Specialists training in a technical university in the transition to a robotic society

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Abstract. The prerequisites for the research of the topic arise from the tasks of society modernization and social training of professional staff for these purposes. The latter has traditionally been based on sociology as a science appropriate to the present moment, studying societal problems at the group and individual levels of individual behavior. However, during the transition to the Bologna model of education, it was withdrawn from the Federal State Educational Standard for training future engineers and dramatically downgraded in status, which had a negative impact on their personal potential as professionals. This was stated by employers who had been given the task of using these graduates for the purposes of Russia's transition to an information, robotic society. The purpose of the research is to draw the attention of society and the authorities to the importance of strengthening the social training of groups capable of keeping up with the scientific and technological progress of society, using the base of sociological knowledge. For the methodological basis of the topic were used: the sociology of higher education, theories of personal role behavior, as well as the concept of social humanism. Three sets of sources and literature on the topic have been studied, revealing the main problem of society, which centers on the situation with "artificial sociality" as a condition of socialization of student youth, and the conjunction of their behavior with "digital risks"; as well as the impact of these risks on both natural and social environments. It is argued that students who are already taking these risks today are potential creators of new "digital" and other technologies, who have not mastered the skills of forecasting social and professional behavior and have not formed themselves as a whole person. The hypothesis formulated in the article about the tendency to reduce the hours of social training in universities for engineering personnel has been confirmed. The reason for this trend is the neoliberal policy of austerity on education.
Keywords: engineering students, social student training, student role behavior, robotic society

1 Introduction

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The topic of the article is driven by the task of training engineering personnel capable of making a technological breakthrough in the transition to the information society as a necessary stage of the Knowledge Society [1]. In an unstable economy, setting such an ambitious goal for its implementation in a fairly short time shows its mobilizing nature and involves the joint efforts of the authorities, production specialists, employers and the educational community in this direction, as it happened more than once in the history of our country. In this situation, it is obvious that such problems can only be solved by strengthening both the natural-technical bases of future engineers' training and the social ones. The latter are traditionally based on *sociology as a science, studying the fundamental social forms of human life in their adaptation to natural and artificial environments.* This is due to the peculiarities of its subject and methods, directly addressed to the study of both internal and boundary problems of society, revealing the mechanisms of group and individual role behavior of the individual in it. The ongoing research covers not only the theoretical but also the empirical levels, and corresponds to the current moment in time. Thus, as part of the *sociology of higher technical education* social technologies are developed *to adapt the personality of university graduates* to the *conditions of artificial sociality, to the economic and social challenges of society.* This prepares them for an active role in professional activities, for positioning themselves in the hierarchy of groups at the cutting edge of scientific and technological progress.

However, the situation with the teaching of sociology at technical universities is not satisfactory. This is caused by the willful exclusion of it from the Federal State Educational Standard (FSES), which *destroyed the educational approach to the holistic training of the engineer's personality. This weakened his ability to master special disciplines, disoriented him in his professional growth. If we add to the above the educational failure of the new generations of students (coming from school reforms)*, it is clear that technical universities, in order to increase the competitiveness of their graduates, need to strengthen the subjects that ensure their social qualities.

In this regard, this topic is relevant.

Purpose of research: Drawing the attention of society and the Authorities to the increasing role of sociological training of engineers as a necessary tool to ensure their social qualities as professionals.

Research objectives are:

1. to outline the general situation with social training of engineers in technical universities.

2. to show the connection between the lack of social training of future engineers and the problems of comprehensive modernization of society.

3. to formulate proposals for improving the social training of specialists in a technical university.

The bibliography on the subject can be divided into three groups:

1) reflecting the current situation in society with "artificial sociality" as a condition of socialization of modern student youth in their natural social environment, and the risks that lie in wait for them along the way [2-5];

2) revealing the content and composition of "universal competencies" for the formation of the personality of an engineer demanded by robotic production; as well as the content characteristics of students' personalities, their compliance (or non-compliance) with the role expectations of the modernizing society [6-9];

3) focusing on the policy of institutional reform of education, its positive and negative consequences for the transformation of Russia into a Knowledge Society based on science and robotic technologies [10].

Hypothesis: There is a tendency to reduce the hours of social training in higher engineering education, underestimating the importance of this training in the modernization of Russian society.

2 Methods

The study of social training of specialists in a technical university in the conditions of mobilization transition to a robotic society is based on the methodological principles of Sociology of Higher Education [11], theories of role behavior of personality (Mareno, Parsons, Linton, Yadov), and the concept of social humanism [12].

