

Assessing English language needs of electronic engineering students: A case study at polytechnic university of Tirana, Albania

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Abstract: This study explores the English language needs of the five-year engineering students at the Faculty of Information Technology, Polytechnic University of Tirana (PUT). The main objective was to assess whether the current ESP course and the widely used engineering textbook address students' academic and professional requirements. A structured questionnaire with 17 items was administered to 81 students across electronic, informatics, and telecommunication engineering programs. It was complemented by interviews to gain qualitative insights. Data were analyzed through descriptive statistics and thematic categorization. Key findings reveal a strong recognition of English as essential, yet students reported significant challenges in mastering technical vocabulary, grammar, and listening comprehension. Speaking emerged as the most prioritized skill but also the weakest, while reading was perceived as the most developed due to greater exposure in prior schooling. Results further highlight dissatisfaction with the limited course duration, as students believe the single-semester ESP instruction does not adequately prepare them for academic studies of professional demand. The study concludes that a gap exists between current ESP provision and students' actual needs. Implications include the necessity for curriculum reform, extending ESP across multiple semesters, and incorporating communicative, task-based approaches. These adjustments would foster higher motivation, improve proficiency, and better align language instruction with engineering students' future career contexts.

Keywords: Course evaluation, Engineering education, English language proficiency, ESP, Language skills, Needs analysis, Polytechnic University of Tirana.

1. Introduction

English for Specific Purposes (ESP) has become a cornerstone in higher education, particularly in engineering disciplines where access to scientific literature and professional communication is predominantly in English. Previous research highlights the necessity of tailoring ESP instruction to students' needs [1, 2]. Despite this, gaps often exist between course design and learners' expectations [3]. At the Polytechnic University of Tirana (PUT), the engineering textbook is widely used across faculties; however, limited research has assessed its effectiveness in addressing students' real needs. This study seeks to evaluate the English language needs of first-year electronic, informatics, and telecommunication students at PUT. Specifically, it aims to identify linguistic challenges, assess the relevance of current ESP instruction, and recommend improvements for aligning the curriculum with student expectations and professional requirements.

Research has always played an important role in ESP, and the quality and quantity of empirical research in the field continue to grow [4]. The emergence of ESP as a discipline highlights a significant expansion in both the scale and geographical spread of English for Specific Purposes (ESP) research over the past 30 years. Hyland and Jiang [5] additionally, a recent 2023 study in *English for Specific Purposes* confirms the increasing quantity and quality of empirical research over four decades [6].

Traditionally, ESP research has drawn on approaches and methods in applied linguistics, but sociology, psychology, learning theory, and rhetoric have also been influential [7]. There is a large number of linguists, researchers, writers, and teachers who have attempted to define the meaning of ESP over the years. ESP is often regarded as a distinct discipline, but also as one of the most significant subfields of English language teaching. The point is that ESP learners, in our case, engineering students, have a specific English learning purpose dictated by their field of specialization.

Identifying the communicative needs of learners is essential for planning courses, selecting materials, and designing syllabuses [8]. ESP courses are those where the syllabus and materials are determined in all essentials by the prior analysis of the communication needs of the learner. Similarly, another definition considers it as an approach to language teaching in which all decisions regarding content and methods are based on the learners' reasons for learning [2]. Another study emphasizes that ESP teachers should regularly attend teaching workshops or conferences to raise awareness about ESP and stay updated with recent strategies in ESP teaching, testing, and material development [9]. Their findings imply the importance of including the ESP students' needs and interests in the ESP curriculum development and syllabus design [10]. All in all, the most important usage of ESP occurs simply by giving an answer to the question of why the learner needs to learn a foreign language. Needs analysis is defined as the process of determining the needs for which a learner or group of learners requires a language and arranging the needs according to priorities [11].

2. Analysis of the text "Engineering"

Students who study at PUT need the English language in order to reinforce their knowledge as well as to obtain new information from books or scientific materials in their field of study. They need reading materials to help them meet academic requirements as well as to match their interests in English language enrichment. We see that there is a need for good teaching materials, which will prepare students to be able to face situations for which they are studying, as well as make the work of the teacher (ours) more interesting.

One of the key factors in designing ESP texts is to understand the features that stand out in scientific and technical texts. From the point of view of discussion, we observe that there are specific features and characteristics in scientific English that differentiate it from other types. To support this, we conducted an analysis of the text to serve as an example. Such knowledge is useful for creating effective exercises for various technical materials.

In order to determine what students should achieve through the English course, it is necessary to carry out a study defined as the process of determining the needs for which a student or a group of students seek learning a foreign language, as well as managing needs according to priorities [11]. Based on the interviews conducted with students of the Faculty of Information Technology, we thought it would be a good idea to expand our study by conducting a more defined survey using questionnaires.

The observation was conducted with the aim of determining and highlighting the English language needs of the students at the Faculty of Information Technology (FIT) at PUT. More precisely, this study was conducted in order to identify the perceptions of the frequency of the use of English language skills by students, the importance of these skills, and their preferences for English language courses. Also, the results of the questionnaire and interviews helped us to prepare the lesson plan since the main participants are the teachers who are in charge of running the course and all the students. The results provided were relevant to electronic engineering students and identified their deficiencies, wants, and needs with reference to English language skills. Below, we have included pedagogical implications that can help to improve current English language courses based on students' needs.

