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TO THE QUESTION ABOUT ACADEMIC PROCESS  
OPTIMIZATION IN A TECHNICAL UNIVERSITY

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**Abstract**

Teaching a foreign language at a technical university requires more and more new approaches and methods in accordance with modern realities. It is important to change the paradigm of foreign-language education - it should meet the needs of society in terms of the demand for engineering specialists with knowledge of English. To obtain high-quality learning result, it is desirable to use optimization, since it allows you to get the highest possible result with a small number of hours and non-ideal school training. It provides for freedom of choice of training goals, content, methods and materials, if all these aspects work for the effectiveness of training. In this context, we recommend using a personal approach, activity and design methods, an individual approach to each, which will help attract and use the full potential of trainees, form their internal motivation, increase academic performance and expand their horizons. In addition, it is important to pay more attention to the specialized component. This will allow students to join the future profession and expand their communication skills in the language. The profile component provides for the wide use of specialized vocabulary in the language, grammatical constructions characteristic of the language of specialty, clichés and samples in the framework of future foreign language communication. The role of the teacher is important, he is a senior friend, coordinator, mentor and friend for the student. A democratic style of communication leads to contact with students, provides a favorable psychological climate and removes the language barrier.

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*Keywords:* Optimization, foreign language communicative competence, personal approach, activity methodology, project



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## 1. Introduction

The issue of teaching a foreign language in the context of a modern non-linguistic university is often discussed by teachers - practitioners, methodologists, scientists and researchers. This is one of the painful problems, since the resource of the number of hours in a foreign language and its disciplines is small in a technical university, the training of applicants for technical specialties is insufficient for high-quality communication even within the school level, and meanwhile, the company's demands for competitive engineers who have foreign language communication of the oral and written spectrum are increasing.

The situation with foreign-language education, as we see, is complicated and requires correction. We believe that the solution can be found in optimization measures that will allow a professional teacher to choose material, determine the content, goals of training within the limits of existing modern standards and norms.

It should be emphasized that the teacher should know certain provisions and implement them within the framework of his discipline (Gez, 2017). Note that at all stages of the development of vocational education in Russia, its strategy was determined by socio-economic prerequisites (Gareev et al., 2018). The new state educational standard provides the graduate with the necessary knowledge and competencies in accordance with the developed requirements.

## 2. Problem Statement

Programs in the foreign language and its variations should contribute to the formation of both professional and general competencies among students. They include the ability to foreign language communication in terms of general, business and professional foreign language, the development of initiative, independence, the ability to socialize in society successfully, professional mobility, career development and advancement (Delimova, 2013). As noted in the state standard, the content of the disciplines of these cycles should be professionally oriented, taking into account the specifics of the training of graduates, and contribute to the implementation of the tasks of professional training.

The training of a competitive specialist involves a high level of his general development, possession of communicative abilities, the ability to make independent decisions, think and adapt to changing social and economic conditions (Likhacheva, 2019). Therefore, the process of education at the university acquires a pronounced target orientation - it should be focused on creative activity, an individual approach in education and training, ensuring the development of individuality and professionalism.

## 3. Research Questions

In the process of forming the competencies outlined in the state educational standard, a significant role is assigned to foreign languages that have a high potential for developing the communicative abilities of specialists and their preparation for business and professional communication (Likhacheva, 2018). An integrated approach to the goals of teaching foreign languages in a non-linguistic university requires the introduction of all aspects as components of the goal on equal rights. Neglect of any aspect leads to tangible losses. It is no coincidence that one of the leading methodological categories is optimization. Optimization

means choosing the best, most favorable option from a variety of possible conditions, means, actions, etc. If optimization is transferred to the learning process, then it will mean choosing such a methodology that ensures that the best results are achieved at the minimum cost of time and effort of the teacher and students in these conditions. Optimization is not achieved by some good, successful method. We are talking about a conscious, justified choice of one of many possible options by the teacher.

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

The purpose of the study is to consider and develop optimization while training students of technical universities in a foreign language. We agree with most researchers and believe that optimization is not any special method or acceptance of learning (Belyakova & Zakharova, 2019). This is a focused selection and selection of methods for a specific training session. Optimization is a logical stage in the development of science (Likhacheva, 2019). Its application is based on the criteria of optimality, that is, the characteristic feature on the basis of which the possible solutions and learning options are compared.

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

This article uses methods of analysis, synthesis, observation, comparison, induction, deduction, modeling, which make it possible to distinguish a number of optimization features directly when teaching a foreign language in a non-linguistic university.

#### **6. Findings**

In methodological science, several indicators of the optimality of the learning process were identified. One is the optimal allocation of learning time. The indicator can be considered implemented if the distribution of educational time within subjects and between subjects is optimally carried out, taking into account the real capabilities of students and teachers.

