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**NEW APPROACHES IN FOREIGN LANGUAGE TEACHING  
FROM CONFIDENT STUDENTS TO EXPERIENCED ENGINEERS**

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***Abstract***

This article studies the problems of contemporary engineering education that should be aimed at enabling future specialists to meet demands of developing industry and society. One of the most important factors of a good and effective education is a curriculum. Unfortunately, at present there is a gap between existing curriculum and the demands for foreign language learning. The paper focuses on creating new curriculum content in teaching foreign languages that would help the students of Moscow polytechnic university acquire sound learning skills. The content of the curriculum is closely connected with students' professional engineering training. The teacher's role isn't only to impart knowledge, but to facilitate the process of learning. That's why the so called "educational trajectory" was created to develop students' communicative skills. According to this trajectory, first year students start learning general technical vocabulary and reading rather simple technical texts. During the second stage they proceed to mastering their professional vocabulary. The next compulsory course introduces the students to "Business English" that includes such topics as company structure, management development, changing careers, describing and evaluating the products. As a result, the learning motivation of students has grown noticeably as the new curriculum meets the demands of future specialists who are to live in the age of information and digital technologies.

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## 1. Introduction

Over recent years there have been great changes in higher educational system that are caused by the impact of globalization on the development of our society, culture and technological processes, such as information and digital technologies. Existing society is considered to be a learning society which pursues the strategy of studying during the whole period of life. Therefore, there is a constant and continuous growing need for better educational system around the world that will meet the demands of the future. However, even in its current state, education remains one of the most important sectors of our society, its main tasks being the expansion of educational institutions, the development of new curricula that will better match demands of job market, the reduction of instruction and training costs through new educational technologies.

The system of education has three components: the content (what to study?), the methods (how to study?), and the aims (why to study?). The educational content, methods and aims must be based on the most recent social, scientific and technological achievements in order to train well-rounded socially responsible, educated and creative engineering specialists who will become the mainspring in the county's future scientific and technological development (O'Hara, 2017). In the modern world the ability to think out of the box and perform professional duties using creative approach is considered to be the cornerstone of a modern professional, which, is one of the main goals of the contemporary education. This should allow graduates to become not only more competitive at the labour market, but also provide basis for innovative and competitive economy in Russia. The development of individual's creativity is directly connected with the development of individual's potential abilities and purposeful teaching him/her the methods of creative activities. Obviously, the humanities can play the most important role in the development of a creative person, foreign language teaching being one of them.

## 2. Problem Statement

The improvement in foreign language training at the university is one of the most important trends in higher education modernization, the necessity of which has always been the primary concern. There are some reasons of foreign language learning by students of engineering professions. They include the processes of globalization in the modern world; the development of innovation and digital technologies; the transition to the communicative environment; the processes of modernization in the field of education and new teaching technologies. Every time creates its own world in which we live and the aim of education is to teach a person how to live in this new and changing world. The education plays a key role in bringing up a future specialist who will be able to contribute to the further development of all fields of science (Riemer, 2002; Siemens, 2015; Byung-Jun, 2017).

Education policy in our country is directed at giving the students a solid foundation in engineering education and obtaining the best possible results in their specialty. It is obvious that learning a foreign language must be closely connected to the content of professional disciplines.

Nowadays in Russia a lot of people from students to experts are interested in learning foreign languages because it helps them to be well aware of the latest scientific achievements. Learning a foreign language should meet social and personal requirements of different categories of people and this is one of

the main tasks of contemporary education. It is also very important to teach young specialists to use a foreign language in different situations such as:

- taking part in international educational programs on academic mobility;
- the work in foreign companies, including international companies;
- interaction with foreign partners on the problems of production;
- the solution of different tasks requiring of foreign language knowledge;
- the exchange of professional knowledge and experience with colleagues from foreign countries;
- the search for information from different sources (printed and electronic) (Sharifian, 2013; Matienko, 2016).

In the Federal State educational standards of higher education there are the following requirements for foreign language competences which students will gain under the influence of the traditions that exit in teaching foreign languages in our country; European requirements for educational environment; Russian professional standards of education.

Foreign language competence of future engineers considers further professional competence development as well as the necessary conditions for his/her professional activity. What does a professional competence mean? Firstly, it is the ability of a person to organize his/her foreign language activity in different situations of professional communication. Secondly, it describes what someone can do, but it doesn't describe the learning process which a person has to undergo. Thirdly, if competence is concerned with doing then it must have a context (Smith, 2005).

Foreign language activity of engineering students includes such components as storage and analysis of information on different problems in the fields of technology, the formation of thesaurus and skills necessary for carrying out professional activity. Engineering education must help a student to meet demands in different branches of industries. To do so it is necessary to acquire a wide range of knowledge and develop technical and academic skills. Professional success of a person is closely connected with his/her progress at the university. When the students understand the necessity of mastering a foreign language it will motivate them to study and use it in their professional job. Long life learning skills must be acquired by the students, so they will be able to join the projects on different subjects.

