concerns Third year is provided by the different Departments of the ENP of Constantine.

As far as the type of activities used and the degree of relevance of the actual course content to students’ needs, the two teachers expressed a positive attitude. In the process of content selection, both of them asserted that they often invited students to participate in the process of selecting materials according to their field of interest. However, none of them conducted a needs analysis investigation before designing the course. Teachers’ satisfaction towards the content of their course was translated through learners’ behavior. According to the more experienced teacher “though the content of my course is based on classroom observation not the result of needs analysis; yet it is relevant to my students’ needs and interest. The students’ motivation, rate of attendance, and participation during my course insure me how far my course is satisfying their needs”. Hence, teachers’ evaluation of the relevancy of the course content to students’ needs at the ENP of Constantine is measured via students’ interest, attendance, participation, and motivation during the English sessions.

In the course of their present teaching, the teachers focus more on teaching English that is related to science and technology in general besides the teaching of general English. “During my course I concentrate on teaching grammatical structures and lexical items that are related to science and technology” postulated one of them. As for the used materials, the teachers tend more to use materials specifically related to technology and science. And in some cases, they often rely on some documentation used by students in their subject specialty; yet, in other times English materials to be used in class are brought by students.

For the importance given to each language macro skill in their courses, the two teachers tend to lay more emphasis on the oral skills (speaking and Listening), and then on the written skills (reading and writing). “I follow this order purposefully because I have noticed that my students are somehow weak in these skills” justified one of the teachers.

Concerning students' motivation, teachers were quite pleased. In that even though students' major obstacle was in the oral skills, this deficiency did not lessen from their interest and motivation to learn English. "The reason behind students' motivation is related to the importance of English in their studies and in their future career", argued the two teachers. When asked about whether or not students were allowed to use their mother tongue during the English course; the two teachers favored the use of the English language. "I always advise my learners to use English during the session; however, when facing difficulties in expressing themselves in English, I allow them to use French; but not Arabic", postulated the more experienced teacher.

For the introduction of an ESP course that fits engineer students' needs, the two teachers welcome the idea. "Students' deficiency in the oral skills that is becoming an alarming problem necessitates an ESP training that enables them to overcome the language difficulties", explained one of them. "Designing a course where the focus is satisfying learners' needs is primordial; especially, after proving that this category of learners regarded speaking in English and understanding what others are saying as important in their academic training and in their future perspectives", argued the two teachers.

After proving that an ESP course that meets engineer students' aspirations at the ENP of Constantine is a necessity; still, is the design of this latter achievable? For the two teachers taking in charge the English course, the key success in an efficient ESP design is to collaborate with subject specialists' teachers during this process. "My collaboration with subject specialist will facilitate my task as an ESP teacher to cover the subject area of engineer students, so that satisfying their ESP needs", asserted one of the teachers. However, "these practices are nearly rare at this school because there is a clear cut between English teachers and subject specialists" confirmed both teachers. According to them "the team work between language teachers and subject expert-teachers would give them an opportunity to exchange ideas and perspectives for the sake of satisfying students' needs".

The teaching conditions in terms of the number of students in class, the weekly teaching time is appropriate. "Teaching fifteen students (15) per group helps me in presenting the lecture within a warm environment where the majority of learners are solicited" asserted one of the teachers. As far as the weekly allocated time is concerned, "three (03) hours per week is sufficient; yet, the ESP course should be included in both 4th and 5th year curricula" replied one teacher. However, "for an effective teaching/learning, students should be exposed twice a week to English" added the other one.

Teachers' opinions about the main component of an ESP course, and their suggestions to improve the teaching/learning situation turned around the activities to be included that most promote students' mastery of the English skills, mainly speaking and listening. When interrogated to give a percentage for the ESP activities (see **Table 12**) that enhance students' abilities, the more experienced teacher, ranked the activities to be regarded in the course design by allocating the percentages of their focus in the course.

Table 12: ESP Suggested Activities

Suggested activities	Percentage
Topic Discussion	70%
Listening to audio and videos in the field of interest	60%
Oral presentation in the 2 nd semester	50%
Grammar activities	50%
Reading comprehension of materials in the field	40%
Developing writing letters, CVs...etc	20%

The two teachers stressed the importance of the language lab during students' training because it enables them to listen to native speakers or at least listen to correct English.

Concerning their further comments, teachers claimed the continuity of ESP training for Fourth and Fifth year students. Moreover for an appropriate ESP teaching, coordination between ESP teachers and teachers of disciplines to prepare a common course is so vital.

