

Mother tongue interference in translating engineering ESP terminology: Issues and implications

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Abstract: This study investigates the impact of mother tongue interference on the translation of English for Specific Purposes (ESP) terminology by engineering students at the Polytechnic University of Tirana. The main objective is to identify the linguistic challenges students face when translating technical terms from English into Albanian and to explore effective pedagogical strategies to mitigate such interference. The research employed a mixed-methods approach, combining translation exercises, student questionnaires, and semi-structured interviews with ESP instructors. The findings reveal that the most frequent difficulties involve lexical gaps due to the lack of standardized Albanian equivalents, literal translation errors, and syntactic transfer from the mother tongue. Moreover, over 70% of students admitted to thinking in Albanian before expressing ideas in English, which often leads to structural inaccuracies. The study concludes that mother tongue interference remains a key obstacle in developing ESP competence and translation accuracy. It recommends integrating bilingual glossaries, task-based translation activities, and critical use of digital tools into ESP curricula. These implications highlight the need for a more contrastive and context-based approach to ESP teaching in Albanian higher education.

Keywords: Albania, Engineering students, ESP, Mother tongue interference, Technical terminology, Translation.

1. Introduction

The globalization of the world has brought significant changes in every aspect of life, causing languages themselves to evolve. Therefore, the concepts of language contact and borrowing are not new. Both of these concepts have always been intertwined with languages, as they have changed throughout history and continue to change today [1]. A basic definition of language contact can be described as the use of more than one language at the same time in the same place [2]. This means that language contact occurs when two languages are in contact with each other, resulting in linguistic change in one or both languages. Language contact, especially in cases of close contact, also brings about linguistic change. Milroy adopts the sociolinguistic perspective, in which he sees linguistic change in a language or language system as a social phenomenon. All members of a language community are connected to each other in social networks, and so it defines close contact as open networks resulting from a large number of weak links [3]. A person whose personal contacts know each other is part of a "closed network," but an individual whose contacts tend not to know each other belongs to an "open network" [4]. The number of links between people in a network depends on whether they are cousins, friends, colleagues, etc. The stronger the connection between people, the stronger the connection in the network will be. At the same time, the more distant the connection between the persons, the weaker the

network will be. Many contacts with other members of the network are called multiple connections; having only one contact is called a single connection. In this way, it is not actually a language contact, but a contact between speakers [3].

English for Specific Purposes (ESP) has become an essential component of higher education, especially for students in technical fields, such as those who study in engineering branches. Mastery of ESP not only facilitates comprehension of technical literature but also enables effective communication in professional contexts. However, students often encounter significant challenges when translating specialized terminology into their native language, which can affect both learning outcomes and professional preparedness.

In Albania, engineering students at the Polytechnic University of Tirana face a dual challenge: they must acquire English technical vocabulary while also navigating the influence of Albanian as their mother tongue. Mother tongue interference, defined as the transfer of linguistic patterns from a native language into the target language, has been widely recognized in translation studies as a major factor contributing to lexical, syntactic, and semantic errors. In technical domains, where precision is critical, these errors can hinder comprehension and lead to misunderstandings in both academic and professional settings.

Despite the growing recognition of ESP's importance in technical education, few studies have systematically examined how Albanian-speaking engineering students handle the translation of ESP terminology or the specific ways in which their mother tongue affects their choices. This research aims to fill this gap by investigating the types of translation challenges these students face, the patterns of mother tongue interference, and potential strategies to improve ESP instruction in engineering programs.

2. Literature review

2.1. ESP in Technical Education

ESP refers to the teaching of English tailored to the specific needs of learners in professional or academic disciplines. Technical ESP, particularly in engineering, emphasizes vocabulary and structures relevant to technical texts, manuals, and professional communication. Effective ESP instruction requires a needs analysis to identify the linguistic competencies students must develop for their field [5]. Engineering students frequently struggle with specialized terms that have no direct equivalents in their native language, a problem that complicates both reading comprehension and translation.