3. Methodology

This study employed a mixed-methods design. Participants included 81 first-year students (aged 18-19) enrolled in Electronic, Informatics, and Telecommunication engineering programs during the 2021-2022 academic year. A structured 17-question questionnaire was distributed to gather quantitative data

on students' English skills, perceived difficulties, and preferences. Additionally, semi-structured interviews provided qualitative insights. Quantitative data were analyzed using descriptive statistics, while qualitative responses were thematically categorized to identify recurring patterns and concerns.

4. Data Collection and Data Analysis

As we mentioned above, the survey was conducted through questionnaires. The questionnaire consisted of 17 questions aimed at identifying the linguistic needs that students demonstrated while studying the English language during the first semester of their first year in the branch of Electronic, Telecommunication, and Informatics Engineering (since, according to The Bologna system, this is the only foreign language extension available in the faculties of PUT); the shortcomings of the English language, the importance of these skills, and the students' wishes for improvement and extension over a longer period of time of the English language. Additionally, the study illustrated students' perceptions of the current English language course as well as the course they would prefer to choose.

Below, we present the questionnaire and the results obtained from 81 first-year students at FIT, PUT, in the fields of Electronics groups IA and IB, Telecommunication groups IA and IB, and Informatics groups IA and IB.

The purpose of the questionnaire was to assess the students' perception of the new method implemented during the academic year 2023-2024, in order to evaluate the impact of this method on the students, whether it met their needs, and what changes they would suggest for improvement.

4.1. Needs Analysis

1. Do you consider foreign languages important in your studies?

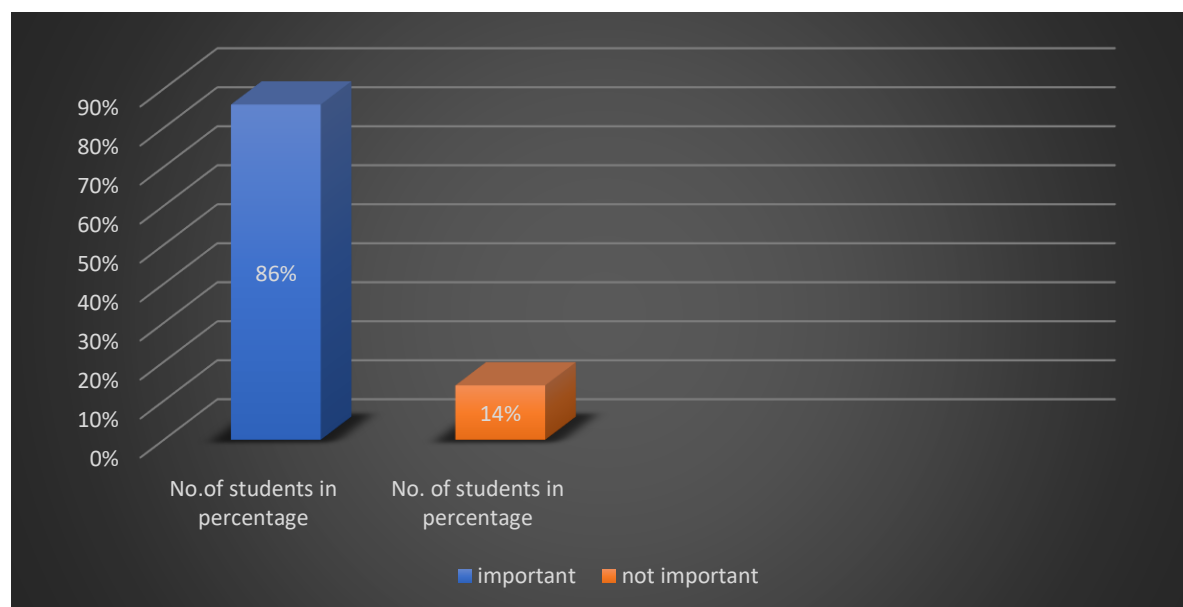


Figure 1.
Importance of English in Students' Studies.

All students were of the opinion that the English language was important for their studies. They answered 86% in favor of the English language, and 14% were unsure whether a foreign language should be part of their studies.

2. Apart from studying, do you engage in any other professional activities? 3. Do you work? 4. If yes, do you use your English language skills in communication?

