



NEEDS ANALYSIS OF ENGLISH FOR SPECIFIC PURPOSES (ESP) INSTRUCTION IN MOROCCAN ENGINEERING EDUCATION: A MIXED-METHODS STUDY

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Abstract:

This study investigates the English language needs of engineering students and teachers at the National School of Applied Sciences (ENSA) Agadir in Morocco, with a focus on English for Specific Purposes (ESP) instruction. Using a mixed-methods research design, data were collected from 82 fifth-year engineering students, four English language teachers, and an institutional ESP course description through questionnaires and document analysis. Quantitative data were analyzed using descriptive statistics, while qualitative responses were examined through thematic analysis. Findings reveal that both students and teachers perceive English as highly important for academic success and future professional careers, particularly in engineering contexts. All four language skills are considered essential, with speaking identified as the most critical skill and the area in which students feel least proficient. Students generally prefer ESP courses over General English due to their relevance to disciplinary and occupational needs. However, both students and teachers report dissatisfaction with the limited instructional time, lack of standardized materials, heterogeneous proficiency levels, and insufficient opportunities for interaction and speaking practice. The study also highlights institutional and pedagogical challenges, including a lack of ESP-specific teacher training, limited collaboration between language and subject-area instructors, and partial misalignment between the official course description and stakeholder needs. Overall, while ESP instruction is perceived as relevant, its effectiveness is constrained by structural limitations. The study concludes with recommendations for curriculum redesign, increased instructional time, teacher training, and enhanced institutional support to improve ESP implementation in Moroccan engineering education.

Keywords: English for Specific Purposes (ESP), needs analysis, engineering education, Morocco, higher education

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1. Introduction

The power of English as an international language is strongly felt in the Middle East and North Africa (MENA) region (Nasr, 2013). In Morocco, the reform of 2000 asserted English as the key to international communication and stressed an urgent need to learn Foreign Languages (Sadiqi, 1991:107). However, the teaching of English in Moroccan universities remained unsuitable for students' needs and disconnected from their specific majors (El Mellouki, 2015). In the same regard, the importance of English for communication or academic research is even more salient in the case of engineering students. As many studies have shown, engineering students have specific urgent needs for English (Pendergrass et al., 2001; Pritchard & Nasr, 2004; Kaewpet, 2009; Alastal & Shuib, 2012; Dahbi, 2016; Dahbi, 2017). Yet, in Morocco, the teaching of ESP in vocational schools has not yet received much attention in terms of research exploring such needs. Moreover, given that students' and teachers' attitudes towards English highly affect the outcome of the learning/teaching process (Hutchinson & Waters, 1987; Songhori, 2008; Kaewpet, 2009; Alfehaid, 2016), it is important to explore their perceptions. As Jeczelewski (2016: 11) asserts that, in order to cater for the needs of students, research must obtain data from three primary sources, mainly "*the language-teaching organizations, user-establishments, and the student*". That is why the proposed study seeks to add to the existing literature regarding engineering students' needs as perceived by students themselves and teachers of the subject, and as reflected in the course description.

English has become a dominant language in higher education and professional domains, particularly in scientific and technological fields. In engineering education, it plays a central role in enabling students to access up-to-date technical knowledge, understand scientific publications, communicate in international environments, and participate effectively in global professional practices. As a result, English proficiency is no longer considered an optional skill for engineers but an essential component of their academic and occupational competence.

However, the implementation of ESP courses is often complex and faces several challenges. In many contexts, including Moroccan higher education, ESP instruction is affected by limited instructional time, heterogeneous student proficiency levels, lack of specialized teaching materials, and insufficient institutional support. In addition, ESP teachers are frequently required to design courses and teaching materials without receiving adequate training in ESP methodology or consistent guidance from institutional curricula. These constraints may lead to a gap between course objectives and learners' actual needs.

At the National School of Applied Sciences (ENSA) in Agadir, Morocco, English is a compulsory subject across engineering programmes. Despite its importance, there is limited empirical research examining how ESP courses are implemented in this context and how they are perceived by both students and teachers. In particular, little is known about whether the institutional course design aligns with the communicative, academic, and professional needs of engineering students. This gap is significant, as needs analysis

is considered a fundamental step in effective ESP course design and curriculum development.

Accordingly, the present study seeks to investigate the English language needs of engineering students and teachers at ENSA Agadir, Morocco. It also aims to explore their perceptions of ESP instruction and to evaluate the extent to which the official course description corresponds to these perceived needs. To achieve these objectives, a mixed-methods research design is adopted, combining quantitative and qualitative data in order to provide a more comprehensive and reliable understanding of the issue.