Before the 90s, in Albania, the main ESP texts were based on Russian textbooks, and depending on the branch of study, such as Mechanical Engineering, Italian textbooks were used. After the 90s, Albania, like other countries worldwide, was exposed to changes, which significantly affected terminology, with electronic and informatics terminology becoming the focus of ESP. This shift highlighted issues in translating and adapting engineering terminology into the Albanian language, and vice versa.

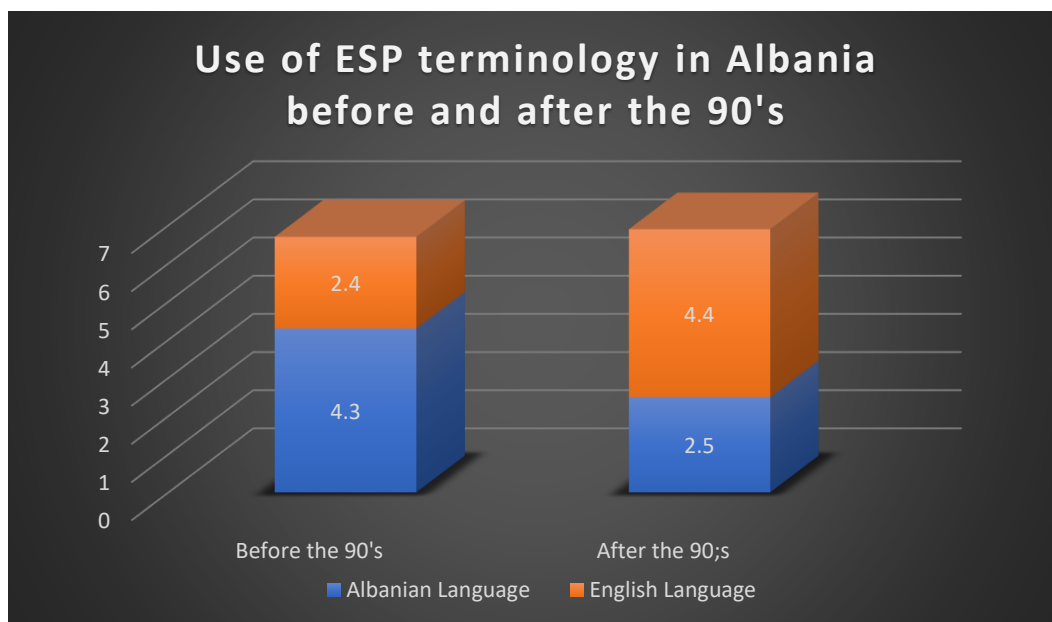


Figure 1.
Use of ESP terminology in Albania before and after the 90's.

There are four identified fundamental stages of modern terminology: Cabré [6]

- Origins belonging to the years 1930–1960: the basic principles are set out, and the methodology of terminological processing is established, considering the systematic character of terminologies of different fields of knowledge [7].
- Structuring in the years 1906–1975: innovations brought by the field of informatics that allow the creation of a terminological database.
- Development in the years 1975–1985: terminology became an important tool of language policy.
- After 1985 until today: perspectives related to the development of new technologies and the importance that terminology takes on in the circulation of goods and services at the international level.

In the 1990s and onwards, the same principles have been followed for the elaboration of terminology and its reflection in textbooks, in the compilation of terminological dictionaries. However, much work remains to be done because only in a refined state can it be a source of enrichment for the literary language and for the national culture.

2.2. Translation Challenges in ESP

Translation of ESP materials is a complex process that requires both linguistic proficiency and domain-specific knowledge. Studies highlight that technical translation is particularly prone to errors due to the lack of precise equivalents, polysemy, and the necessity of contextual understanding [8]. Engineering students often produce literal translations that fail to convey the intended technical meaning, reflecting both limited ESP proficiency and interference from the mother tongue [9].