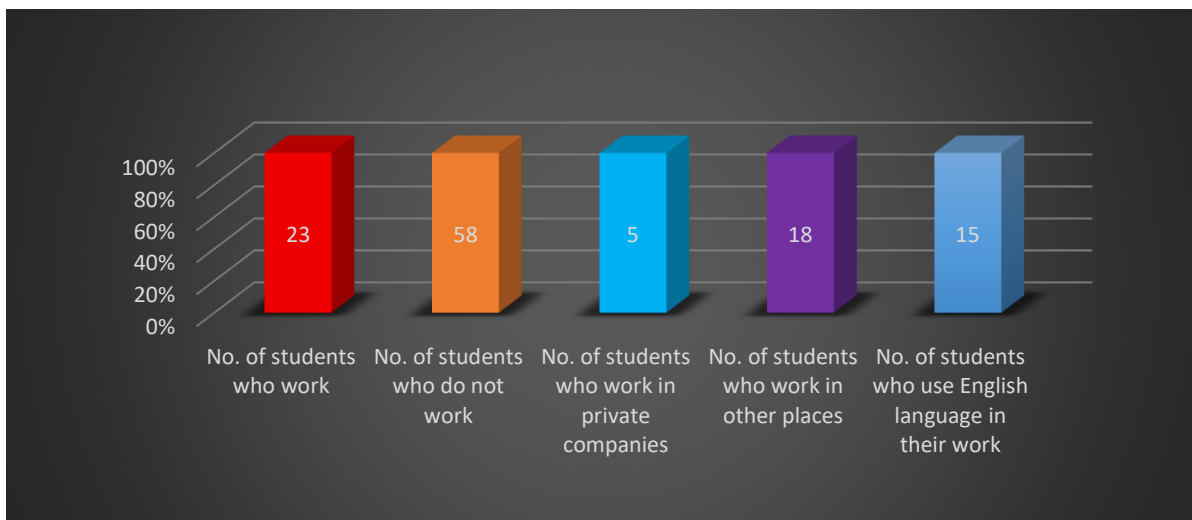


Figure 2
Employment Status and Use of English at Work.

- Some students are employed part-time
- 15 students use English at their jobs

From the answers of the students, it turns out that some of the students are employed part-time and work in private companies or different services. If the lessons were extended during the morning only, then the number of students who would be employed would be even higher. Since students start their classes in the morning and finish in the afternoon for most of the week, it is difficult for them to get a job. Asked in interviews why they choose to work even when studying, they answer that they need employment to afford the expenses of living and education. We must take into account that students come from different economic and social backgrounds and parts of the country, and a significant portion of them face deep economic issues. In the interviews, they stated that they work in bars, restaurants, internet centers, computer repair shops, or as sales operators. Among the employed students, 15 of them practiced their English language skills in their jobs.

3. What skills do they focus on the most?

4. Which of these skills do you think you have the best right now?

In this question, the students were more interested in spoken language. They thought that in order to start working somewhere, the first question they are asked is "if they know how to speak English." They believe that more priority should be given to spoken language in the foreign language course because they mostly deal with reading and supplemental exercises. Students are aware of their deficiencies in spoken language, which is a result of learning English in high school. Listening was also of interest to them, with 24 students deciding that it was a skill they should focus on. Dealing with foreigners presents them with the difficulty of understanding an English native speaker, and in this case, they believe practicing listening more in foreign language classes is necessary. Even in terms of reading, they face difficulties, especially when it comes to reading technical texts. Students did not focus much on writing, thinking that verbal communication is more important to them than being accepted in the workplace.

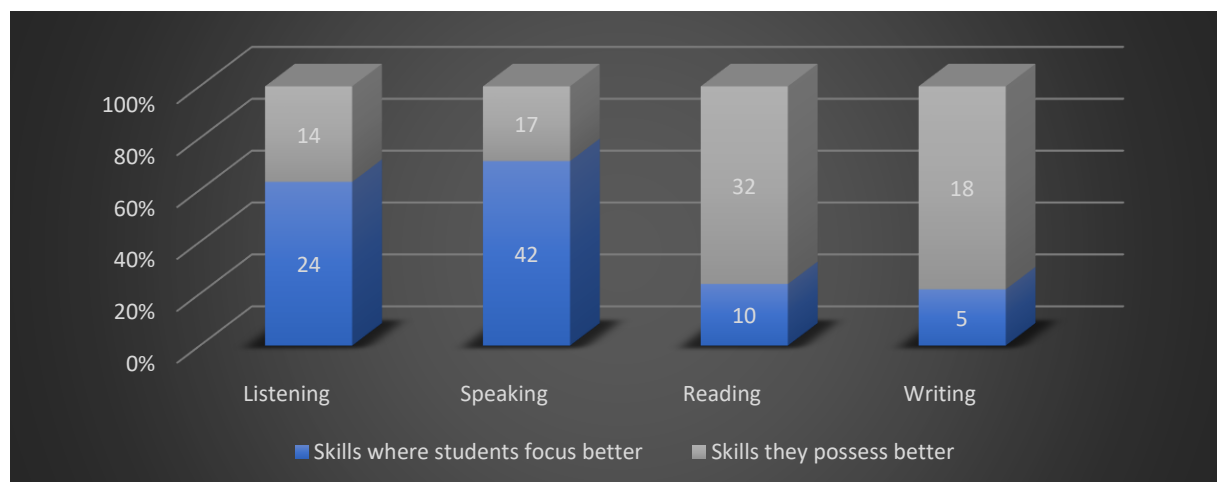


Figure 3.
Skills Students Focus on Most.

- Speaking: Most prioritized
- Listening: 24 students
- Reading: Focused on but with technical difficulties
- Writing: Least prioritized

Students think they are better at reading because they feel more confident while reading than when expressing themselves in spoken language or listening comprehension.