2. Literature Review

The teaching of English for Specific Purposes (ESP) has developed as a response to the growing need for targeted language instruction that aligns with learners' academic disciplines and professional domains. Unlike General English, ESP is not defined by a fixed set of linguistic content, but rather by the specific communicative requirements of learners in particular contexts. Hutchinson and Waters (1987) describe ESP as an approach to language teaching in which all decisions regarding content and method are based on learners' reasons for learning. Similarly, Dudley-Evans and St John (1998) emphasize that ESP is closely connected to the identification of learner needs and the adaptation of instruction accordingly.

A central principle in ESP theory is needs analysis, which serves as the foundation for course design. Needs analysis involves identifying what learners must be able to do with language in target situations, as well as assessing their current level of proficiency and learning gaps. Long (2005) highlights that effective language instruction should be grounded in detailed information about real-world language use, ensuring that classroom teaching reflects authentic communicative demands. In this sense, ESP courses are expected to be responsive, flexible, and continuously informed by contextual requirements.

Previous empirical research has consistently demonstrated the importance of English in engineering education. Studies conducted in various academic contexts (e.g. Pendergrass et al., 2001; Pritchard & Nasr, 2004) show that engineering students rely heavily on English for accessing technical resources and participating in professional communication. Research in ESP settings has also revealed that learners typically assign high importance to productive skills, particularly speaking, due to its relevance in workplace interaction and presentations.

At the same time, a recurring theme in the literature is the mismatch between ESP course design and actual learner needs. In many higher education contexts, ESP programmes are constrained by institutional limitations such as restricted teaching time, lack of appropriate materials, and insufficient coordination between language instructors and subject-specialist departments. Dudley-Evans and St John (1998) note that ESP teachers often assume multiple roles, including materials designer and needs analyst, which can create additional pedagogical challenges when institutional support is limited.

Teacher preparedness is another key issue discussed in ESP research. Studies have shown that instructors frequently enter ESP contexts without formal training in specialized course design, which can affect their ability to tailor instruction effectively. This situation is often compounded by limited collaboration between English language teachers and disciplinary faculty, reducing opportunities for integrating subject-specific knowledge into language instruction. In summary, the literature highlights three major dimensions relevant to ESP implementation: the centrality of needs analysis in course design, the importance of aligning instruction with disciplinary communication demands, and the institutional constraints that often hinder effective ESP delivery. These aspects provide the conceptual framework for examining ESP practices in the present study context.

3. Material and Methods

This study adopted a mixed-methods research design combining quantitative and qualitative approaches in order to provide a comprehensive understanding of English for Specific Purposes (ESP) needs and perceptions in an engineering education context. The use of a mixed-methods framework enabled the integration of numerical data with qualitative insights, allowing for triangulation and a more robust interpretation of findings. The study was conducted at the National School of Applied Sciences (ENSA) in Agadir, Morocco, a public engineering institution offering five-year degree programmes in various engineering specializations, including industrial, electrical, mechanical, and energy/environmental engineering. English is a compulsory subject within the curriculum and is taught through ESP-oriented courses designed to support both academic learning and future professional communication needs.

The participants included 82 fifth-year engineering students and four English language teachers involved in ESP instruction at ENSA Agadir, Morocco. The students represented different engineering specializations and were selected as intact groups without random sampling procedures due to accessibility and their relevance to the research objectives. Fifth-year students were targeted because they were at the final stage of their studies and therefore better positioned to reflect on both academic and professional language needs. The teachers included instructors with varying levels of experience in ESP teaching, all directly involved in delivering English courses at the institution.

Data were collected using three instruments: a student questionnaire, a teacher questionnaire, and document analysis. The student questionnaire included closed-ended items such as Likert-scale questions, rating scales, and multiple-choice questions, as well as a small number of open-ended questions aimed at capturing students' perceptions of English language use, skill importance, and course relevance. The teacher questionnaire included similar item types and also explored teaching practices, perceptions of student needs, and institutional conditions affecting ESP delivery. In addition, a document analysis was conducted on the official ESP course description provided by the institution in order to examine its stated objectives and content focus.