With regard to a foreign language, it should be noted that the distribution in this aspect should be carried out as follows - more time should be devoted to a specialized language, a specialty language. Vocabulary and grammar samples, clichés, structures characteristic of professional English, texts in the specialty, business games, round tables and discussions - all these aspects can be implemented in the project methodology. It will make it possible to use the full potential of students in a fairly short time, consolidate and develop all types of speech activities, expand the outlook of students, and effectively prepare them for professional communication within the framework of a foreign language. It is important to teach the profile component in the language starting from the first year, and fully engage in the specified segment for the next two years. This will change the attitude towards the foreign language, and the quality of its proficiency will be coordinated with the demands of society.

The next aspect is the optimal choice of training methods. This indicator of the learning process is considered to have been achieved if the teacher has substantiated why he used one or another of the teaching methods, on the basis of which he combined them. The teacher makes a conscious and informed choice based on the knowledge of those whom he teaches (the student's information model), what he teaches (the educational content information model) and recommendations for the optimal choice of teaching methods.

In relation to the foreign language, we note the methods of immersion, personal approach, activity methodology, which are based on self-consciousness, activity, motivation, personal qualities of the student himself. The process is aimed at him, his characteristics of perception, his freedom, goals and desires. The teacher directs them, he is the main coordinator, mentor and friend. Dictate is excluded if the parties of the pedagogical interaction want a high result of this interaction.

The following aspects are characteristic of an active approach to foreign language education. Firstly, foreign language is perceived as an instrument of communication between people in ordinary conditions and everyday conditions (Kazun & Pastukhova, 2018). Secondly, receiving knowledge of the new language, its grammar, students also master new means of perception and expression of thoughts about already known objects and phenomena, they begin to look at them in a new way. Thirdly, the primary goal in the knowledge of a foreign language is not to obtain new information about the world around them, as happens when studying other disciplines, but to form a view of the culture of other countries through language. With the activity algorithm of training, the basic element is the mastery of new types of activities: creative, search and design, educational and research and others, as well as the in-depth development of any other, already familiar, types of activities (Henner, 2018). Together with mastering the activities, the trainee will have the opportunity to form his own worldview and value system adopted by society. The type and category of activity under this teaching method is the dominant and semantic component of the entire learning process. With this approach to learning, students work with current communication tools, as well as modern sources of information. In addition, they are able to critically understand the latest information coming to them from various channels, forming on its basis their own opinion, their assessment judgments and any conclusions. We also note that the trainees solve problems reflecting typical situations by practical or cognitive methods, by a group or on an individual basis and are engaged in the analysis of modern social events and phenomena. We emphasize that students, who trained using this method, try on typical social roles with the help of training games and trainings that reflect situations from the everyday life of students, prove their position with arguments, parading the attacks of their opponent in discussions, debates or disputes on the topic of modern problems of society. Another important element of the approach under consideration is that students receive new knowledge independently, participating in various types of activities. Accordingly, the teacher's task when introducing new material and working out what was passed is to organize these types in such a way that students themselves achieve success in their goals.

A more successful and efficient student learning process takes into account personal interests, personal opportunities and flexibility in defining goals. With this approach, a special atmosphere of creativity, emotional contact, mutual assistance is formed, interpersonal relations are built. One aspect of this approach is training in cooperation.

Students studying in the same group of a technical university often have different baggage of knowledge and skills in the field of a foreign language. Some of them have a rather high level of knowledge; they understand all the explanations of the teacher instantly, master the lexical material and communicative skills without problems, while weak students need a thorough explanation of the material, as well as much more time to understand it. In this situation, the first may be bored, while the latter will show some discomfort. Realizing that these students will never catch up with the rest, they will be embarrassed to ask questions and, accordingly, "fall out" of the general learning process.

At the stage of class planning, which refers to the person-oriented method, the teacher needs to adhere to the following recommendations: to rely on knowledge that allows the student to choose the type and form of the material himself (graphic, verbal, conditionally symbolic); create a positive emotional attitude to work; to discuss with students at the end of the class not only what they mastered, but also what they liked or did not like and why, what they would like to do again, and what work to do differently; name the topic and scope of homework, and explain in detail how to organize their study work correctly when performing a homework task (Petrova, 2018). Training technology in cooperation can be particularly useful in this situation. The goal of the teacher is to unite students into groups of 3-4 people and give them one general task. At the same time, the role of each student of the group in the performance of this task should be stipulated. In this situation, each student, on the one hand, is responsible for the result of the work of the entire group; on the other hand, he is responsible for the result of his own work. This is why collaborative learning technology allows you to differentiate tasks by complexity levels.

There is a number of basic principles of learning in cooperation. Firstly, the entire group receives one task, but when it is executed, roles can be distributed among the members of the group. Secondly, the group, as a rule, should consist of a weak, medium and strong trainee. If the group works efficiently over several sessions, it is necessary to change its composition. Thirdly, there must be the evaluation for the work of the whole group; it is worth noting that the efforts of students are evaluated at the same level as their knowledge (Lyakhovitsky, 2018). Students themselves can also evaluate results. Fourth, the teacher chooses the student who must report the result of his group's work.

