DEVELOPMENT OF FOREIGN LANGUAGE TERMINOLOGY BASE OF STUDENTS FOR ENGINEERING SPECIALTIES

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Abstract. The globalization of engineering activities has heightened the necessity for students to acquire a strong base of foreign language terminology specific to their field. This article explores various teaching methodologies, tools, and strategies to aid students in developing their foreign language terminology base for effective participation in international engineering projects. It highlights the challenges faced during the learning process and proposes solutions to enhance retention and practical application.

Keywords: foreign language, engineering terminology, education, teaching methods, technical vocabulary, language learning tools, contextual learning, student challenges;

MUHANDISLIK MUTAXASSISLIKLARI BO‘YICHA TALABALARNING CHET TILI TERMINOLOGIYASI BAZASINI ISHLAB CHIQISH.

Annotatsiya. Muhandislik faoliyatining globallashuvi talabalarning kasbiy xorijiy til terminologiyasini o‘zlashtirish zaruriyatini kuchaytirdi. Mazkur maqolada talabalarning muhandislik faoliyatida ishtirok etishi uchun xorijiy tildagi terminologiya bazasini rivojlantirishda turli o‘qitish metodlari, vositalari va strategiyalari o‘rganiladi. Shuningdek, o‘quv jarayonida uchraydigan qiyinchiliklar va bilimlarni mustahkamlash hamda amalda qo’llash uchun taklif etilgan yechimlar yoritiladi.

Kalit so‘zlar: xorijiy til, muhandislik terminologiyasi, ta’lim, o‘qitish usullari, texnik leksika, til o‘rganish vositalari, kontekstual o‘qitish, talabalarning qiyinchiliklari;

РАЗВИТИЕ ИНОЯЗЫЧНОЙ ТЕРМИНОЛОГИЧЕСКОЙ БАЗЫ СТУДЕНТОВ ИНЖЕНЕРНЫХ СПЕЦИАЛЬНОСТЕЙ

Аннотация. Глобализация инженерной деятельности усилила необходимость студентов в овладении базой иностранных терминов, специфичных для их области. В статье рассматриваются различные методологии обучения, инструменты и стратегии, которые помогают студентам развивать базу терминов для эффективного участия в международных инженерных

проектах. Освещаются трудности, с которыми сталкиваются студенты в процессе обучения, и предлагаются решения для повышения запоминания и практического применения.

Ключевые слова: иностранный язык, инженерная терминология, образование, методы обучения, техническая лексика, инструменты для изучения языка, контекстное обучение, трудности студентов.

Introduction. In an increasingly interconnected world, engineering has evolved into a global profession that requires engineers to collaborate across borders, participate in international projects, and access cutting-edge research published in different languages. As a result, the development of foreign language skills, particularly the mastery of engineering-specific terminology, has become essential for students in engineering specialties. Proficiency in technical terminology not only facilitates communication but also enhances the ability to comprehend technical documentation, participate in multinational teams, and contribute to globally distributed projects.

Engineering education traditionally emphasizes technical and analytical skills. However, the incorporation of language learning, particularly specialized vocabulary, is often overlooked despite its significant impact on students' career prospects and professional effectiveness. According to Smith (2020), language barriers can hinder the integration of professionals into international teams and limit their ability to engage with global research^1. This underscores the importance of developing a comprehensive terminology base that enables engineering students to communicate effectively and understand complex engineering concepts in a foreign language.

Effective terminology learning goes beyond rote memorization; it requires contextual and practical application to ensure long-term retention and accurate usage. The current landscape of education provides various tools and strategies for this purpose, ranging from traditional teaching methods to digital platforms and interactive workshops. Digital tools such as SDL MultiTerm and Quizlet, coupled with multimedia and project-based learning, have shown promise in addressing the challenges associated with terminology learning.

This article seeks to explore the methodologies, tools, and strategies for developing a robust foreign language terminology base for engineering students. It also discusses the common challenges faced by students, such as the sheer volume of terms and the difficulty in applying them contextually, and proposes solutions to overcome these obstacles. By adopting a blended approach that incorporates both traditional and modern learning techniques, educators can better prepare engineering students for the demands of a globalized profession.

Literature Review. Previous research highlights the importance of specialized language skills in engineering education. According to Brown (2019), integrating technical vocabulary within engineering coursework has shown a positive impact on comprehension and retention [1, pp 150-154]. Studies by Carter (2021) emphasize the role of interactive, contextual learning strategies in enhancing language acquisition [2, pp 87-95]. Further, Morgan (2022) discusses the challenges students face in mastering

extensive terminology and stresses the need for innovative teaching approaches [4, pp45-50].