4.3. Summary of the Findings:

The quantitative and the qualitative data analysis revealed the following findings;

- The extent of ESP needs perception held by both students and teachers is very high. Students needed to use English sources to study their subjects because most of the documentation is in English.
- Adding to the importance of English during students' academic studies, it is needed in their future jobs as most of graduated engineers carry their studies in foreign countries
- The English skills needed most are speaking, listening. Students expressed an urgent need to develop interactional skills of communication: speaking in English and understanding what others are saying in English is put at the forefront in the engineers' learning needs.
- Reading and Writing are the least appreciated for future engineer due to some factors. Yet, the striking finding is that when students were asked about the encountered difficulties when using English, it is when writing scientific documents.
- Lack of ESP syllabus that is relevant to students' needs. No needs analysis process has been undergone in this school of engineering before.
- Content selection is based on teachers' observation and a personal evaluation of students' weaknesses.
- Internet builds a new dimension in the education process at this school. The lack of ready-made materials stimulates ESP teachers to rely more on different web-sites searching for convenient materials.
- Classroom size at this school is a favoring factor that facilitate the efficient delivery of an ESP course
- Dissatisfaction towards the current ESP course weekly allocated time and the length of the training is expressed. In one hour and half per week during a one year period, students find difficulty in developing their English proficiency and in overcoming all their language weaknesses.
- Teachers need a special training on how to manipulate the English laboratory features to enable students benefit more
- Collaboration between ESP teachers and subject specialty teachers is crucial during ESP course design.

4.4. Discussion:

From the above listed findings, it seems clear that the ESP teaching at this higher institution of engineers (ENP of Constantine) is somewhat problematic. Even though students' learning motivation, teaching condition, and some other favoring factors listed above could accommodate the effective delivery of ESP course; however, some of the problems reported by both students and teachers such as the lack of the ESP syllabus, a mismatch between reality and students' learning expectation, teachers' heavy workload and many others factors could hinder any ESP progress. These factors require scrutiny from the stakeholders mainly the school administrators, ESP teachers and subject teachers as well. Consequently, some remedy strategies are afforded for the ongoing of the ESP progress in engineer institutions.

The ESP learning objectives in vocational institutions is to enable learners' proficiency to use English not only for general communication, but for the context of English within learners' subject area. To reach this goal, crucial is inspecting learners' English learning needs. When this latter is not investigated, the case of the current research, a mismatch between reality and students' expectation is manifested. To bridge the gap between what students are able to do with language at the beginning of the course and what they need to do at the end of the course is met when identifying learners' "lacks"⁽²⁶⁾. Needs analysis investigation, then, is the remedy for all the problems raised by both learners and teachers in

this study. When the learning context meets with students' expectation, the design of the ESP course will be easily achieved and thus the teachers' invested efforts will diminish. Because when the course is determined via needs analysis, all the components in the course design such as the language skills, teaching materials, linguistic forms, and the communicative practices needed by a group of learners are identified (Dudley-Evans⁽²⁷⁾; Hyland⁽²⁸⁾). Consequently, this will result in lessening the teachers' teaching heavy workload.

Although English teachers at this school have little experience in the domain of ESP teaching; they demonstrate a high awareness towards the importance of determining engineers' language needs in the future. Moreover, to enhance the quality of the ESP course taught to engineering students, a call for collaboration with Subject specialist teachers is made by ESP teachers. Sharing their competencies with specialties facilitates for ESP teachers the course design. This finding supports Alsamadani's main conclusion⁽²⁹⁾ when ESP and subject-matter teachers at Umm Al-Qura University confirmed the importance of collaboration in the design and the preparation of ESP course.

Data analysis helped us to determine the most important language skills engineer students need to fulfill adequately during their academic training and in their future job. Developing speaking and listening skills were ranked by both teachers and students as the most important abilities to be developed in engineering studies. This finding contradicts Alsamadani's conclusion in which he asserted that listening was the least important skill for engineering students. This means that even though students share the same specialty, their language needs differ. Besides, it has been concluded that writing skill was the least regarded in our investigation. This finding echoes Basturkmen's (1998) main conclusion where he reported that writing was not very important for ESP students⁽³⁰⁾.

Students' speaking and listening difficulties are mainly due to the limited period of ESP training that reduces from their opportunity to be exposed to this foreign language. This problem could be solved through the increase of learners' exposure to the target language by multiplying the weekly allocated time of the ESP course. Additionally, for a complete ESP training for engineer students, a call to include ESP course in fourth and fifth year curriculum is made to the stakeholder in this higher engineering institution. This would give students the opportunity to continue their ESP training starting from their Third year till they graduate. Therefore, engineer students will overcome their language problems, and will be ready to approach their professional world without fear.

Besides expanding the ESP training, designing specific tasks that would enable engineer students overcome not only their oral deficiencies, but also enhance their writing skills are quite necessary. The project work is among the communication tasks proved efficient in an ESP environment⁽³¹⁾ because it permits the creation of a learning environment characterized by the same conditions existing in the learners' professional and vocational environment. The project work as task-based learning requires learners to manifest what they have learned via two modes oral and written production. During the different phases of this learning activity, students are required to comprehend, produce, and interact in the target language. The project work is an appropriate choice to engineer students.

Conclusion:

This study was conducted to investigate the ESP needs of Third year engineering students at the "Ecole National Polytechnique" of Constantine in Algeria. As the English language in the engineers' academic studies and future career is deemed important, designing a course that meets their expectations is possible if learners' learning needs are verified prior to course design. This would facilitate the task for ESP teachers to tailor their course content around the language, skills, and genres appropriate to the specific activities these specific learners need to carry out in English. As it is proved in this investigation, needs analysis that had never been carried out before at this engineering institution revealed many hidden data that were completely ignored by both teachers and students. This data could result in a relevant ESP

course that fits engineer students' wants and expectations if carefully taken into account by ESP practitioners.

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