5. At the moment, how would you classify your language level?

Based on the question, the questionnaire indicated that 41 students believe they have a good language level. They base this assessment on the knowledge of the General English language acquired during their high school studies. A significant number of 30 students consider that they have a very good command of the English language skills, including their abilities in the four basic skills (speaking, writing, reading, and listening). Meanwhile, 10 students felt weak in mastering these skills.

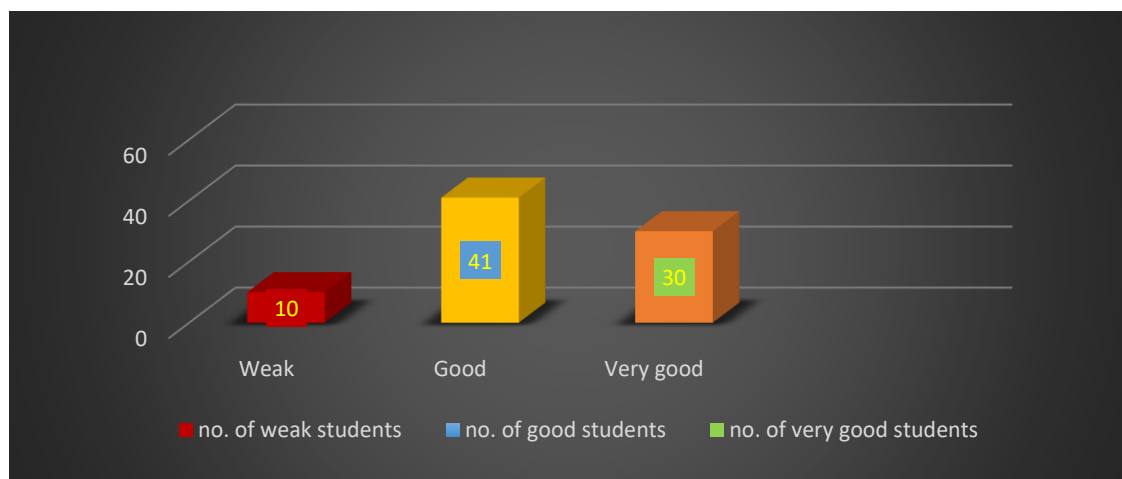


Figure 4.
Self-assessed English Language Level.

- Very Good: 30 students
- Good: 41 students
- Weak: 10 students
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6. If you still have difficulties in using the English language, which aspects do you list as the most difficult?

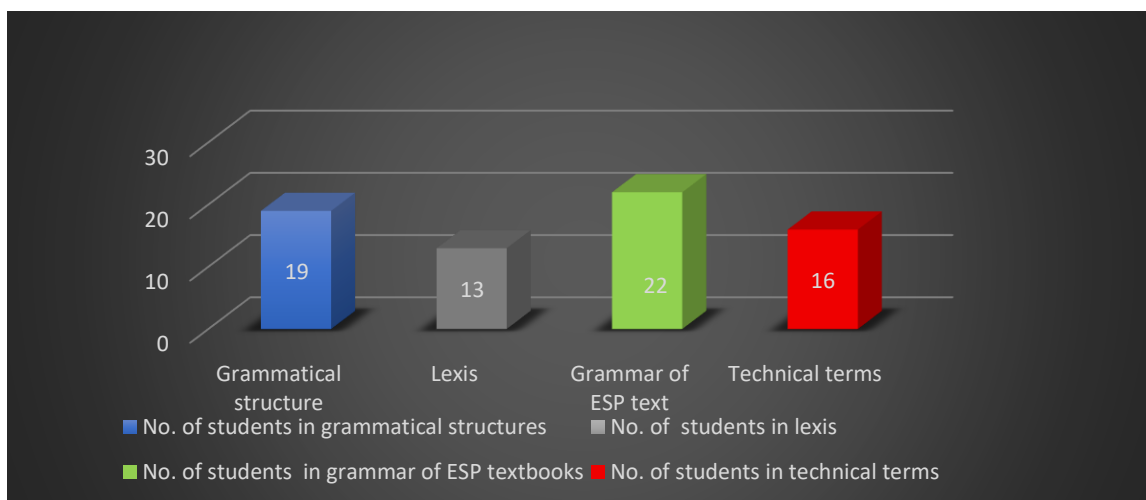


Figure 5.
Reported Difficulties in English Language Use.

- General grammar: 19 students
- Technical grammar: 22 students
- General vocabulary: 13 students
- Technical terms: 16 students

Based on the students' answers, it turns out that students encounter more difficulties in grammar, either general, where 19 students believed they had difficulties carried over from previous studies, or grammar based on technical and scientific texts, where 22 students believed they had difficulties. They affirm in the oral interview that their choice has to do with the fact that they have not dealt with scientific texts before (a large part of them), and therefore, they had difficulties while analyzing such a text. Regarding the lexicon in general, 13 students claimed that they had difficulties in acquiring the vocabulary and putting it into use. 16 students claimed that they had difficulties in translating technical terms, especially when it came to long and sophisticated texts.

