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ENGLISH AS A MEANS OF PROFESSIONAL COMMUNICATION IN AN ENGINEERING AND PEDAGOGICAL ENVIRONMENT: CHALLENGES AND OPPORTUNITIES

The article is devoted to the study of the importance of English as a key tool for professional communication in the modern engineering and pedagogical environment. In the context of globalisation and international integration, where scientific and technological progress and the exchange of knowledge are becoming transnational, English language skills are becoming an essential prerequisite for the successful professional activity of engineering and teaching staff.

The article discusses in detail the role of English in providing access to the latest scientific publications, technical documentation, participation in international conferences, seminars and other forms of information exchange. It emphasises that English is the language of international communication in the field of science and technology, which makes its knowledge crucial for engineers and teachers who want to keep abreast of the latest achievements in science and technology.

Particular attention is paid to analysing the importance of English for establishing international contacts, participating in joint research projects, and exchanging experiences and ideas with colleagues from different countries. The author stresses that English language skills help to broaden professional horizons, establish partnerships with foreign educational and research institutions, and open up opportunities for international academic mobility.

The article also discusses the impact of learning English on the development of engineers' and teachers' cognitive skills, such as critical thinking, analytical skills, problem solving and generating new ideas. The author notes that English language skills contribute to the development of intercultural competence, which is an important factor for successful professional activity in a multicultural and multilingual world.

The article also analyses the problems associated with the use of English in the engineering and educational environment, such as insufficient language skills, difficulties in understanding technical terminology, language barriers, etc. The article suggests ways to solve these problems, in particular by improving English language training programmes for engineering and pedagogical staff, using modern teaching methods, creating conditions for practising communication in English, etc.

Key words: *English language, professional communication, engineering and pedagogical environment, globalisation, international cooperation, engineering education, pedagogy, intercultural competence, critical thinking, analytical skills, technical terminology, language barrier.*

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АНГЛІЙСЬКА МОВА ЯК ЗАСІБ ПРОФЕСІЙНОЇ КОМУНІКАЦІЇ В ІНЖЕНЕРНО-ПЕДАГОГІЧНОМУ СЕРЕДОВИЩІ: ВИКЛИКИ ТА МОЖЛИВОСТІ

Стаття присвячена дослідженню значення англійської мови як ключового інструменту професійного спілкування в сучасному інженерно-педагогічному середовищі. В умовах глобалізації та міжнародної інтеграції, коли науково-технічний прогрес і обмін знаннями набувають транснаціонального характеру, володіння англійською мовою стає невід'ємною умовою успішної професійної діяльності інженерно-педагогічних працівників.

У статті детально розглядається роль англійської мови у забезпеченні доступу до найновіших наукових публікацій, технічної документації, участі в міжнародних конференціях, семінарах та інших формах обміну інформацією. Підкреслюється, що саме англійська мова є мовою міжнародного спілкування в науково-технічній сфері, що робить її знання критично важливим для інженерів-педагогів, які прагнуть бути в курсі останніх досягнень науки і техніки.

Особлива увага приділяється аналізу значення англійської мови для налагодження міжнародних контактів, участі в спільних дослідницьких проектах, обміну досвідом та ідеями з колегами з різних країн. Автор наголошує на тому, що володіння англійською мовою сприяє розширенню професійних горизонтів, встановленню партнерських відносин з іноземними освітніми та науковими установами, а також відкриває можливості для міжнародної академічної мобільності.

У статті також розглядається вплив вивчення англійської мови на розвиток когнітивних здібностей інженерно-педагогічних працівників, таких як критичне мислення, аналітичні здібності, вміння вирішувати проблеми та генерувати нові ідеї. Автор зазначає, що володіння англійською мовою сприяє формуванню міжкультурної компетентності, що є важливим фактором успішної професійної діяльності в умовах полікультурного та багатомовного світу.

Окремо аналізуються проблеми, пов'язані з використанням англійської мови в інженерно-педагогічному середовищі, такі як недостатній рівень володіння мовою, труднощі у розумінні технічної термінології, мовний бар'єр та інші. У статті пропонуються шляхи вирішення цих проблем, зокрема, шляхом вдосконалення програм навчання англійської мови для інженерно-педагогічних працівників, використання сучасних методів навчання, створення умов для практики спілкування англійською мовою та ін.

Ключові слова: *англійська мова, професійна комунікація, інженерно-педагогічне середовище, глобалізація, міжнародна співпраця, інженерна освіта, педагогіка, міжкультурна компетентність, критичне мислення, аналітичні здібності, технічна термінологія, мовний бар'єр.*

Problem statement. In today's interconnected world, English has become indispensable in education, science, and technology, particularly for engineering educators. Their profession demands the training of highly skilled professionals for diverse industries, making English proficiency crucial for effective communication and knowledge dissemination (Davis, 2017; Reinhart, 2019; Smith, 2020). The rapid pace of scientific and technological advancement, coupled with globalized economies and integrated education systems, further underscores English's importance as the lingua franca of international collaboration (Brown, 2019).