In selecting sources and literature within the framework of these theories, the relative autonomy of sociological knowledge intended for the pedagogical object in a technical university was taken into account. Also, the specifics of the content of the educational environment of the university, characterized by a spirit of technocratism and social skepticism, were taken into account. The selection was based on the principle of comparing conceptual approaches to the study of "artificial sociality" and the "natural" social environment, of which students themselves are active social agents [13].

The selection criteria within the concept of social humanism were different social risks and related economic, environmental and even political risks [12, 14], which were compared with possible "digital risks. The latter were viewed hypothetically as "gains and losses" from an approaching robotic society. It is also of interest to find out why "digital risks" exist. These are seen as reasons for the unequal rights of groups or individuals to access information-robotic tools, the unequal right to own them, and the natural division of people into those who can and those who cannot handle these tools [15]. It should be noted that students are taking these "digital risks" today as potential creators of new "digital" and other technologies. They do not master the social knowledge of predicting the consequences of their professional activities and do not have the necessary personal characteristics for this.

The sources that focus on everything that relates to the characterization of the personal qualities of the students being trained were singled out for consideration in a separate group. Here universal competencies were taken as a criterion and the possibility of comparing them with the practice of social behavior of the student. What did this comparison show? Practically all of the terminology and content of the proposed competencies relate to the science of sociology. However, a number of technical universities do not include such a subject in their curricula. In those technical universities that include sociology in their curricula, its position does not meet the objectives of quality social training of specialists. The result of this educational policy in technical universities *is the extreme dissatisfaction of employers with the social characteristics of graduates of these universities*. They lack business and human communication skills, notions of work discipline, responsibility for assigned tasks, the habit of self-control and self-analysis of their behavior, motivation to work in a team for the overall result. The percentage of such graduates is quite high. Only 5-10% of graduates are motivated, hardworking, diligent, develop their talents, and increase their ambition.

3 Results

The results of the research on the topic stated in the article confirmed our hypothesis about *the underestimation of the role of social sciences in the training of engineering personnel at universities. This inevitably reduces their potential to reveal their abilities in adapting to the requirements of modern production, and also causes employers' dissatisfaction with the*

social quality of training of this personnel. To remedy this situation, it is recommended: 1) to change the vector of neoliberal reforms in higher technical education and rotate it in favor of the best national traditions of engineering education; 2) to overcome the tendency of excessive technocratic bias in engineering training and increase the importance of social training in it; 3) to return sociology to a place in the educational grid that is adequate to the tasks of competency-based training of engineers; 4) to restore the conditions of the educational environment inherent in the former technical universities, which were conducive to the academic success of students; 5) to ensure that in the educational environment of these universities all social agents trust each other.

Meeting even part of these conditions will allow us to preserve young people, our invaluable educational and human capital, who still continue to believe in social justice. But young people can no longer make up their minds about their future, because their future is not obvious, and instead of a successful professional career, they risk ending up in the precariat.

4 Discussion

The following questions are presented for discussion: 1) Is the situation with the social training of engineering personnel in the country critical? Are there prerequisites for reversing this situation in the interests of a comprehensive modernization of society? The analysis of the literature and the authors' own reflections do not allow us to give an unambiguous answer to this question. The reason lies in the policies of neoliberal reforms, criticized by much of society for their austerity on public investment in education, as well as for the low actualization of student potential [16].

2) To what social type of behavior should the personality of a future engineer be oriented – to "an intellectual" (Russian educational school) or to "an intellectual" (European school)? In our opinion, in the current situation of uncertainty with the students' goal-setting, the first type seems to be more effective, as it corresponds to the national traditions of engineers' training, their service to the Motherland. Whereas the second type is more characterized by the spirit of technocratism (and even snobbery), underestimation of everything related to the social activity of the engineer, bringing him (in the spirit of "technical romance") closer to the "technical man".

3) How is the mobilization of society possible under conditions of insufficient social training of engineering personnel and the existing educational failure of students? We believe that this is impossible without the sovereignty of national educational policy.

5 Conclusion

In conclusion, we should like to note that the topic of social training of students in technical universities on the basis of sociology has not been practically studied. And it seems to us that this is just due to the fact that its status in each case is determined by the leadership of universities due to its exclusion from the federal standard. Most of the leaders of these institutions understand the importance of sociology for students' success as professionals. Especially since the latter set of general cultural competencies is more universal than the previous ones, and terminologically reflects the language of sociology almost one hundred percent. However, they are forced to cut back on something, and doubly at the undergraduate level. At the same time, employers' criticism of the poor quality of social (sociological) training of engineers cannot but worry them. They are forced to respond to it, but they cannot change the situation themselves. At the same time, the tasks of modernizing society in the direction of its robotization, as well as the presence of problems (as negative

consequences of the "modernization" of school education) relating to the underperformance of students, increasingly require them to address the issue of their social (sociological) training at the ministerial level.

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