Data collection was carried out through direct classroom administration of student questionnaires with the assistance of the English instructor, while teacher questionnaires were completed individually after being distributed in person. The course description document was obtained from the institutional administration and analyzed separately after questionnaire data collection in order to allow comparison between official curriculum guidelines and stakeholder perceptions. Quantitative data were analyzed using Microsoft Excel 2010 to calculate frequencies and percentages and to generate descriptive statistical representations of the responses. Qualitative data from open-ended questions were analyzed using thematic analysis, involving systematic coding and categorization of recurring patterns across responses. The document analysis was conducted through careful reading and interpretation of the course description, with key themes extracted and compared to questionnaire findings to assess alignment between institutional intentions and perceived learner needs.

To enhance validity and trustworthiness, methodological triangulation was employed by combining multiple data sources (students, teachers, and institutional documentation) and multiple instruments. Additionally, questionnaire items were adapted from established ESP needs analysis studies with minor modifications to suit the Moroccan engineering context, and expert feedback was used to refine the instruments prior to data analysis.

4. Results and Discussion

The findings of this study are presented and discussed according to the research questions guiding the investigation. The analysis draws on data collected from students' questionnaires, teachers' questionnaires, and document analysis. Quantitative data were analysed using frequencies and percentages, while qualitative responses were thematically examined. The discussion also integrates comparisons with relevant literature in the field of English for Specific Purposes (ESP), particularly within engineering education contexts.

The results indicate a strong consensus among students and teachers regarding the importance of English for both academic studies and future professional careers. Students considered English a key competence for engineering education and employability (see Table 4.1), which was also shared by teachers. This alignment reflects the growing recognition of English as an essential tool in scientific and technical fields.

Table 4.1: Students' views on the importance of English for their future profession and academic studies

Rating items	For academic studies	For future profession
Strongly agree	0.0%	1.22%
Agree	14.6%	12.2%
Strongly disagree	46.4%	45.8%
Disagree	39.0%	41.5%

In terms of language skills, speaking emerged as the most highly prioritized skill among students, followed by reading and listening, while writing was slightly less emphasized (see Table 4.2). Students clearly associate English proficiency with oral communication in professional engineering contexts such as presentations, meetings, and workplace interaction. Teachers also acknowledged the importance of all four skills but showed some variation in emphasis depending on instructional priorities.

Table 4.2: Students' views on the importance of English language skills

Ratings Skills		Very important	Quite important	Not very important	Not important at all
Writing	For academic studies	59.8%	36.6%	3.70%	0.0%
	For future professions	61.0%	30.5%	8.5%	0.0%
Speaking	For academic studies	89.0%	9.8%	1.2%	0.0%
	For future professions	96.3%	3.7%	0.0%	0.0%
Listening	For academic studies	67.1%	30.5%	2.4%	0.0%
	For future professions	82.9%	14.6%	2.4%	0.0%
Reading	For academic studies	82.9%	9.8%	7.3%	0.0%
	For future professions	68.3%	25.6%	4.9%	1.2%

A key finding of the study is the clear preference for English for Specific Purposes (ESP) over General English (GE) (see Table 4.3). Most students expressed the need for English instruction tailored to engineering disciplines, particularly for mastering technical vocabulary and understanding specialised texts. Teachers largely supported this view, although some argued for maintaining a basic foundation in General English due to the heterogeneous linguistic background of students.

Table 4.3: Students' views on the type of course needed

	ESP	GE
Frequency	58	24
Percentage	70.70%	29.30%

Regarding course relevance, student responses reveal a mixed perception. While slightly more than half of the respondents considered the English courses relevant to their academic and professional needs, a significant proportion expressed dissatisfaction. This suggests that although the course is partially effective, it does not fully meet student expectations, particularly in terms of communicative practice. Both students and teachers strongly agreed that the time allocated to English instruction is insufficient. Students highlighted the lack of opportunities for practice, especially speaking activities, while teachers emphasised that limited instructional time restricts interactive and communicative teaching approaches.

The study also revealed important institutional limitations. Teachers reported the absence of a standardized teaching programme, which requires them to design their own materials and adapt content independently. This reliance on self-prepared resources leads to inconsistencies in course delivery. Students identified several key challenges in ESP learning, particularly vocabulary overload, insufficient speaking practice,

heterogeneous classroom levels, and limited time. These difficulties directly affect learner engagement and confidence in using English.

Teachers reported similar challenges, including mixed-ability classes, lack of motivation, limited teaching time, and absence of collaboration with subject-specialist staff. A particularly significant issue is the lack of ESP-specific training among teachers, which affects their ability to design and deliver specialised courses effectively.