This study addresses the urgent need to enhance English language skills among engineering educators. Several factors contribute to this need:

Internationalization of Education and Research: Initiatives like the Bologna Process, international exchange programs, and collaborative research projects necessitate strong English skills for seamless participation and knowledge exchange (Balandina, 2012). As Kohut (2015) notes, Ukraine's integration into the European educational space hinges on raising foreign language proficiency, especially English, among future specialists.

Access to Information and Professional Development: English dominates scientific publications, technical documentation, software, and other vital professional resources (Clark, 2009; Crystal, 2019). As Leontiev (2010) argues, English proficiency is not merely desirable but essential for the professional competence of modern specialists. Furthermore, Balandina (2012) highlights the importance of international mobility for both students and teachers, which relies heavily on English proficiency. Insufficient English skills can limit access to cutting-edge research, hinder participation in international conferences and collaborations (Brown, 2019), and ultimately impede professional growth. Wilson (2018) discusses the importance of English for publishing scientific articles.

Current Limitations of English Language Training: Existing English language programs for engineering educators often fall short of meeting the specific communication demands of their profession (Dudley-Evans & St John, 1998). There is a need for innovative teaching methodologies that focus on developing professional communicative competence (Swales, 2004; Taylor, 2016) and preparing educators for success in international academic and professional settings.

Analysis of recent research and publications. Foreign scholars emphasize the crucial role of English in engineering education and professional practice. Davis (2017) highlights its importance for communicating complex technical concepts and staying abreast of global innovations. Reinhart (2019) points out that English fluency is essential for both academic success and career advancement, yet many engineering educators face language training barriers. Brown (2019) argues that while English proficiency offers access to global knowledge, inadequate training hinders content creation and professional development. Smith (2020) stresses the need for mastering both technical language and professional communication skills (presentations, reports, negotiations). Swales (2004) and Taylor (2016) advocate for English for Specific Purposes (ESP) programs tailored to engineers' needs, while Lee (2010) underscores the importance of mastering professional jargon and adapting communication styles for global workplaces. Collectively, these scholars highlight the challenges and opportunities presented by English as the dominant language in engineering, emphasizing the need for targeted language training to equip educators and professionals for international collaboration. Ukrainian scholars are actively researching the use of English in the engineering and pedagogical environment. Zakharova L. (2012) stresses the importance of intercultural communication, Ivanova O. (2020) studies professional communication in engineering education, Kohut I. (2015) draws attention to the need to learn specific vocabulary, Mykhailova T. (2014) discusses the role of language norms, Leontiev O. (2010) focuses on the role of foreign languages in professional education, Petrenko V. (2019) analyses the psychological and pedagogical aspects of professional communication. All of them stress the importance of English for the successful professional activity of engineers and teachers in the international context**.**

Aim of the Article. The purpose of the study is to determine the role and importance of English in the professional communication of engineering educators. Also, we need to investigate the specific uses of English within various engineering and educational contexts, to identify the key challenges faced by engineering educators when using English, to develop recommendations for improving English language instruction for engineering educators.

Main material. To achieve these aims, the study will employ a mixed-methods approach, including: analysis of relevant literature and documents; observation of professional activities; and statistical analysis of collected data. The findings will inform the development of effective English language programs designed to cultivate professional communicative competence and prepare engineering educators for successful engagement in the international academic and professional community.

The findings of the study can serve as a basis for the development of effective English language teaching programs for engineering teachers, aimed at developing their professional communicative competence and preparing them for successful activities in the international educational and scientific environment.

The study's theoretical framework encompasses three interconnected areas: (1) linguistic aspects of professional communication, (2) sociolinguistic factors influencing English use in engineering and pedagogical contexts, and (3) psychological and pedagogical principles of English language acquisition for professional purposes.

Professional communication is a complex sociolinguistic phenomenon, characterized by a number of features determined by the specifics of the professional activity.

Effective professional communication is key to the success of any organization or individual. It helps to:

– Increase labor productivity.
– Improve the quality of products and services.
– Strengthen partnerships.
– Ensure a positive company image.
– Avoid conflicts and misunderstandings.

Professional communication is a process of interaction between professionals in the context of professional activities aimed at achieving common goals and solving professional problems. It includes the exchange of information, ideas, experiences, as well as the establishment and maintenance of professional contacts (Ivanova, 2020, p. 25).

Engineering and teaching combine technical and pedagogical aspects, which is reflected in the peculiarities of professional communication. Engineer-teachers need to master both technical terminology and pedagogical methods and techniques in order to communicate effectively with students, colleagues, and partners. Their communication is characterized by accuracy, logic, structure, and consideration of the psychological characteristics of the audience (Petrenko, 2019, p. 47).