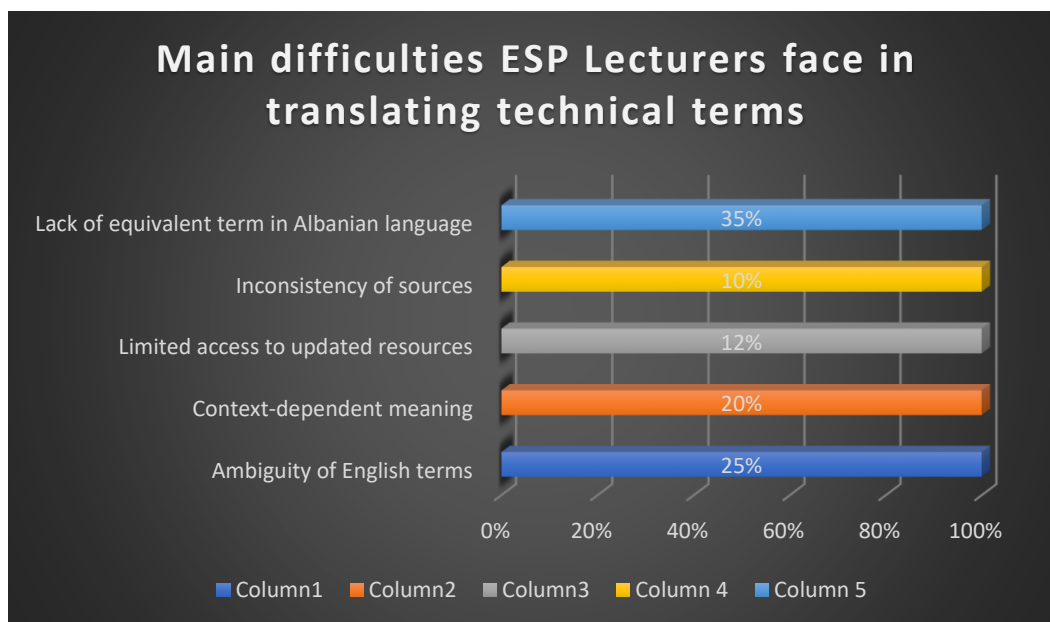


Figure 2.

Main difficulties ESP Lecturers face in translating technical terms.

A special place among borrowings in the contemporary Albanian language is reserved for Anglicisms, which, after the 1990s, have become more numerous in both spoken and written language. It is enough to browse a newspaper or magazine to understand how many foreign words are present. This influx of terms may be the result of a number of factors [10]. Among these factors, we can mention the widespread use of the English language, which is even more studied and is currently considered the lingua franca not only for Albanians but also for international communication.

Unlike some countries like France and Spain, Albania did not decide against the influx of Anglicisms, and it is not thought that it will resist in the future, even finding them in the field of politics with terms that are often used, such as exit poll or bipartisan, etc. It is noted that most Anglicisms have initially entered through the languages of specialization, such as in the fields of economics, finance, administrative organization, *e.g. report, budget, target*, etc.; the field of medicine, *e.g. bypass*, etc.; the field of sports, *e.g. corner, goal, beach volley, windsurfing*, etc.; the field of music, *e.g. hit, disc jockey, rock, pop, soul, band*, etc.; in the field of telephony, *e.g. cordless, roaming*; in the field of mass media, *e.g. talk show, fiction, audience, spot, share*, etc.; in the field of fashion, mainly for young people, *e.g. jeans, T-shirt, piercing*, etc.; in the field of food, *e.g. crackers, cornflakes*, etc.; or even in colloquial language like *weekend, babysitter, trendy, look*, etc [1].

However, without a doubt, in the field of informatics and electronics, Anglicisms have been widely used since the 90s thanks to the expansion of technical-scientific culture in this field of knowledge. This spread is due to the widespread computerization in workplaces, in schools, and in various daily activities. Consequently, the interest in this specialty language is, in fact, an interest in the future of the language because it offers the opportunity to observe development trends that may also be valid for the general language. This is also evident in the spread of the use of Anglo-American terminology in the field of cybernetics and computers.

2.3. Mother Tongue Interference

Mother tongue interference, or L1 transfer, occurs when students inappropriately rely on native language structures and semantics in the target language [11]. In technical translation, interference can manifest in multiple forms: lexical errors (using incorrect terminology), syntactic errors (mirroring

native sentence structure), and semantic errors (misinterpreting meaning). Several studies in ESP contexts indicate that L1 interference is a persistent obstacle in mastering specialized terminology, particularly when students lack access to bilingual technical resources [12, 13].