7. How would you describe your perception of the English language at the beginning of your studies?

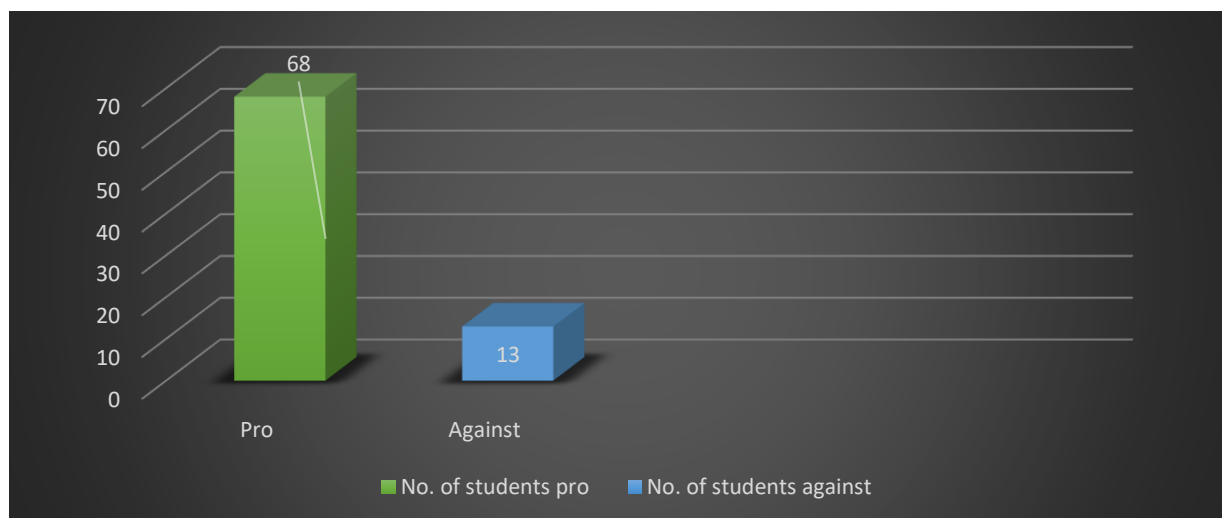


Figure 6.
Students' Perception of English at the Start of Studies.

- Majority perceived English as essential or beneficial
 - Some students underestimated its relevance initially
8. How do you feel about the number of lessons available for the English language?

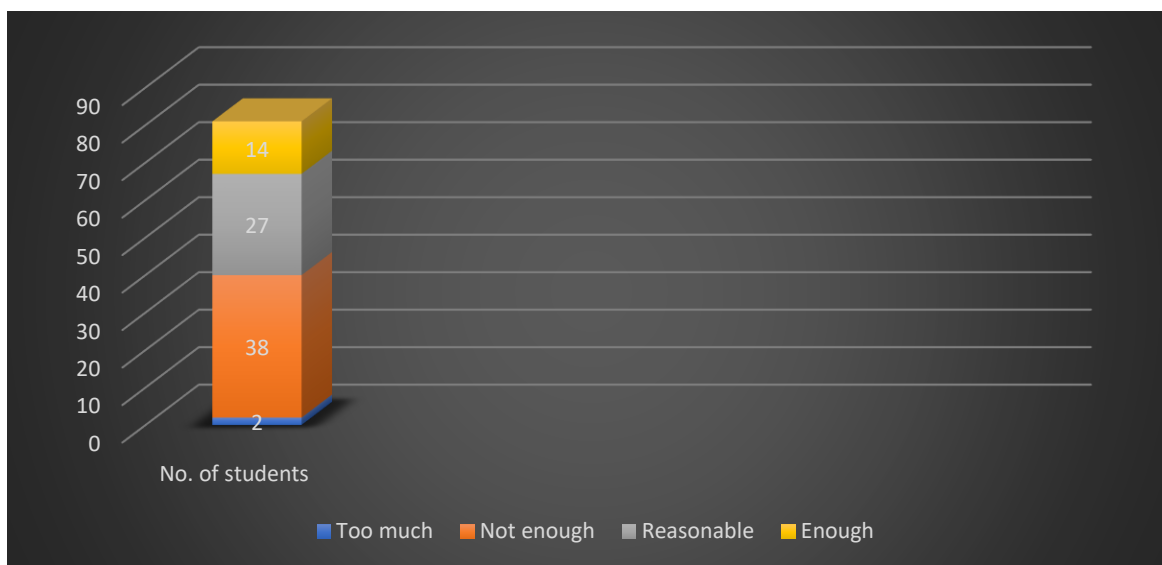


Figure 7.
Opinions on the Number of English Lessons.

- General consensus: current number insufficient
 - Requests for more hours across semesters
9. Do you use English materials as references in other subjects?

