Modern approaches to polytechnic education

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Abstract. In modern society there is a growing demand in high-quality specialists of engineering sphere as a result of science, technique and technology development. In this context a new concept of polytechnic education is important, in which there is a special significant place for the humanitarian segment. Mastering the above mentioned competences implies a high cultural and educational level of a future specialist of engineering sphere. The aim of this article is to study the modern condition of humanitarian subjects in a technical university and offer the ways of solving the existing problems by means of modeling the academic process in a new demanded context of a high school. The actuality of this article consists in an insufficient study of the humanitarian segment and a growing need in changing approaches to its studying in a polytechnic university.

1. Introduction

Nowadays, the issue of significance and peculiarities of modern polytechnic education in Russia causes many disputes, disagreements and discussions due to the wide interest of the audience to engineering specialties and their demand in the context of the realities of higher education today [1]. Really, the Russian youth wishes to master engineering professions fundamentally, as development of science, equipment, technologies form the social order, and future students of an engineering profile have an opportunity not only to use the budgetary education in a modern context, to get a job without effort, but also to develop, to raise and to advance scientific researches in the short term.

The humanitarian segment in the context of polytechnic education may not be basic, rather it appears to be a non-core component, but deserves no less attention than a set of special disciplines. We emphasize that it is the subjects of the humanitarian cycle, such as foreign language, sociology, philosophy, cultural studies, economics and many others, that contribute to the formation of a comprehensively developed, intelligent and a cultural person with a wide world view and outlook, an effective specialist who is able to make high-quality decisions and rationally cope with all kinds of tasks [2].

However, there are some difficulties with the subjects of the humanitarian cycle at the Polytechnic University. As long-standing practice and experience in technical universities show, students do not always adequately perceive information, without assessing the significance of humanitarian subjects, considering them non-core and unclaimed in the future [3,4]. On their part, there is either complete rejection, or disregard, or a non-serious attitude towards the above-mentioned disciplines. This state of affairs can adversely affect the level of a graduate engineer and negatively affect the image of the university. The situation requires rational correction and resolution.
2. Materials and methods
In accordance with the above mentioned facts, we propose to develop and implement a certain model of the functioning of humanitarian cycle subjects in polytechnic education at the present stage. It should be noted that today modeling is one of the effective methods of pedagogical research and allows to detect features and solve a number of pedagogical problems by creating a model, i.e. a sample, with the help of which one or another subject or phenomenon causing difficulties in other surveys can be carefully investigated [5]. In this article, we will consider the setting of the goals and objectives of this modeling, as well as the components of the proposed model, their real and desirable functioning at the present stage in a technical university.

We recommend the following component composition of the proposed model: polytechnic or technological university - subjects of humanitarian cycle - goals and objectives of disciplines of humanitarian profile - educational content - sides of pedagogical interaction - teacher and student, the process of pedagogical interaction and influence itself [6]. To fully understand the features of the humanitarian sector at a polytechnic university, we will consider each component of the recommended model.

3. Results
So, a polytechnic or technological university is one of the constituent parts of a model with a defining value. Having an administrative resource, it is the university that, in accordance with the needs of society, forms curricula and programs, building the academic process in such a way as to satisfy the social order - the competencies acquired during university studies should have active practical application. The specialist should not experience difficulties and problems with getting to work, as was the case before, when the graduate had mainly theoretical knowledge [7.8]. In addition, the university also determines the policy of additional education, popularizing certain subjects, focusing on possible difficulties.

For example, additional courses in foreign languages, which can aim at increasing the level of proficiency in foreign language communication competence of non-linguistic students, the development of a professional foreign language, the formation, training and improvement of translation skills [9]. Such courses can be organized in economic theory in order to promote the financial literacy of future specialists, as well as introduce a program of 1С specifically for non-specialists in order to have a general understanding of economic definitions and features functioning in the context of modern society.

Regarding psychology, it is also possible to organize special courses on maintaining corporate culture, conflict-free relations within the training of a future engineering specialist, which will help him to observe corporate ethics, correctly build the art of dispute and correctly defend his point of view [10.11].

