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SPOTLIGHT ON RUSSIA HIGHER TECHNICAL EDUCATION: RESULTS OF STUDENT SURVEY

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ABSTRACT

This paper analyzes in detail the improving of the educational system in Russia and introduces the solution with identifying the challenges in System. Training of specialists (qualified personnel of engineering and technical profile) of the new formation in accordance with the realities and expectations of modern science-intensive and high-tech production requires the study of the main problems, the solution of which depends on the quality of modern technical education. The article deals with some problems of higher technical education, the existence of which can be noted at the present time and presents the results of a survey of students regarding their plans for future professional activity, continuing education, and motivation for further employment in the chosen profession.

1 INTRODUCTION

It is undeniable that in the current situation, the optimization of the state scientific and technical policy requires taking into account the specifics of the Russian model of modernization (including education), the promotion of scientific and technical knowledge in order to involve society in the transformation processes and awareness of the critical importance of technological breakthrough, full support of science and education, the formation of highly qualified human resources and effective national innovation system [1].

In today's world, education is necessary, which is a holistic system that includes the production, preservation, and transmission of knowledge, as well as education and moral improvement of the person. Despite the fact that in recent years as a task of higher education is declared the education of creative thinking specialist, in fact, prevails an approach that is based on a simple transfer of knowledge to the student and is aimed at the formation of a professional in a particular area [2].

In this regard, there are different problems of modern technical education that require immediate solutions.

It is no secret that today in our country there is a shortage of qualified personnel of engineering

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and technical profile. The situation is aggravated by the rapid development of science-intensive and high-tech production, where there is a need for technical specialists.

Let us note some problems with modern technical education in Russia. The most important problems are unwillingness and unwillingness to work in the chosen profession. The decrease in interest in technical professions is also caused by the difficulty of mastering technical Sciences, the lack of practical training in educational institutions. One of the problems is low wages compared to some other professions.

It can also be noted that the age of scientific and engineering personnel and teachers of educational institutions of higher education, working at the "technical" departments is more than 50 years and many over 70 years. At the same time, the influx of young personnel is insignificant, and the level of their training is low. The same situation is observed among skilled workers [3].

These problems indicate a weakened position of the domestic higher technical education, as well as indicate the need for its improvement (modernization) [4, 5].

2 RESEARCH METHODS

The University "MIREA – Russian Technological University" conducted a survey devoted to the study of students' opinions on their plans for future professional activity, further education (master's, postgraduate), motivation to study and work in the chosen profession.

The purpose of the study was to study the motivation of the choice of future profession technical orientation.

The survey was conducted on 1, 3 and 4 courses by random sampling in the 2015/2016 academic year. The survey was attended by 77 students enrolled in undergraduate programs (areas of training 12.03.01 "Instrument", 12.03.02 "optics", 27.03.01 "Standardization and Metrology", 27.03.05 "innovation") and specialty programs(direction of training 23.05.01 "Land transport and technological means"). Of the 77 respondents, 55 (71.4%) were men and 22 (28.6%) were women.

It should be noted that there is an increase in the number of women (almost 30% of the respondents) who receive higher technical education. Of these, 68.8% plan to continue their master's degree in the chosen field of study.

The structure of higher education is presented in Table 1 for various countries. Non-governmental private universities and colleges provide also academic education. Education at state-run academic institutions is free. Academic education under the jurisdiction of the State Academic Committee of the Federation of Russian Federation is offered to enthusiasts who are entrusted with the task of recognizing and enhancing academic institutions and transforming themselves and promoting and supporting government education institutions. Table 1, with more than nine hundred Higher Education Institute (HEI), Russia students per Faculty ratio is the lowest compared to other countries. Russia student per population ratio is among the lowest as well.

Table 1: The structure of higher education in Russia in comparison with other countries (the year 2015-16).