2.4. Implications for Curriculum and Teaching

ESP teachers are faced, among other things, with a language or material outside the boundaries of their previous experience. And in this new experience that they encounter, many ESP teachers begin to doubt their knowledge of the general language, and consequently, questions arise, such as: should the content of the materials have a highly technical, specialized language? Why do we encounter so many difficulties in the field of ESP? What kind of knowledge or insights should an ESP teacher have?

It turns out that texts with excessive technical language do not have any great advantage over texts with general language. This is because the problem must be viewed and evaluated in the entirety of the teaching process. Texts should not be selected as technical texts but as elements of an effective teaching process. ESP teachers select the text/materials in accordance with their level; they are often both course designers and material collectors. This advantageous position gives ESP teachers an advantage in knowing and adapting the materials according to the situation, according to needs, and according to possibilities.

There is a tradition that divides the sciences into humanities and scientific/technical fields, and consequently, language is included in the social sciences. However, ESP is associated with the technical sciences; secondly, very few steps have been taken towards the qualification of ESP teachers, except for a few isolated regional projects and centres.

But what kind of knowledge should ESP teachers have?

They should have a positive attitude towards the content of the subject. They should also have knowledge of the basic principles of the respective field and awareness of their knowledge in this field.

The literature suggests several strategies to mitigate mother tongue interference in ESP learning, including:

- The use of bilingual technical glossaries.
- Task-based translation exercises that encourage contextual understanding.
- Integration of domain-specific reading and writing tasks to reinforce vocabulary retention.

This study builds upon these insights to provide empirical evidence from the Albanian context, offering practical recommendations for ESP curriculum development in engineering faculties.

3. Methodology

3.1. Context and Participants

At the Polytechnic University of Tirana, foreign language teaching is conducted using language for specific purposes methods. With the introduction of the Bologna education system in 2003 in Albania, significant emphasis was placed on adapting foreign language teaching methods. Specifically, this pertains to English, a language that has been taught at this university for years. The methods employed are not those of general English but are tailored to English for specific purposes. These methods are adapted to meet the needs of students, as they have already acquired general knowledge of English during high school. The English for specific purposes methods are designed to prepare students for professional communication in future work environments, emphasizing the relevant vocabulary of their respective fields. Different branches of engineering at the Polytechnic University of Tirana (PUT) utilize specialized English methods in their respective disciplines, including Electronics in the electronics and telecommunications branch, Information Technology for computer engineering students, and Electrical Engineering for electrical engineering students. These textbooks are published by Express Publishing. For architecture students, the textbook titled *Architecture* is used. Additionally, some branches utilize a comprehensive book that summarizes various engineering disciplines, titled *Engineering*.

The study was conducted at the Polytechnic University of Tirana, specifically within the Faculty of Electronic Engineering. A total of 80 undergraduate first-year students participated in the study. All participants had completed a semester of the ESP course focused on technical English.

3.2. Research Instruments

Three complementary instruments were employed to collect data:

Translation exercises: students were asked to translate 20 technical terms and short engineering texts from English to Albanian. Terms included vocabulary from electronics, programming, and telecommunications.

- Questionnaires: A structured questionnaire assessed students' perceptions of the difficulties encountered in translation, their strategies, and the perceived influence of their mother tongue.
- Semi-Structured Interviews: ESP instructors were interviewed to gather insights on common student errors and effective pedagogical strategies.

3.3. Data Collection Procedure

Translation exercises were administered during regular ESP class sessions. Questionnaires were completed immediately afterward. Interviews with instructors were conducted in person and audio-recorded with consent. All translations were anonymized for analysis.

3.4. Data Analysis

Qualitative Analysis: Translation outputs were analyzed for lexical, syntactic, and semantic errors, focusing on mother tongue interference.

Quantitative analysis: Frequencies of error types were calculated to identify the most common challenges. Survey responses were statistically summarized using percentages to highlight patterns in perceived difficulties.

Summary of Findings (Based on Student Responses):

Table 1.

Summary of findings based on the frequency of error types in translating terms.