Nowadays, one of the most essential problems for our education is what kind of specialists our industry needs and how many specialists are going to use a foreign language in their professional activity. That's why, while working out the programs "Foreign language for professional purposes" and "Foreign languages" educators should take into consideration the content of engineering activity, the features of engineering work and the opportunities for successful career building.

Polyakova (2015) was the first who tried to analyze engineering standards and adapt them to the needs of foreign languages. She also paid attention to some contradictions and disadvantages in the engineering PC connected with foreign language. They are:

- the exclusive usage of the English language;
- the knowledge priority over skills (passive activity);
- the absence of requirements for communication skills;
- the absence of requirements for foreign language learning;
- the absence of requirements for foreign language learning at different levels.

In order to fulfill these requirements it is necessary to analyze what results students really need to achieve in mastering a foreign language for professional purposes. Owing to all these changes in engineering education great attention should be paid to the intensification of foreign language training and to the development of student's professional qualification. This new approach of engineering training is found in Russian educational standards where foreign language competences are determined as the knowledge of foreign language which should allow the students to communicate at the professional level (Federal State educational standards of higher education, 2015). Thus, foreign language education has the same purposes and principals as other disciplines and should be included in the programs for engineers. The content of foreign language programs is being innovated all the time as the result of changing attitude towards foreign language education and the intention to meet new requirements of modern world. Such integration means improvements in current approaches of teaching foreign languages. It is obvious that there is the necessity to intensify and reconsider the system of foreign languages teaching in engineering universities not only at the level of content but at the level of organization and techniques (Loktyushina, 2012; Rybushkina, 2015).

In our age the principles of education are the same as they always have been. But, do new technologies influence a learning process? It is rather difficult to find a correct answer to this question. That's why the role of the teacher is not only to give students a wide range of knowledge, but to help them solve the most complicated problems. In the process of learning the teacher becomes the model of education and plays a significant role in training well- rounded and qualified specialists of the 21st century (Smith, 2005; Todorovski, Nordal, & Isoski, 2015).

### **3. Research Questions**

One of the most important factors of a good and effective education is the curriculum. At present there is a gap between existing foreign language curriculum and the demands for foreign language knowledge of engineers which causes significant changes in the working program context. That's why, "Foreign Languages" Department of Moscow Polytechnic University had to reconsider all the curriculum. However, any changes should be carried out on the basis of some underlying principles, the concept of final results, as well as external and internal factors of educational process. External factors include the federal state standards of foreign language knowledge presented in the form of relevant competences. For bachelor's degree this competence means "communication skills in Russian and foreign languages for solving interpersonal and intercultural interaction in oral and written forms" (Federal State educational standards of higher education, 2015). Another external factor is employers' wish to have young specialists who will be able to communicate fluently with their partners from different countries, search and analyze all the necessary information from foreign sources.

Internal factors include educational environment of the university: the number of class hours of foreign language during a term, the period of time students study foreign languages, multimedia equipment, lectures of famous scientists from European universities, the possibility to receive adequate training at well-known laboratories, even the attention of authorities to the problems of foreign language teaching.

#### **4. Purpose of the Study**

The analysis of external and internal factors has discovered the significant contradictions in the system of foreign language teaching at engineering institutes: Federal State educational standards of higher education and employers would like to have engineering graduates with high communication skills while according to existing curriculum students have only one or two lessons a week for 2 or 3 year period. Thus, there is a strong necessity to design a new curriculum which will aim at solving the existing contradiction.

#### **5. Research Methods**

To have a new system of future engineering education is of great importance nowadays, but the creation of such effective system of foreign language training must be based on the principles which will combine all the constituent elements together. Such principles, as it has been mentioned before, must be long life education, successive development and learner-oriented approach to foreign language teaching (Hardan, 2013; Karatas, Balyer, & Alci, 2015; Ning & Zhu, 2016).

The principle of long life education means that besides developing students' communication skills the teacher should provide the students with effective methods of successive self-development and introduce them such kinds of activities that will contribute to their further independent mastering a foreign language (e.g. watching films in foreign languages, working on computers with English operating system, using foreign sites and etc.) (Klimenko, Lubimova, Presnukhina, Sorokina-Ispolatova, & Tamrazova, 2018).

The principle of successive teaching a foreign language implies that all the materials are introduced starting from the simple ones and moving towards more complicated, the explanation of new constructions and vocabulary being accompanied by the revision of the previously learnt material.