We also offer some more recommendations for teaching English along with traditional approaches within the technical university at the present stage (Lubkov, 2020). These are the most common versions of the training method in cooperation, which differ in organizational forms and setting of educational tasks: Student Team Learning - Team Training, Jigsaw-Saw, Learning Together - Learning Together (Mirolyubov, 2016).

The STL method is based on the success of the entire team and its goals, as a result of the independent work of each group member in joint group work on the problem being studied. The task of each student is not just to perform any task, but also to gain the necessary knowledge and develop the necessary skills. It is in the interest of the whole group to be motivated in learning the educational information of each of its members, since the success of the team depends on the contribution of each student to solving the problem posed to them. A distinctive feature of this method is the system for evaluating individual works. The assessment is carried out on a progressive-comparative basis (Novikov, 2017). If the score for this work is higher than the student's average score for his previous work, only then he can win additional points for his team. The team that scored the largest number of points while studying the topic is considered the winner.

The next method of learning is a method called Jigsaw. In this method, students are divided into groups of 4-6 people. Each group is invited to work on a common theme, and then each member of the group is invited to work on a separate section of the common theme. Each member of the group finds the material separately (Yan, 2020). Students who have studied the same part meet and exchange information as experts on the topic. To get the material of all fragments, students need to carefully listen to their teammates and make recordings. The trainees are extremely interested that their comrades faithfully fulfill their

task, as this may affect their final assessment. Reports on the whole topic are both individual and by the whole team.

Learning together method provides one common theme for all students in the group. The class of students is divided into groups of 3-4 people each (Perminov & Tests, 2020). Groups should be approximately the same in terms of knowledge and skills. Each group receives one task, which is a part of this topic. Each group is working on its own theme. When individual groups and all groups work together, the entire material is absorbed (Byrdina et al., 2020). When preparing their tasks, the groups discuss information together, offer their own solutions to problems, and ask questions. This work can be successfully carried out only with careful preliminary preparation and knowledge of the vocabulary on this topic. The basic principles are observed - these are awards for the entire team, an individual approach and equal opportunities.

We believe that the use of these methods and approaches will greatly contribute to the formation and development of foreign-language communicative competence among students of technical fields and will greatly facilitate the process of mastering a foreign language by non-linguistic students.

The presence of a research component in modern academic conditions should also be noted (Novikov & Novikov, 2019). Students are very independent now, they have access to the Internet and can find a lot of information on a particular educational issue, monitor the degree of study of a particular theme. It is important to give them initially mini-tasks - abstracts, messages, and then it is important to suggest discussing issues that require an ambiguous solution (Pletyago et al., 2019). You can provide a topic for expansion and deepening, for subsequent coverage of it in a scientific article, a set of articles, joint work, monograph, collection (Raskovalova, 2017). In this context, students will have a good opportunity to practice writing a course or diploma project, learn to express their thoughts correctly and logically, see the topic of research in the future of a scientific dissertation. They can use the opportunity to join science successfully, which in the context of a modern university is necessary and in demand. It is important that the material has practical application precisely within the specified subject, corresponding to the students' level, the sphere of their interests.

The revision of approaches to learning and their practical application in the academic process allowed us to identify the best options for determining the goals, content of education and the development of relevant competencies (Faizullina & Zaripova, 2015). The purpose of teaching a foreign language in modern conditions is oral and written high-quality communication using elements of the business language and specialized features of the specialty. Accordingly, the main content of teaching a foreign language at a non-linguistic university is professional-oriented business communication with the dominant of teaching spoken speech, including training in the translation of industry authentic texts (Chubarova, 2016).

Optimization involves the use of convenient methods that are in demand in modern realities and efficiency (Yadrovskaya, 2013). They make it possible to improve the academic process faster, form a motivational component and prepare students for foreign-language communication within the framework of the future profession and everyday communication. Note that the complicated nature of foreign-language education provides that in order to achieve the best results, it is necessary that all factors influencing the effectiveness of the educational process must be based on the analysis of their impact on the final result of training and, accordingly, all of them would be effective (Yakovlev, 2010). An incorrect choice of one of

their factors can completely cancel the positive effect of another factor that is optimal. Generally speaking, the educational process will be optimal if its high result, namely, the competencies obtained by the graduate in accordance with the requirements of the state educational standard, are achieved on time with minimal efforts of the teacher and students (Yamskikh & Slepchenko, 2015).

## 7. Conclusion

Optimization is a significant component when teaching a foreign language in a non-linguistic technical university. It allows, with a minimum number of hours and poor training of students, to form skills of foreign-language communicative competence among students of non-linguistic areas, which is relevant in the realities of modern society. To optimize the educational process, project methods, a personal-oriented method, as well as an activity approach are used, which allow you to use the potential and opportunities of the student in maximum terms and obtain high-quality educational results. Moreover, educational content is represented by specialized material in English - professional vocabulary, grammar, texts and the test material, which allows you to introduce students to a future profession and communication in a foreign language from the very first year of university education.

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