Contemporary methods include the use of digital tools such as terminology management systems, multimedia content, and language learning applications [5, pp 134-140]. Researchers like Fischer (2021) argue that technology-supported learning, such as gamified vocabulary training, increases engagement and retention [6, pp 180-185].

Research Methodology. This study employs a mixed-method approach comprising qualitative and quantitative methods. The research involved:

- Participants: 100 engineering students from three universities were selected, with equal representation from mechanical, electrical, and civil engineering disciplines.
- Data Collection: Surveys were conducted to assess students' prior exposure to foreign language terminology and their preferred learning methods. Focus group discussions and individual interviews were conducted to gather insights into learning challenges.
- Intervention: Students underwent a 6-week training program utilizing a combination of contextual learning, digital tools (e.g., SDL MultiTerm and Quizlet), and interactive workshops.

Analysis and Results.

Quantitative Findingsıo The study's quantitative data focused on the changes in students' performance before and after the 6-week intervention program designed to build their foreign language terminology base. Key data points include:

a) Pre-Training Performance: Students' initial assessments, conducted through multiple-choice quizzes and translation exercises, showed an average score of 52%. This highlighted a significant gap in their ability to recognize and use engineering terminology effectively in a foreign language.

b) Post-Training Performance: Following the completion of the program, students demonstrated substantial improvement, with average scores increasing to 78%. Statistical analysis using paired sample t-tests confirmed the significance of this result ($p < 0.01$), supporting the effectiveness of the methodologies implemented.

Breakdown by Teaching Methods

Analysis of the impact of different teaching methodologies revealed:

c) Contextual Learning: Students who engaged with case studies and real-world engineering problems that integrated the target vocabulary showed the highest improvement, with average test scores rising by 35%. This method reinforced their understanding of terminology in practical situations, enhancing retention and application.

d) Interactive Workshops: Group activities such as role-playing and collaborative projects contributed to an increase in scores by 30%. Students reported that these workshops helped them better understand the functional use of terms, fostering both memorization and spoken proficiency.

e) Digital Tools: The use of platforms like SDL MultiTerm and Quizlet accounted for a 25% improvement in test scores. These tools allowed for repetitive practice and active recall, key techniques for vocabulary retention. However, feedback indicated

that initial difficulties with navigating the software reduced their effectiveness for some students until familiarity was achieved.

Qualitative Findings

Through focus group discussions and individual interviews, several insights were uncovered:

- Student Engagement: Over 70% of the participants expressed that the inclusion of digital tools and interactive methods made learning more engaging compared to traditional rote learning.

- Retention Challenges: Students initially struggled with the overwhelming number of terms. However, those who utilized spaced repetition software found it easier to retain information over the 6-week period.

- Practical Application: Students highlighted that integrating terms within project-based tasks and simulations helped them see the relevance of vocabulary, leading to more meaningful learning.

Common Themes:

- Positive Impact of Contextual Learning: The approach of learning vocabulary within the context of real-world problems proved to be the most effective, aligning with the findings of Brown (2019) and Carter (2021).

- Barriers to Learning: Initial technical difficulties with digital tools and software navigation presented barriers, though these were mitigated through guided tutorials and peer support.

Table 1

Methodology	Average Improvement	Key Insights
Contextual Learning	+35%	Most effective method; real-world examples helped students understand and apply terminology in context.
Interactive Workshops	+30%	Enhanced practical use and memorization; group activities improved engagement and spoken proficiency.
Digital Tools (e.g., SDL MultiTerm, Quizlet)	+25%	Supported vocabulary retention through active recall; initial software challenges noted by students.

Conclusion. This study demonstrates that a well-rounded approach to teaching foreign language terminology in engineering education can significantly enhance students' learning outcomes. The combination of contextual learning, interactive

workshops, and digital tools led to improved retention and application of technical vocabulary, essential for successful participation in international engineering activities.

Key Findings:

- Contextual and Interactive Methods: Methods that simulate real-life engineering scenarios and encourage collaboration were most effective in helping students internalize and apply new terminology.
- Digital Tool Integration: While digital platforms support the learning process through spaced repetition and active recall, their effectiveness relies on user familiarity and comfort.
- Addressing Challenges: Initial struggles with software use and the extensive volume of terminology can be mitigated by a gradual introduction to tools and focused, repetitive practice.

Recommendations:

- Hybrid Teaching Approach: Educators should consider blending traditional teaching with digital and interactive methods to maximize learning.
- Training on Digital Platforms: Providing preliminary training on the use of software and tools can enhance their effectiveness.
- Regular Practice: Implementing regular terminology review sessions can help reinforce learning and prevent the loss of acquired knowledge.

Future Research Directions: Further research could explore the long-term impact of these teaching strategies on professional performance and the integration of terminology learning into workplace training programs. Additionally, studies could examine the scalability of these methods for different engineering subfields and levels of language proficiency.

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