The learner-oriented approach in teaching foreign languages is rather difficult to implement as there are about ten or twelve students in each group (Clifford, 2015). But on practice this principle was realized in the following way. Since the students of Moscow Polytechnic University have already chosen their future employment according to their interests, one the options of implementing a learner-oriented approach has become teaching English for professional purposes. Secondly, every student has different levels of foreign language proficiency and they do not acquire material in the same way. The teachers of "Foreign Languages" Department have worked out so called "online platform" where students are able to find additional material that help them to master the most difficult grammar constructions and professional terms performing a variety of tasks in their free time. Thirdly, great attention is also paid to self – directed learning, which presents an essential part of English language curriculum: during every term students have to prepare a project according to some parameters on the topic he or she is interested in (Volobuyeva & Subbotina, 2015; Klimenko, Lubimova, Presnukhina, & Tamrazova, 2017).

Thus, all the elements of our new curriculum should contribute to successive and progressive foreign language learning, using those teaching methods which will take into account students' personal abilities and contribute to their life-long developing of foreign language skills.

The next step in creating a new curriculum in foreign languages is the problem connected with the content (Prensky, 2014; Tissot, 2017), that is, what material we are going to teach the students, as we know that a number of class hours for each group is quite small. What materials and communication skills are of practical importance for future engineering training? To answer these questions we should use the method of prioritization. It means that we should define the importance of each linguistic aspect and each communication skill for the future professional career of students. This modeling allows us to make a list of typical tasks solved by a professional in every engineering field.

As the result of this work the following educational trajectory for three level of education (baccalaureate, magistracy, and postgraduate course) has been created. It was decided to refuse from the traditional course “Foreign language for everyday purposes” as the students tend to acquire this material quite well while studying at school. However, it isn’t worth teaching professional vocabulary to first year students as they know almost nothing of their future job. The only discipline they are taught at their first year that gives some details of their future jobs is “Introduction into profession”. So, first year students start learning so called general technical vocabulary that includes terms and their meanings in different branches of industry and technology. Only then the students move on to study “Foreign language for specific purposes” that helps them to acquire professional vocabulary. Reading and analyzing simple original texts, describing different technological processes or modern equipment help students to develop their learning and communicative skills and greatly contribute to mastering their future profession (Volobuyeva & Subbotina, 2015). “Business English” is the next compulsory course that introduces students to the basics of the world of business. This course includes such topics as company structure, recruitment process, company operation and performance. Great attention is pay to the development of students writing’ skills (to write formal and informal letters, CVs, reports, as well as shorter pieces like personal notes, messages, memos). Such kind of work is of great importance as we live in the age of information technologies and it takes us only a second to send and receive emails. Thus, this trajectory allows students to master learning and communicative skills step by step.

The aim of bachelor’s learning is to educate high quality experts while the master’s course objective is to train top managers and university teachers who are able to organize the work and take necessary decisions based on their own and foreign experience. At this level such skills as the search of scientific and technical information in Russian and foreign languages, data processing and solving different scientific problems are of great importance. All these tasks include working with documents, scientific articles and monographs in order to develop students’ skills in the field of writing (what is the structure of the article, how to introduce material, how to write an abstract, to describe the results of experiments and conclusion). Moving along the proposed trajectory it has become logical to include writing students’ own scientific articles in the new English language curriculum for postgraduate students.

## **6. Findings**

This trajectory has already been implemented at “Foreign Languages” Department for two years. The survey conducted at the beginning and at the end of a term to evaluate the students’ expectations from foreign language course showed that 79% of students had their expectations satisfied, and 72% of

respondents evaluated the material and skills taught as “necessary for their future professional career”. These figures are respectively 8% to 12% higher than the ones obtained during the survey before introducing a new curriculum.

Thus, at present the most important result of this experiment has become the growing interest and motivation of the students to foreign language learning. Obviously, it has happened thanks to the changes in the foreign language curriculum content that has become more closely connected with professional engineering training. Besides, this approach helps students to master their professional skills as well, as in reality they study the course “The introduction into Profession” but in a foreign language. The course “Business Language” introduced to third year students and teaching them essential businesses skills has also been highly evaluated by the graduates as most of them are thinking about looking for a good and interesting job.

## 7. Conclusion

After this new trajectory in teaching foreign languages has been introduced, we have obtained positive results of students’ increasing motivation in studying foreign languages. But there are also have been identifies some moments which need further improvements. One of them is the necessity to take a greater advantage of information technologies and to create so called “tasks bank” that will contain different kinds of tasks for students to master their grammar and vocabulary skills. Moreover, it has become obvious that foreign language teaching should become a multi-disciplinary subject involving other students’ professional areas. Only when students realize that learning a foreign language is not an aim, but a tool, they will overcome the psychological barrier in their foreign-language communication and acquire the ability to express their thoughts in a foreign language fluently and efficiently.

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