

# CHALLENGES OF TEACHING FOREIGN LANGUAGES TO ENGINEERING STUDENTS

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## **Abstract:**

Engineering students are increasingly expected to operate in global contexts, making foreign language competence essential. However, teaching languages to engineering students presents unique pedagogical challenges. This study explores the main difficulties encountered by instructors and learners, as well as the strategies used to improve foreign language education in engineering programs. Using qualitative methods, the study identifies key barriers including low motivation, curriculum mismatch, and time constraints, while also highlighting best practices such as integrating ESP (English for Specific Purposes), CLIL (Content and Language Integrated Learning), and technology-enhanced learning.

**Keywords:** Foreign language teaching, engineering students, ESP, CLIL, language motivation, technical education, higher education, blended learning, STEM education.

## **Introduction**

In the era of globalization and international collaboration, engineers are often required to work in multicultural and multilingual environments. Proficiency in foreign languages—particularly English—is no longer optional but a key professional skill (Bocanegra-Valle, 2015). Despite this need, engineering curricula frequently overlook language instruction or treat it as peripheral to technical subjects. Engineering students often lack motivation to learn languages and find traditional methods irrelevant to their future careers (Tsagari & Sifakis, 2014).

This paper investigates the specific challenges of teaching foreign languages to engineering students and proposes pedagogical strategies to address them. It aims to support educators in designing more effective language courses that align with the academic and professional needs of STEM learners.

## Methods

A qualitative case study approach was employed to gather in-depth insights from both educators and students in engineering programs. Data were collected through:

- Semi-structured interviews with 12 language instructors teaching at technical universities in Europe and Central Asia.
- Focus groups with 30 engineering students enrolled in language courses.
- Classroom observations over a 10-week period.

Thematic analysis was used to identify recurring patterns, challenges, and strategies. Ethical approval was obtained, and all participants gave informed consent.

## Identified Challenges

1. Low motivation and perceived irrelevance: Students often viewed language courses as unrelated to their professional goals. Many expressed the belief that technical skills outweigh communicative competence in job markets.
2. Curriculum misalignment: Language instruction frequently lacked technical vocabulary or context, making it less applicable to real-world engineering settings (Evans & Morrison, 2011).
3. Time constraints: With packed schedules and demanding coursework, students had limited time and mental energy for language learning.
4. Traditional teaching methods: Grammar-heavy and literature-based instruction failed to engage students or develop practical communication skills.

## Effective Strategies

ESP (English for Specific Purposes): Tailoring courses to engineering contexts significantly improved engagement and performance.

CLIL approach: Combining technical content with language instruction helped contextualize vocabulary and foster meaningful learning (Coyle et al., 2010).

Blended and autonomous learning tools: The use of platforms like Moodle, Quizlet, and technical podcasts enhanced learning flexibility and appeal.

## Discussion

The most prominent difficulties in teaching foreign languages to engineering students:

- Most of the students think language classes are a waste of time because they don't see how English or any other foreign language helps them with coding or solving engineering problems.
- Students come to class, but they rarely engage in speaking activities. They are hesitant to participate because they think making mistakes will make them look less intelligent in front of peers.
- The textbooks we're given are mostly for general English. There's hardly anything about engineering. So, students get bored reading about travel and shopping.
- Engineering students are overwhelmed with lab work, programming assignments, and exams. It's difficult for them to commit time to language study.
- Many language teachers at technical universities don't have the background to teach technical vocabulary or understand engineering contexts.
- Our class has both beginners and advanced learners. It's hard for the teacher to balance the material so everyone learns something.

Use case studies, guest speakers, and industry examples to show students how language skills can open doors to international projects, conferences, and job markets. For example, a guest lecture by an engineer who works in an international team and uses a foreign language regularly can make the need for language skills more tangible. **Online learning platforms** (e.g., Moodle, Duolingo) or **language apps** to provide additional vocabulary, grammar exercises, and interactive learning tools. This allows students to review materials during their free time, helping them progress without overwhelming their schedules.

Implement **Content and Language Integrated Learning (CLIL)**. In CLIL, students learn technical content (e.g., engineering concepts) in the foreign language, helping them improve their language skills while engaging with the subject matter. For example, an engineering student might learn about circuit design in both their native language and English.

The findings highlight a critical disconnect between traditional language instruction and the specific needs of engineering students. Low motivation often stems from a failure to demonstrate the professional value of language skills. As noted by Dörnyei (2001), relevance is key to sustaining student motivation. Therefore, ESP and CLIL approaches offer promising alternatives by aligning content with students' academic disciplines.

Moreover, given the cognitive demands of engineering programs, language learning must be time-efficient and integrated with other subjects where possible. Institutions should invest in curriculum redesign, teacher training, and modern educational technologies to enhance learning outcomes.

While this study focuses on engineering students, the insights may apply to other STEM disciplines. Future research could explore comparative effectiveness of different methods across STEM fields and institutions.

## Conclusion

Teaching foreign languages to engineering students poses significant challenges due to curriculum overload, low motivation, and the perceived irrelevance of language skills. However, through context-aware methods like ESP and CLIL, along with technology-enhanced and project-based approaches, language education can be made both relevant and effective. A paradigm shift in curriculum planning and institutional support is crucial to ensure engineers are equipped with the communicative skills needed in a globalized workforce.

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