No.	Statement	Agree/Strongly Agree (%)	Neutral (%)	Disagree/Strongly Disagree (%)
1	Translating technical terms from English to Albanian is difficult.	72%	18%	10%
2	Some English technical terms have no exact Albanian equivalent.	85%	10%	5%
3	I mix English and Albanian terms when writing or speaking.	68%	17%	15%
4	Literal translation often causes errors.	76%	12%	12%
5	English enriches Albanian technical language.	81%	10%	9%
6	Borrowed English terms are necessary in engineering.	88%	7%	5%
7	Switching between English and Albanian is difficult.	61%	22%	17%
8	English syntax affects Albanian sentence structure.	58%	25%	17%
9	I rely on bilingual dictionaries.	35%	11%	54%
10	I use online tools for translation.	91%	6%	3%
11	I understand the concept before translating.	83%	12%	5%
12	I use technical glossaries.	66%	20%	14%
13	I create my own translations for missing terms.	59%	21%	20%
14	Albanian influences my ESP learning.	64%	18%	18%
15	I think in Albanian before expressing ideas in English.	71%	16%	13%
16	Similarities help me learn faster.	69%	20%	11%
17	Grammar differences cause translation difficulties.	78%	12%	10%
18	My Albanian knowledge limits my understanding of English texts.	57%	19%	24%

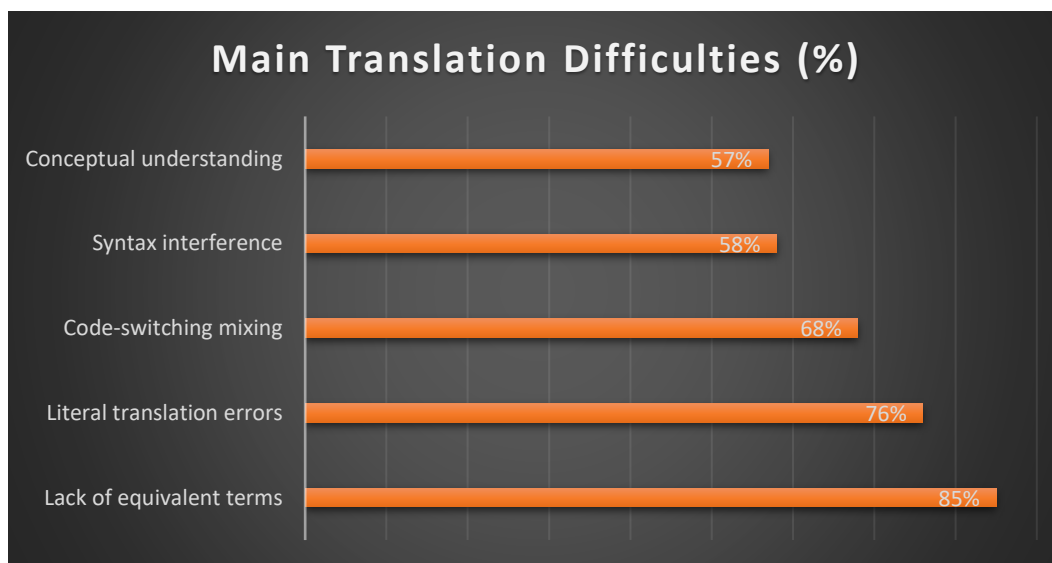


Figure 3.
Main Translation Difficulties (in %).

Table 2.
Percentage of Students agreeing on difficulties in translating terms.

Category	% of Students Agreeing
Lack of equivalent terms	85%
Literal translation errors	76%
Code-switching (mixing)	68%
Syntax interference	58%
Conceptual understanding issues	57%

Source: (Interpretation: Most students perceive vocabulary gaps and literal translation as major obstacles.).