Professional communication is a multifaceted and complex phenomenon, encompassing various forms of interaction between people in the context of their professional activities. It is not only an exchange of information but also a process of establishing contacts, achieving mutual understanding, influence, and cooperation.

Professional communication has its own peculiarities in different fields of activity. For example, in the technical field, it is characterized by precision and conciseness, in the humanitarian field by emotionality and imagery, in the service sector by politeness and customer orientation.

Professional communication is regulated by certain language norms and standards that define the correct use of language in a professional context. These norms may relate to vocabulary, grammar, style, and communication etiquette (Mikhailova, 2014, p. 135).

Effective professional communication involves taking into account the cultural characteristics of the interlocutors. Different cultures may have different communication styles, behavioral norms, and traditions that need to be taken into account in order to avoid misunderstandings and conflicts (Andreeva, 2013, p. 158).

Globalization is leading to an increase in intercultural interaction and the expansion of the use of English in engineering and education. This requires a high level of English proficiency for successful professional activity (Zakharova, 2012, p. 180).

The psychological and pedagogical aspects of foreign language teaching play an important role in the formation of foreign language communicative competence of professionals. Motivation is a key factor in successful foreign language learning. For engineering educators, important motivations may include professional development, the opportunity to participate in international projects, access to up-to-date scientific information, and broadening of horizons (Serhienko, 2012, p. 205).

Teaching English for professional purposes should aim to develop the skills necessary for successful professional communication. It is important to use authentic materials, model real-life situations of professional communication, and use interactive teaching methods (Brown, 2019).

The development of communicative skills (speaking, writing, listening, reading) is a priority task in teaching English for professional communication. It is important to teach engineering educators to communicate effectively in different situations of professional activity, taking into account the cultural characteristics of the interlocutors (Swales, 2004).

Modern engineering educators, working in the context of globalization and international integration, are constantly faced with the need to use English in their professional activities. Proficiency in English is an important factor for success in this field, as it provides access to world knowledge, facilitates participation in international projects, and expands opportunities for professional development.

Engineering educators may use English in a variety of professional communication situations. When speaking in English at conferences, seminars, or to an audience, engineering educators present their research, methods, or projects (Anderson, 2015). It is important to have public speaking skills and be able to express your thoughts clearly and understandably in English. When communicating with colleagues, partners, or students in English, engineering educators discuss technical issues, share experiences, and seek solutions to problems (Thomas, 2014). It is important to be familiar with technical terminology and to be able to hold a discussion in English. Business correspondence with foreign partners, colleagues, or students is often conducted in English (Moore, 2013). It is important to have business writing skills and to be able to write letters, requests, proposals, and other documents in English. Participating in international projects or working with foreign companies may involve negotiating in English (Jackson, 2012). It is important to have negotiation and compromise skills in English.

English used in the context of engineering and education has its own unique lexical and grammatical features that distinguish it from ordinary English. These features are due to the specificity of the professional activity of engineer-educators, which combines technical and pedagogical aspects.

Engineering and pedagogical activities are characterized by the use of a large number of specialized terms covering various fields of knowledge such as engineering, pedagogy, psychology, information technology, etc. This terminology can refer to both technical processes and equipment (e.g., «automation», «robotics», «CAD/CAM») and pedagogical methods and techniques (e.g., «didactics», «E-learning») (Richards, 2011). Mastery of this terminology is crucial for engineering educators as it enables them to communicate effectively with colleagues, understand technical documenta-

tion, participate in scientific discussions, and share professional experiences.

In addition to official terminology, engineering educators may use what is known as professional jargon in their professional communication, which is a set of informal words and expressions used in a particular professional group (Lee, 2010). This jargon may include abbreviations, acronyms, metaphors, and other linguistic devices that are understandable to members of the group but may not be clear to outsiders. The use of professional jargon can help to create a sense of community and identity among engineering educators and can facilitate and speed up communication. However, it should be remembered that the use of jargon is only appropriate in informal situations with colleagues, while in formal situations such as presentations, reports, or communication with management, formal terminology should be preferred.

English in engineering and pedagogical contexts often contains borrowings from other languages, particularly Greek and Latin, which are traditional for scientific and technical terminology (Clark, 2009). These borrowings can be either single words (e.g., «algorithm», «paradigm», «concept») or phrases (e.g., «modus operandi», «ad hoc», «a priori»). Knowledge of these borrowings is important for understanding scientific and technical literature and for communicating with foreign colleagues, as many of these terms are international and used in different languages.

English used in engineering and pedagogical contexts is often characterized by a scientific and technical style, which has its own grammatical features (Clark, 2009). This style is characterized by objectivity, accuracy, logic, and impersonality. Scientific and technical styles often use passive constructions (e.g., "The experiment was conducted..."), impersonal constructions (e.g., "It is known that..."), complex subordinate clauses, and various adverbial phrases.