Country	Number of universities	Number of students	Faculty members	Population (millions)	Student: population ratio	Students: Faculty	Budget (million USD)
USA	2157	8529130	427560	258.3	4%	5%	59244
Russia	904	2991000	539600	150	2%	1%	-
Australia	48	505800	33660	17.8	3.1%	6.7%	3113
South Korea	150	1193000	41744	44.5	2.9%	3.5%	803
France	554	1480300	53110	57.5	2.9%	3.6%	5659
Canada	68	499177	35800	27.4	2.3%	7.2%	-
Germany	302	1827229	38170	81.1	2.3%	2.2%	19100
Japan	538	2209000	129000	124.4	1.9%	5.8%	28824
England	97	728300	53000	57.5	1.4%	7.2%	4768
India	232	3796000	256000	897.5	0.47%	6.7%	-
Iran	90	625000	20360	63.4	1%	3.2%	-

3 ANALYSIS AND RESULT

3.1 COMMERCIALIZATION OF THE STUDY IN HIGHER EDUCATIONAL SYSTEM

One of the main problems in the higher education system is their research budget and providing it for the institute. From 1995, private higher education institutions have been developed very fast based on the tuition fees. Figure 1 depicts the allocated budget education systems.

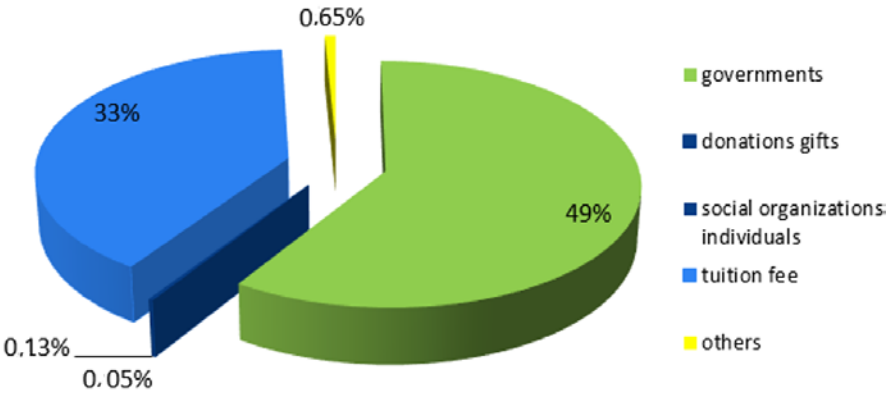

Figure 1: Schematic of each Russia educational higher system budget for 2015-16.

By developing private higher education institutions, the budget problem is going to be solved and the students which eager and qualified are interested to research, enter these systems, while in some cases it has reduced the quality of education, when the money will be important than the education, so the government should control these institutes by strict rules.

3.2 QUESTIONNAIRE RESULT

In the first question of the questionnaire, respondents indicated the reasons for admission to HEI. The most popular answer (55.3%) is "higher education is necessary for the quality of future work", then 51.8% of respondents believe that education in high school is necessary in order to find a good job" and 41% – necessary for life.

When specifying your reasons (the answer is "other") students listed the following reasons (this is a single answer): self-development; don't want in the army; he just will never hurt; the person is

obliged to receive higher education; higher education is fun.

The second question related to the reasons why the choice fell on higher technical education. The data obtained do not coincide with the results of the previous survey. This is due to the change in recent years, the attitude in our country to the need for training of engineering and technical profile, to the recognition of their insufficient number for the development of the scientific and technological level of Russia. More than half of the respondents 62.5% noted the need of modern society for technical specialists. The results show that the promotion of higher technical education in various media is reflected in the choice of students in the field of study. It also confirms the interest of the state in highly qualified engineering and technical personnel and the availability of allocated budget places, the number of which is much greater than in other areas of training (for example, "Economy", "Management").

Students 32.1% believe that they went to study by vocation. It is encouraging to consider that only 12.5% of respondents chose the answer "I did not go anywhere else (a)". Of interest is one answer "good for the mind."

What motivates students to study and work? The survey revealed that the vast majority of 87.5% of respondents believe: interesting, necessary material and practical tasks – the necessary motivation for them to study. 66% of students hope for the evaluation of "automatic", which is a motivating factor for their attendance, and 42.9% noted a high level of teaching. Unusual, but natural is the answer, which indicates that the motivation for training can be through the provision of a free schedule of attendance. Most likely, these students are aimed either at self-study of subjects or to obtain the so-called "crust" of education.

When choosing the answer "I have my own motivation", some respondents specified which one: obtaining new knowledge; I do not want to join the army; an interesting subject, an interesting teacher; my mother.