We emphasize that all organizational educational aspects are possible with the active policy of a polytechnic university, its interest in the training of quality specialists, competitive graduates, and comprehensively developed personalities capable of making the right decisions.

The next component of the educational model is the humanitarian subjects themselves and the goals and objectives of their training within the framework of a technical university. These are a complex of disciplines in a foreign language, an economic block, social disciplines, pedagogy, psychology, cultural studies and many others, depending on the policies of the university, variable and regional components.

The goals and objectives of humanitarian disciplines have already been mentioned above, but we also emphasize that without the humanization of the educational process it is impossible to imagine a high-quality engineering specialist. If you ignore the spectrum of disciplines of a humanitarian profile, then in the end you can get a "rude" technician, an artisan, far from manners, culture, and education [12]. We emphasize once again that the purpose of such disciplines at the Polytechnic University is to train a professional specialist in engineering, cultural and developed person who speaks a foreign language, as well as masters a complex of competencies of a professional and general plan, demanded by society and the country as a whole, allowing to solve complex and multi-level problems, develop creative and scientific potential [13, 14].
The next component of the model of humanitarian education in a technical university is a teacher. This is one of the significant components of the model, since it is the teacher who determines the motivation of the student, his further formation as a person and specialist, and manages pedagogical interaction. A modern teacher must be a real professional in his field, have excellent knowledge of the subject, know effective teaching methods, have a tendency to empathy, and be a good psychologist. In addition, he must possess the secrets of individual and active approaches, have a sense of humor, charisma and willpower [15]. He should be friendly and position himself in relations with students rather than an elder comrade, friend, mentor, in no way a dictator who puts pressure on students. It is on the teacher that the motivation of students largely depends, it is the teacher who can encourage the student to master a particular, even very complex subject. In addition, humanitarian disciplines represent a broad field for self-education, improvement, spiritual growth and development, as well as scientific knowledge and research at various levels [16]. A university teacher in a modern context should encourage students to understand various cultures, traditions, history, develop patriotic feelings, and learn more about their own culture.

In modern times, when young people travel a lot, develop, spiritually enrich, the teacher must be a model, be impeccable, act as a leader and lead students [17]. The teacher should be motivated by himself and form motivation among his students - the desire to study, develop, achieve their goals, become a high-quality specialist and professional in his field.

The second side of pedagogical interaction is a student who, in modern realities, has special characteristics different from his peers 20 years ago.

The trainees today are well aware of their rights. They are raised in democracy and freedom of speech [18]. They are more demanding, erudite and cleverer than before. Such trainees need a special approach - individual, constant incentives and personal contact. But the return on them will be more productive - they are ready to work additionally, engage in active extracurricular activities, aim at obtaining the result quickly and effectively [20]. If a modern student is interested in the subject, its subsequent need for career growth and development, he is ready to work hard and qualitatively. And in this regard, the example of the teacher, his ability to interest the student is of great importance for the formation of the future competitive, competent specialist [21].

Pedagogical interaction is the other important component of the pedagogical model discussed in this article. This is the contact between the sides of the educational process, the success of which is determined by the openness of the parties to effective cooperation, a favorable psychological climate, a motivational criterion, as well as the quality and level of the teacher [22]. An effective academic process is possible only if there are these components that give a positive result in the complex. Note separately the motivation of both the student and the teacher. If both sides of pedagogical interaction are active, aimed at the result, responsible for their duties, professional and diligent, the result is guaranteed.

4. Conclusion
In accordance with all above, we note that modern society requires a special approach to humanitarian education in general and the humanitarian segment within the framework of a technical university in particular. There is an urgent need for a new concept and improved approaches to the development of the humanitarian sector, which entails a review of attitudes towards these subjects. It is important to improve programs and plans, expand the goals and objectives of training so that it is applied. It is necessary to carefully approach the selection of teachers, take into account their level of professionalism, motivation, interest in work, the desire to improve constantly. In accordance with this, it is recommended to make pedagogical interaction more high-quality, effective, interesting and encouraging further development of its parties. A necessary condition is the change of stereotypes of non-core or non-importance of humanitarian subjects in the training of technical specialists.

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