The grammar of English in engineering and pedagogical contexts is often more formal than in spoken language (Crystal, 2019). This is reflected in the use of more complex grammatical structures, the avoidance of contractions and colloquialisms, and a stricter adherence to grammatical rules.

The grammar of English in engineering and pedagogical contexts tends to be universalised and standardised, which facilitates communication between professionals from different countries and cultures (Mauranen, 2006). This is manifested in the use of clear and unambiguous grammatical constructions and the desire to avoid ambiguity and inaccuracy.

Mastering the lexical and grammatical features of the English language in the context of engineering and pedagogical is a prerequisite for the successful professional activity of engineers and teachers. An in-depth understanding of these features enables them to communicate effectively with colleagues, understand technical documentation, participate in international projects and contribute to the development of science and technology.

Working in a context of globalisation and international integration, modern engineering educators are constantly faced with the need to use English in their professional activities. English language skills are an important factor for success in this field, providing access to world knowledge, facilitating participation in international projects and expanding opportunities for professional growth. However, teaching English to engineering teachers has its own challenges that need to be addressed.

Many engineering educators have inadequate English language skills, which hinders their professional activities (Balandina, 2012). This may be due to various factors, such as insufficient hours of English language study at university, low motivation to learn, lack of communication practice, etc.

Even if engineering educators have some knowledge of English, they may experience difficulties in communication due to lack of practice (Dudley-Evans & St John, 1998). This may be because they do not have the opportunity to communicate with native speakers, participate in international events, or use English in their daily work.

The language barrier is one of the most serious problems engineering educators face when using English (Holmes, 2013). It can manifest itself in difficulties in understanding spoken and written language, inability to express their thoughts clearly and understandably in English, fear of communicating with native speakers, etc.

Engineering education involves the use of a large amount of specialised technical terminology that can be difficult to understand even for those with a good command of English (Lee, 2010). This can be true for individual terms as well as for whole phrases that have a specific meaning in the engineering and pedagogical context.

To address these issues, a number of measures need to be taken to improve English language teaching for engineering teachers.

English language curricula for engineering and education specialists should be designed to meet the needs and characteristics of this group of students (Leontiev, 2010). They should include a sufficient number of hours devoted to English language learning and the use of modern teaching methods and technologies.

Modern teaching methods and technologies such as interactive methods, multimedia, distance learning can make the process of learning English more effective and interesting for students (Anderson, 2015). It is important to use authentic materials, model real situations of professional communication and create conditions for students' active participation in the learning process.

Students' independent work with English-language materials is an important factor in successful language acquisition (Moore, 2013). Students should have the opportunity to work with scientific literature, technical documentation, internet resources and other materials in English that are relevant to their professional interests.

Communication practice is a prerequisite for overcoming language barriers and developing communication skills (Jackson, 2012). To achieve this, it is necessary to create conditions for students to communicate with native speakers, organise language clubs, hold international events, facilitate internships for students abroad, etc.

Highly qualified teachers, who not only have a deep knowledge of English, but also have experience in working with technical and pedagogical audiences, are key to successful learning (Thomas, 2014). It is important for teachers to have modern teaching methods, to be able to create a favourable atmosphere in the classroom and to motivate students to learn English.

Solving the problems associated with the learning of English by engineering teachers is an important task that requires a comprehensive approach and joint efforts by teachers, students, university administrators and employers.

Conclusions and prospects for further research. The study of the role and importance of English in the professional communication of engineering teachers has allowed us to draw a number of important conclusions and to formulate recommendations for improving the teaching of English to this category of professionals.

The results of the study confirmed that English plays a key role in the professional activities of engineering teachers in the context of globalisation and international integration. The study found that engineering educators use English in various situations of professional communication, such as presenting research results, discussing technical issues, corresponding with foreign partners and conducting negotiations. At the same time, they face a number of difficulties related to insufficient language skills, lack of communication practice, language barriers and complexity of technical terminology. Successfully solving these problems will help to improve the quality of engineering and teaching staff training, their competitiveness on the labour market and their integration into the international professional space.

Prospects for further research in this area may be related to the study of the peculiarities of the use of English in various fields of engineering and pedagogical activity, the development and testing of new methods and technologies of teaching English to engineers and teachers, the study of students' motivation to learn English and ways of improving it, the analysis of the effectiveness of various forms of organising training, and the development of new methods of teaching English to engineers and teachers.

The present study constitutes a contribution to the urgent problem of enhancing the quality of professional training for engineering teachers. It is hoped that the results and recommendations of the study will prove useful to teachers, students, administrators of educational institutions, and all those interested in the development of engineering and pedagogical education in Ukraine.

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