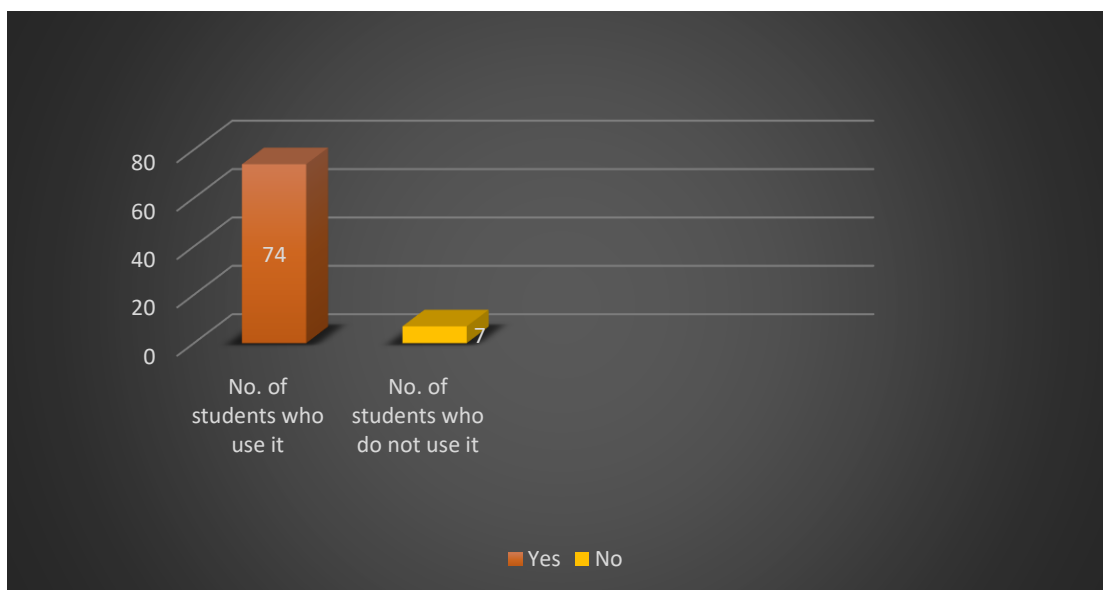


Figure 8.
Use of English Materials in Other Subjects.

- High frequency of English sources used
 - Technical texts and articles most common
10. If yes, what percentage of the books or materials you use are in English?

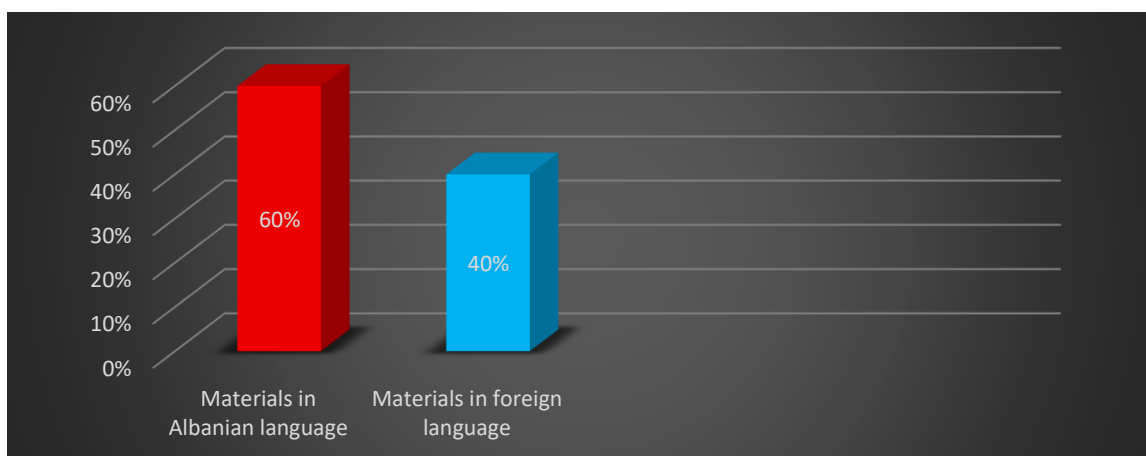


Figure 9.
Percentage of English Materials Used.

- 60–80% of consulted literature is in English (average estimate)
11. Do teachers of other subjects ask or encourage you to browse literature in the English language? 14. If yes, what are the purposes of using these materials?

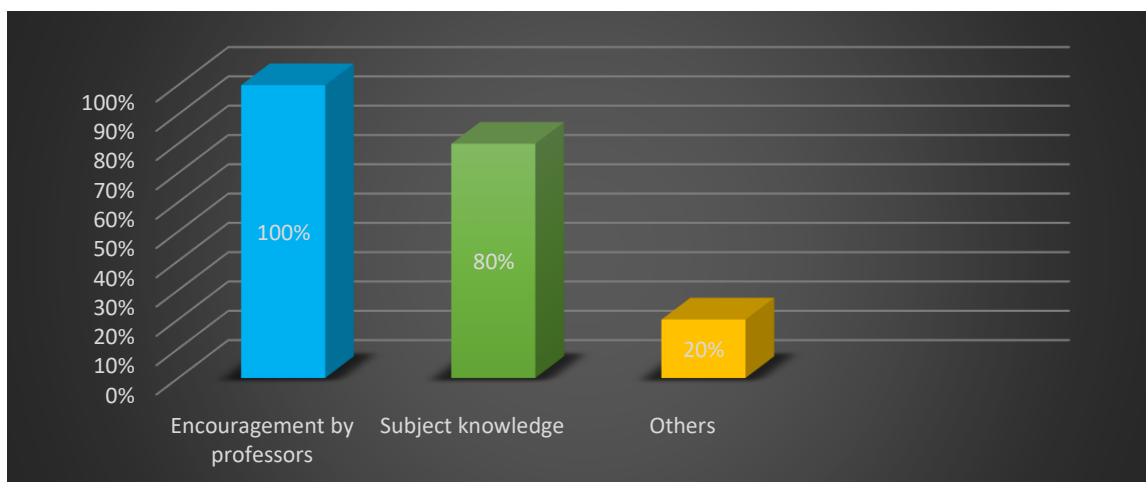


Figure 10.