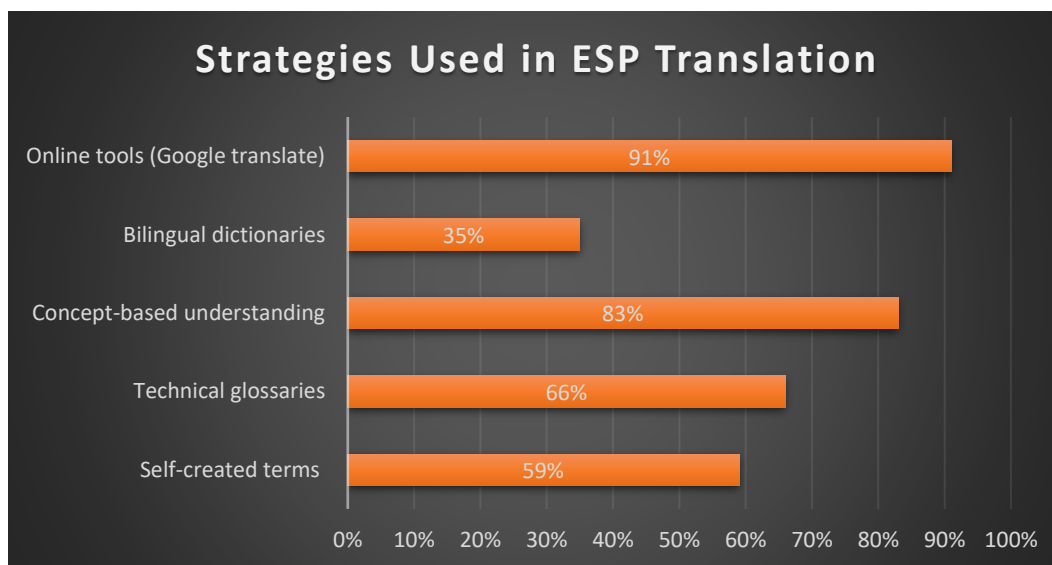


Figure 4.
Strategies Used in ESP Translation.

Table 3.
Percentage of Students agreeing on the most frequently used tools.

Strategy	% of Students Using Frequently
Online tools (Google Translate)	91%
Bilingual dictionaries	35%
Concept-based understanding	83%
Technical glossaries	66%
Self-created terms	59%

Source: (Interpretation: Most students rely heavily on digital tools, while deeper conceptual strategies are secondary.)

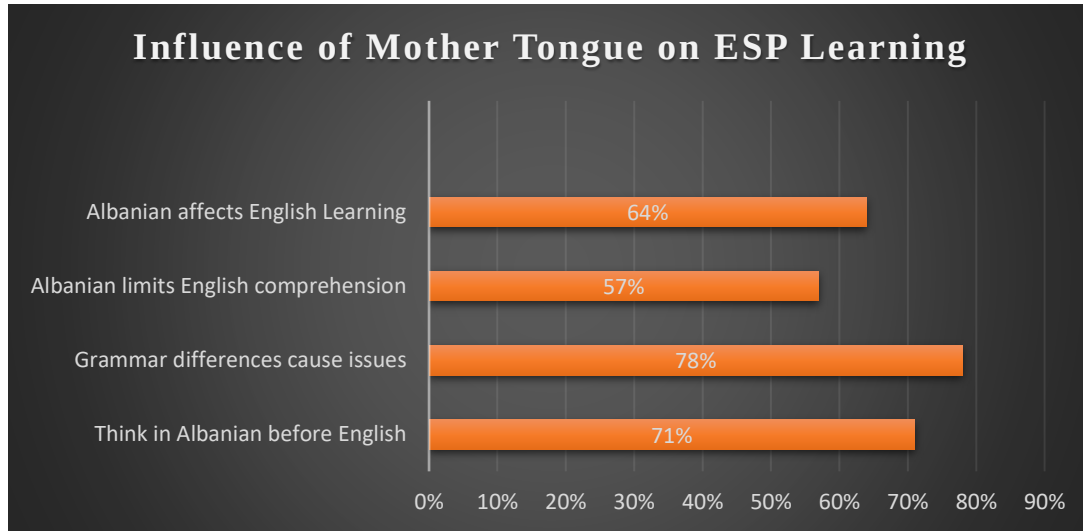


Figure 5.
Influence of Mother Tongue on ESP Learning.

Table 4.
Influence of mother tongue on ESP learning.

