Peculiarities in teaching engineers of a technological university English for professional purposes

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Abstract. Some issues of a foreign language teaching to physicist students of an engineering university are considered. The value of foreign languages (FL) teaching in the development of an engineer as a specialist is outlined, differences in the existing concepts of teaching foreign languages are formulated. The features and areas of technical FL application are identified using the example of the English language. The features and difficulties of engineers foreign languages training are identified, and ways of solving existing problems are outlined. The most promising and effective methods of preparation of physicist students are determined. The need of qualitative changes in foreign languages teaching of physicist students is substantiated, in order to improve the level of their foreign language proficiency and the possibility of its practical use in future professional activities.

1. Research relevance
In modern society, foreign languages teaching has the state, the social and the personal value [1]. The inclusion of Russia in the international division of labor, active migration exchange and the Russian scientific and technical sphere state make us pay more and more attention to foreign languages teaching [2]. Not least this concerns technical and technological universities students. Foreign language proficiency, primarily English, increases the competitiveness of a engineering university graduate in the labor market. The successful solution of professional growth issues largely depends on the quality of their language training. Intercultural knowledge in economics has long ceased to be a competitive advantage, but has become a social necessity [3].
A foreign language is an expanding information and educational environment, which involves the use of a variety of methods, techniques and modern means of teaching and assessing students [4].

2. Modern trends in foreign language teaching
In recent decades, the communicative direction has been the main one in foreign languages teaching, as opposed to traditional approaches [5, 6]. However, this approach is now increasingly combined with a systemic concept in teaching. This allows students to form a holistic picture of national culture and to better understand a particular language features [7].
Unfortunately, it is impossible to achieve the results that the future employer expects to see, without the students’ interest in FL studying and significant independent work in the framework of higher education [8].
Of course, there are no such educational methods that would guarantee the successful mastering of a foreign language in 100% of cases. In the course of training, it is necessary to take into account the students' proficiency initial level, their general cultural and professional erudition, the availability of technical and material means of education, the place of the discipline in the curriculum [9].

In addition, the requirements for the university graduates' language proficiency are constantly growing. It leads to an increase in the teaching staff requirements. It is necessary to know not only the studied language, but also modern educational methods, psychological and pedagogical characteristics of the students' age groups [10].

Upon graduation, the student has to be ready for business and professional communication, be able to independently work with special literature in a foreign language to obtain the necessary information.

Achieving these results is impossible when using only modern or only traditional teaching methods [11].

3. Applications and features of technical English

English is one of the most popular languages of our time. It is spoken by about 2 billion people, primarily in the developed countries of the West and the former Great Britain colonies of around the world (USA, Canada, Australia, India, New Zealand) [12]. Thanks to this wide territorial coverage, English is used as the language of international communication. In a number of industries (IT, electronics, mechanical engineering, pharmaceuticals, biotechnology, chemical industry, nanotechnology), new developments are published primarily in English, which makes its proficiency a key competitive advantage [13]. In this case, we are talking about technical English, which is different from the classical literary language. Sometimes even a native speaker cannot understand specialized technical literature. It is possible to work with technical texts only when the field of activity itself is mastered, and the peculiarities of using the technical language are clear. Complex technical texts require both an entire context understanding and a vast scientific knowledge base [14].

Stylistically, technical texts in English differ significantly from Russian versions. In this regard, when translating, it is necessary to take into account the existing linguistic structures and expressions, literal translation is not always applicable. So, in the Russian language, the impersonal "required", "necessary", "should", etc. are traditionally used. In the English technical language, on the contrary, the active voice is widely used, which distinguishes it stylistically from the Russian-language scientific literature and technical documentation [15].

In a number of texts in English, constructions are widely used, which are distinguished by a complex structure and the impossibility of identifying cause and effect. In such cases, it is necessary to break the text into simpler parts while preserving the meaning and interconnections of the subject. This once again confirms the importance of knowing the processes and phenomena technical essence described in the text.

In addition, the complexity of working with English technical texts is enhanced by the frequent abbreviations use, which are often not obvious to the Russian-speaking reader. This requires a specialist with a broad outlook and practical experience in the area under consideration [16].

For example, in the actively developing field of production of numerical control (CNC) machining, a number of terms are used. It can cause difficulties for a specialist who speaks literary but not technical English. For example, most often "shuttle" is used to mean "space vehicle". In the technical literature, this term is understood as a receiver of signals from a wireless control panel of a CNC machine (MPG pendant).

The acronyms used in this area can be even more difficult, for example:

- MCU — CNC machine control unit;
- VFD — variable frequency drive, converter;
- PWM — pulse width modulation.
In some cases, one abbreviation can be used in different technological areas with different meanings. For example, CAD can mean a computer-aided design system or tool height sensor.

4. **Engineers FL training features**

Studies carried out in engineering universities to determine the level of language training of students indicate that most of them do not speak a foreign language to the degree required for professional written and spoken communication, including interactive communication with modern equipment [17].

The process of foreign languages teaching in engineering universities encounters certain obstacles that do not allow optimizing the learning process [18]:

- low quality and incorrect orientation of teaching aids: either they are physically and morally obsolete materials, or humanitarian materials, far from the realities that future engineers have to deal with. Most foreign publications are commercial products with good design and modest content. Their main goal: to facilitate adaptation for Russian personnel during migration to the West;
- insufficient qualifications of the teaching staff, humanitarian mindset, unwillingness to work with new educational technologies;
- lack of modern material and technical means;
- different levels of foreign language proficiency among first-year students; lack of student interest and, as a result, lack of self-training and self-improvement.

The graduate knowledge level directly depends on the teacher, who must rely on modern literary sources and reliable Internet resources, use innovative technologies and modern systems and means of assessing students' work, implement a personality-oriented approach in foreign languages teaching, use a systematic approach when foreign languages teaching at an engineering university in order for a graduate to be competitive in the labor market [19].

Educational material perception is the student's understanding and ability to determine:

- thematic affiliation of the material under consideration, its structure and parameters;
- the type of tasks and the possibility of applying the theory;
- the composition and sequence of the necessary actions for their implementation.

It is known that the quality of emerging knowledge depends on many factors and at the same time significantly differentiates in the audience. Therefore, in addition to the quality of the source material and its broadcast, it is necessary to ensure the functioning of a feedback mechanism with an assessment of not only what is perceived, but also the level of perception [20].

All this necessitates qualitative changes in foreign languages teaching to students of non-linguistic specialties, in order to improve the level of their foreign language proficiency and the possibility of its practical use in future professional activities.

5. **Conclusion**

The existing contradictions between the growing requirements for the foreign language proficiency of graduates of technical and technological specialties and their real inability to practically use a foreign language in the professional sphere proves the need to solve problematic issues in foreign languages teaching, and explains the urgency of this problem.

Physicist students have insufficiently developed skills to formulate and explain their thoughts in English, to substantiate their professional positions, as well as the ability to conduct an extended conversation with foreign colleagues in professionally oriented communication situations, to deliver reports at international conferences, etc.

The most promising and effective methods of preparation for mastering professionally-oriented English in the course of this study are: well-organized independent extracurricular work of physicist...
students; use of interactive and multimedia training platforms; taking into account subjective motivational components in the learning process on the part of each student.

A promising direction for further research is the study of using the Internet in the course of teaching English to students.

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