Encouragement by Other Faculty to Use English Literature.

- Most instructors encourage use
- Purposes: supporting coursework, research, project preparation

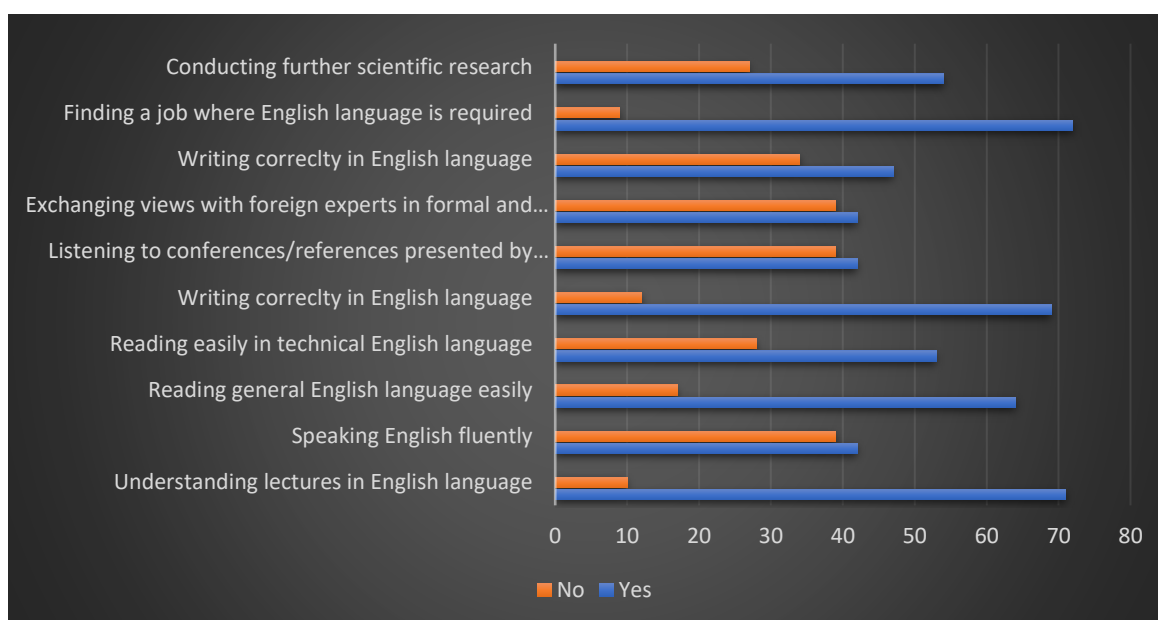


Figure 11.

Student Abilities Post-Course Completion.

At the end of the English language course, considering the acquired knowledge of the English language, are you able to:

- Understand lectures in English: partially
- Speak fluently: limited confidence
- Read general English: mostly competent
- Read technical texts: moderate difficulty
- Write in English: basic to intermediate skills
- Listen to expert presentations: challenging

- Exchange views with foreign experts: rarely practiced
- Write professional reports: minimal exposure
- Find an English-requiring job: some capability
- Conduct research: limited preparedness

5. Results

The findings revealed that 86% of students considered English important for their studies, while 14% were uncertain. Speaking was identified as the most critical skill, yet it was also the weakest area, with students reporting a lack of confidence in oral communication. Reading was perceived as the strongest skill due to prior exposure in secondary education, but difficulties remained in handling technical texts. Grammar and technical vocabulary were cited as major obstacles, with 22 students struggling with technical grammar and 16 reporting challenges with specialized technology. Moreover, 57 out of 81 students felt that the current ESP course did not meet their needs, particularly due to its short duration (one semester). Students also emphasized the necessity of extending ESP instruction across additional semesters to better prepare them for both academic and workplace contexts.

6. Discussion

The results underscore a mismatch between the ESP curriculum and the actual needs of engineering students at PUT. While the course develops some reading skills, it insufficiently addresses oral communication, technical vocabulary, and listening. Similar to findings in other ESP contexts, students expressed the need for more practical, communicative activities and task-based approaches that mirror real-life professional scenarios. Limited exposure and insufficient course duration exacerbate these challenges, restricting students' ability to engage with academic literature or professional discourse effectively. Therefore, curriculum reform is essential, focusing on extending ESP instruction beyond one semester, integrating communicative competence, and aligning teaching materials with engineering contexts.

7. Conclusions

The findings derived from the 17 research questions provided were made from a perspective in which the "gap between what is and what should be" can be identified, in relation to the language needs of FIT students.