Aspect	%Agree
Albanian affects English learning	64%
Think in Albanian before English	71%
Grammar differences cause issues	78%
Albanian limits English comprehension	57%

4. Results and Discussion

The findings of the questionnaire reveal a multifaceted interaction between English and Albanian in the learning and translation of ESP terminology among engineering students. The quantitative data show that translation difficulties are primarily lexical and conceptual rather than grammatical. Specifically, 85% of respondents reported that many English technical terms have no direct Albanian equivalents, while 76% found literal translation to be a major source of inaccuracy. This indicates that the students' challenges are not merely linguistic but also stem from the conceptual transfer between two different terminological systems.

A significant 68% of students admitted that they often mix English and Albanian technical terms, suggesting a widespread phenomenon of code-switching in both oral and written communication. This reflects the increasing dominance of English in technical discourse and its gradual integration into the Albanian lexicon. Despite these challenges, 81% of the participants agreed that English has enriched the Albanian technical vocabulary, indicating a generally positive perception of lexical borrowing as an inevitable result of globalization and technological development.

Regarding translation strategies, the majority of students (91%) reported frequent use of online translation tools, while only a small part relied on bilingual dictionaries. This reliance on digital aids demonstrates a pragmatic approach to overcoming vocabulary gaps, though it may also reflect limited training in translation techniques and critical evaluation of terminology.

Interestingly, 83% of students emphasized the importance of understanding the concept before translating, showing awareness that ESP translation requires subject-specific comprehension, not mechanical word substitution.

The influence of the mother tongue (Albanian) was also significant. Seventy-one percent of students admitted they think in Albanian before expressing ideas in English, and seventy-eight percent agreed that grammatical differences between the two languages cause difficulty in translation. These results align with previous studies highlighting L1 interference as a persistent issue in ESP learning [14]. Students tend to transfer Albanian syntactic patterns and lexical structures into English, leading to unnatural phrasing and semantic inaccuracy. Nevertheless, 69% believed that certain linguistic similarities between English and Albanian facilitate comprehension and retention of technical vocabulary, suggesting that positive transfer also occurs.

Overall, the findings indicate that while English exerts a strong lexical and structural influence on Albanian, students perceive this influence as both a challenge and a resource. English contributes to the modernization of Albanian scientific terminology, yet the lack of standardized equivalents creates inconsistency and occasional confusion. Therefore, there is a clear need for pedagogical focus on translation awareness, terminology management, and contrastive linguistic training in ESP courses.

5. Conclusions and Recommendations

The present study highlights the complex linguistic interaction between English and Albanian in the context of ESP learning among engineering students. The results demonstrate that translation difficulties mainly arise from lexical gaps and structural differences between the two languages. Students frequently encounter English technical terms with no precise Albanian equivalents, which often leads to lexical borrowing and hybridization of professional discourse. Despite these challenges, students perceive the presence of English as a positive force that enriches Albanian technical vocabulary and facilitates access to international knowledge.

Moreover, the heavy reliance on online translation tools suggests a need to strengthen students' competence in critical translation and terminology management. The findings also emphasize that Albanian, as the mother tongue, continues to influence students' comprehension and expression in English, particularly at the syntactic and conceptual levels. This underlines the importance of addressing L1 interference explicitly in ESP instruction.

Based on these findings, several recommendations can be made:

1. **Integration of Translation Awareness in ESP courses:**
Teachers should incorporate explicit activities that contrast English and Albanian structures, helping students recognize and minimize interference.
2. **Development of Bilingual Technical Glossaries:**
Faculties should promote the creation and continuous updating of specialized glossaries in both English and Albanian to ensure consistency and clarity in terminology.
3. **Training in Critical Use of Digital Translation Tools:**
While online tools are widely used, students should be trained to verify terminological accuracy and contextual appropriateness rather than rely on automatic output.
4. **Emphasis on Conceptual Understanding:**
ESP teaching should go beyond linguistic competence, fostering comprehension of underlying scientific and technical concepts to enhance translation accuracy.
5. **Further Research:**

Future studies should explore the long-term linguistic consequences of English lexical borrowings in Albanian, as well as comparative analyses across different branches of engineering and technology.

In conclusion, English continues to exert a powerful influence on the linguistic and cognitive development of Albanian ESP learners. When guided through well-structured pedagogical strategies, this influence can transform from a source of interference into a tool for linguistic innovation and academic empowerment.

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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