Finally, the document analysis shows partial alignment between institutional guidelines and ESP principles. While the official course description emphasises communication skills and professional language use, it lacks clarity in terms of progression, assessment methods, and differentiation between specialties. It also does not sufficiently address varying student levels.

Overall, the findings demonstrate strong agreement among stakeholders regarding the importance of English and ESP for engineering students. However, significant structural limitations remain, particularly in relation to instructional time, institutional support, teacher training, and curriculum design. These factors collectively reduce the effectiveness of ESP implementation at ENSA schools in Morocco.

5. Recommendations

Based on the findings of this study, several recommendations are proposed to improve the effectiveness of ESP teaching and learning at ENSA schools in Morocco. These suggestions are derived from students' and teachers' perceptions as well as the document analysis, and aim to address the main pedagogical and institutional challenges identified.

First, the number of instructional hours allocated to English courses should be increased. Both students and teachers consistently reported that two hours per week are insufficient to develop communicative competence, particularly speaking skills. Increasing contact time would allow for more interactive activities, sustained practice, and balanced development of the four language skills. This is especially important in ESP contexts where learners need both linguistic accuracy and communicative fluency in professional settings.

Second, ESP instruction should place stronger emphasis on communicative and task-based learning approaches. Students expressed a clear need for more speaking practice and interactive sessions. Therefore, classroom activities should include simulations of real engineering situations, presentations, group discussions, problem-solving tasks, and role-plays related to professional contexts. Such approaches would reduce passivity and help learners develop practical communication skills required in their future careers.

Third, vocabulary teaching should be carefully structured and reduced in overload. While technical vocabulary is essential in ESP, students reported difficulties related to excessive lexical input without sufficient practice. It is therefore recommended that vocabulary selection be prioritised based on relevance, frequency, and disciplinary

usefulness. Lexical input should also be recycled systematically through communicative tasks rather than being taught in isolation.

Fourth, institutional support for ESP teachers should be strengthened. The findings revealed a lack of standardised teaching programmes and insufficient pedagogical resources. Providing a clear, structured syllabus aligned with students' engineering specialities would improve consistency across classes and reduce the burden on teachers who currently design their own materials. In addition, access to updated ESP textbooks and digital resources should be ensured by the institution.

Fifth, specific training in ESP methodology should be offered to English language teachers. Many participants reported having no formal training in ESP teaching, which limits their ability to design effective materials and implement appropriate teaching strategies. Regular workshops, professional development sessions, and collaboration with ESP experts would significantly improve teaching quality and confidence in handling specialised courses.

Sixth, stronger collaboration between language teachers and subject-specialist teachers should be encouraged. The lack of coordination between these two groups was identified as a major limitation. Establishing interdisciplinary cooperation would help ensure that English courses are more closely aligned with engineering content and real academic or professional needs. Team-teaching initiatives or joint curriculum planning sessions could be introduced to facilitate this process.

Finally, English should be more firmly integrated into the institutional academic vision of ENSA. The study suggests that English is sometimes perceived as a secondary or marginal subject. Strengthening its status within the curriculum, along with clear learning outcomes and assessment criteria, would improve student motivation and institutional commitment to language learning.

Overall, these recommendations aim to enhance the quality and relevance of ESP instruction by addressing structural constraints, improving pedagogical practices, and reinforcing institutional support mechanisms.

6. Conclusion

This study examined English language needs among engineering students at ENSA Agadir, Morocco, through the perspectives of students, teachers, and institutional documentation. The findings revealed strong consensus on the importance of English, particularly within ESP contexts, and highlighted speaking as the most valued skill for academic and professional purposes. Both students and teachers preferred ESP over General English, emphasizing the need for discipline-specific language instruction. Despite this alignment, the study identified several persistent challenges. Limited instructional time, insufficient institutional support, lack of ESP training for teachers, and minimal collaboration between language and subject specialists were identified as key obstacles. Additionally, students reported difficulties related to vocabulary overload, limited interaction, and class heterogeneity, all of which negatively affect learning

outcomes. Document analysis further showed that while institutional intentions broadly support ESP principles, the actual course design lacks sufficient structure, consistency, and alignment with the full range of student needs. These gaps suggest that effective ESP implementation requires more than positive perceptions; it depends on coordinated institutional planning, adequate resources, and professional training. Overall, the study concludes that although ESP is recognized as essential within ENSA Agadir, Morocco, its current implementation remains constrained by structural and pedagogical limitations. Addressing these issues would contribute to a more effective, relevant, and sustainable English language program for engineering students.

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Conflict of Interest

The author declares that there is no conflict of interest.

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