For example, in response to the first question, where students are asked if they consider the English language important in their studies, 86% of students considered it important. Taking into account the fact that these students have primary subjects in exact sciences, it is true to appreciate the fact that such a significant number value the English language. 14% of students who think that the English language is not so important come as a result of the fact that they think they have chosen to study engineering and consider the subjects of the profession more important.

Following the questionnaire, although subjects perceived listening, reading, writing, and sub-skills to be the most frequently used, they considered almost all language skills important. However, when asked which skills they thought they mastered best, most of them claimed they mastered reading. I think they made this choice due to the fact that these students feel insecure in the manifestation of other skills, such as speaking, writing, or listening.

Since they do not have confidence in their abilities, they have not had opportunities to communicate and practice the English language. They think that it is easier for them to read a text than to describe it in words. This highlights the fact that more attention should be paid to the practice of spoken language by encouraging students to put into practice the acquired vocabulary, reproduce the texts read, work in groups, and listen to materials, to be able to complete the exercises with the information they hear. These results show the students' awareness of the importance of the English language, which has

become the dominant language used in every profession, and even more so in the engineering profession.

Regarding the eighth question, where the students were required to list the aspects in which they felt they had more difficulties in learning professional English, most of them chose that they had more difficulties in adapting the grammar of the professional texts. This is due to previous deficiencies (in secondary and high school) in grammar on the part of the students. Grammar, in fact, over the years has turned out to be one of the linguistic aspects where students encounter more difficulties.

When the students were asked whether it seemed advantageous that they had the foreign language as a subject in the first-year program, 100% of the students were in favor and saw the fact that the foreign language was part of the curriculum at the faculty where they studied. The only problem lies in the scope of the foreign language, which is not very suitable. FIT students have extended English during the first semester of the first year, and there are five credits, of which three are lecture hours and two are seminar hours.

It would be of great interest and very favorable for the students as well if the foreign language were extended throughout the academic year, with the same number of credits, but also during the third year.

In Albania, students are obliged to take the International English Language Test at the end of their Bachelor's studies and in order to start their Master's studies. So, if the students were in contact with the foreign language even during their three years of Bachelor's, it would be very beneficial for them to learn, practice, and become more proficient in the foreign language of the profession. Students claim that they are pushed by their professors to browse literature in English, and most of them do so because they need to consult supplementary materials in their field of study in English. The answers show that most of the students surveyed felt that they could not use English effectively. With the text worked on during the first semester of the first academic year, they might only be able to exchange information about their profession or understand a speech given by their professor, but they had difficulty understanding a reference or conference held by foreign experts, or making a report on their professional subjects in English. Along the same lines, they expressed the opinion that they would like to continue learning ESP in order to improve their ESP language skills. This confirms the immediate need of electronic engineering, telecommunications, and informatics students in a non-native context to develop specific language skills which will help them to function effectively in their target field.

Regarding the last research question (question 17), the students' answers indicate that the English language course does not meet their language needs. Even the time allocated for the course is insufficient to enable them to use the language effectively, considering that FIT students only have the foreign language course in the first semester of the first year, with a total of 5 credits.

ESP courses rarely allow enough time to meet all identified needs, nor enough time to collect and analyze needs data, which means that teachers usually design their courses on the basis of incomplete information. In this way, we, as their pedagogues and selectors of their texts, as well as the organizers of their lessons, have a duty to ask ourselves questions such as:

Why out of 81 students, 57 of them answered that the English language course does not meet their needs?

What is wrong with the text the students are using?

What do we need to remove or adjust so that students are attracted to the method?

On what criteria should the method be selected in order to meet all the needs of the students?

The study found that English proficiency is serious and needs to be addressed urgently. This is because, as in many countries, also in Albania, the English language is an essential requirement in the academic field and the workplace. In addition, the English language courses taken by FIT students have not enabled them to use English effectively. Thus, students need help based on their needs and desires. Satisfying students' needs and interests greatly influences their motivation to learn and be successful [12].

Involving students in the design of ESP courses will only increase their interest and motivation to foster critical thinking skills; make them participate in various language activities with enthusiasm, and

result in effective learning. Teaching strategies incorporating both traditional and technological learning can enhance students' learning experiences and encourage them to engage actively in the learning process [13]. Such a step will make the teaching/learning process satisfactory and pave the way for the achievement of the course objectives. These claims highlight a necessity to design a new curriculum to meet the needs of students. Therefore, the following recommendations can assist in designing an English language course for electronics students at PUT:

1. Perceived needs must be translated into pedagogical terms. In other words, when programming the English language course, we, as ESP pedagogues, must consider the needs of the students by focusing on all language skills, and especially emphasizing the use of the language of speech and analysis of technical texts.

2. The program does not need to be rebuilt, but it would be better to change it to suit the needs of the students. It should match what students learn and what they will face in their academic and professional fields.

3. An elementary or intermediate program will be more appropriate to meet the ability level of the students. Students should receive comprehensible information in the English language; information that they can understand.

4. Students' needs, difficulties, and motivation should be given more attention when designing an ESP course.

5. The duration and number of courses should be increased so that English becomes a core course at FIT.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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