Not surprising, considering the problems of modern technical education mentioned at the beginning of the article, are the results concerning the motivation for further work in the chosen profession. 92.9% of respondents chose the answer "good salary". In second place (39.2%) the answer is "interesting work" and third place (33.9%) the answer is "the opportunity to contribute to the development of society."

Also, when explaining what is meant by interesting work, the following is noted: I understand and can do; original tasks; the desire to go to work; interest and development in this profession; interesting knowledge, the ability to develop skills; participation in new developments. And when describing what can be considered good conditions for work, listed: getting pleasure from work, a good team; understanding management; salary 80 – 100 thousand rubles; flexible working hours, staff; lack of unskilled chief of the enterprise; beautiful girls in the team.

The next two questions were devoted to the life plans of students in relation to their future professional activities and further education. A little less than half of the respondents (46.4%) to the question "Do you plan to continue working in the chosen field of study? “answered "on circumstances", 41% – "I don't know yet" and 37,5% – "Yes". Respondents who noted a categorical

answer "no" only 7.1%.

When specifying the reasons for which they plan/do not plan to work, the following answers were received:

1) plan to work because: it is interesting, there are abilities necessary for this work; deficiency of technical experts, interesting work, good salary; it is pleasant; I study; just like that; if there is a worthy salary (pays attention to inconsistency of the received data: "good salary" and "if there is a worthy salary" – it can be explained either by different ideas of the salary size, or lack of exact data at students on compensation, or already existence of a workplace with known salary at the concrete enterprise);

2) do not plan to work, because: interested in another area of study; made a mistake with the choice; decided to go to another field of activity; not interested; such vacancies are not yet in the labor market (this was answered by a student studying in the direction of "innovation"). On the question of continuing education in master's and postgraduate studies in the chosen field of study, the following results were obtained: 82.1% plan to continue their education [6].

Some contradictory responses are alarming. For example, in one questionnaire it is written about calling to the chosen direction of training, about continuing education in a magistracy in the same direction, but it is specified that about further work "I don't know yet because at the moment I work in a public catering" (the student, the direction of preparation "Innovation")

3.3 PROBLEMS THAT RESULT FROM THE STRUCTURE OF HIGHER EDUCATIONAL SYSTEM TRAINING

Summarized dilemmas can be given

1. The expectation of enterprises are not met by education,
2. The governance support is low for the trainers in the enterprises,
3. The lack of decision making between employer and authorities,
4. The lack of transmission of basic academic knowledge,
5. The training process in the higher education system is inadequate,
6. Not receiving the employer’s opinions for the preparation of the training program,
7. Ignoring the interest, common and skills of the individuals,
8. Not meeting the expectations of students according to the lesson context,
9. Not applying the technologically based training in vocational and technical training,
10. Not meeting the expectations of society in the information age,
11. The evaluation of pass grading system although the training is conducted by a modular system,
12. The lack of directing to formal education in the first stage of basic education.

3.4 SOLUTION PROPOSALS

Fundamental suggestions are given.

1. Provide vocational and technical training for the expectations of enterprises,
2. The increase of the education quality at the primary level,
3. The increase in the applied course time,
4. Update the training programs parallel with technological development,
5. Direct the students who do not have skills for formal education to the informal education institutions after 4 years,
6. The preparation of physical structures appropriate for the modular system,
7. Direct to the vocational and technical orientation with helping of experts, who have adequate skills,
8. The determination of the disciplines by considering the local needs.

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4 CONCLUSION

In General, the results of the survey showed that many students indicate as the main motive for choosing a future profession its prestige, as in our country today there is a need for technical specialists.

The current situation and the survey data also indicate that modern technical education needs modernization (including improving the quality of education). In education, it is most important to develop not some formal moments, but the ability to heuristic thinking and creative search. In this, a key role is played by a living personality – both a teacher and a student. Training of highly qualified specialists, which can be fully attributed to the new generation of the Russian scientific and technical intelligentsia, with its best traditions, love for the country and the desire to work and create for its prosperity, is one of the most important factors to strengthen the necessary level of security and accelerate the pace of modernization in the country.

5 DATA AVAILABILITY STATEMENT

The used or generated data and the result of this study are available upon request to the corresponding author.

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