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Research Work of Students as a Factor in the Innovative Development of the University

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***Abstract*—The relevance of the research is due to the current trend of decreasing students ' interest in research work. Therefore, this article attempts to identify factors that affect the activation of student science. The main method of research used a questionnaire, coupled with a comparative analysis of the results obtained and official statistics. Based on the obtained data, reasoned conclusions are formulated and approaches are proposed aimed at awakening students ' interest and increasing the effectiveness of research activities. The direct dependence of the activity of student scientific work on the involvement of the teaching staff in research activities is revealed. The necessity of identifying and attracting students with a propensity for scientific research and having an unusual mindset to scientific research is justified.**

Keywords—scientific-research work of students, processing of results, the causes and factors, scientific research, Teaching activity, survey

I. INTRODUCTION

An important factor in the development of Kazakhstan's science is the formation of a young scientist. As a rule, the formation of research skills takes place within the walls of the University and is determined by the degree of interaction between the student and the administration of the educational institution.

It should be noted that in recent years, students ' interest in University research work has been falling, and their activity and performance have been decreasing. Moreover, research shows that this trend is observed not only in our University, but in the Republic of Kazakhstan as a whole. In this regard, there is a need to conduct research on this issue, in order to identify the causes of the current situation, as well as to develop effective science-based approaches to increase the interest and effectiveness of student science.

To get the necessary information, the first-year students were surveyed at the Karaganda economic University for several years. The purpose of the research is to identify the level of students 'involvement in science and develop conditions and trends that can increase the activity and effectiveness of students' research work.

Processing the results of the survey allowed us to identify the main directions of optimizing the organization of research work of students. Reasoned conclusions were obtained and well-founded recommendations were formulated. In particular, the hypothesis about the need to increase the research level of the majority of the teaching staff was confirmed.

One of the factors contributing to the formation of a successful professional activity is to instill in students the skills of correct attitude to work, as well as explaining its significance in achieving results. In order to increase interest in scientific research, it seems appropriate to explain the relationship between science and practice, which contributes to the development of social relations and ensures the progress of all spheres of human activity. As the dominant tasks of the learning process, the orientation to the development of interest in knowledge and research work is proposed. It is necessary to instill in students the skills of mindfulness and concentration.

A fundamentally important circumstance for the research group was to determine the objectivity of the data obtained

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and the possibility of their generalization on the scale of the Republic of Kazakhstan. For this purpose the results of the survey were compared with official statistical data.

II. Materials and Methods

The Karaganda economic University of Kazpotrebsoyuz has a research Institute of economic and legal research. One of the main tasks of the research Institute staff is to involve students in research work, increase the effectiveness of their research, and develop the competencies of a future young scientist.

As the main method of research that allowed us to get the desired information, we used questionnaires of respondents on prepared questionnaires with a list of pre-prepared questions. The idea of conducting such research is not new. The effectiveness of the survey as a means of searching for relevant information was shown during similar surveys in a number of CIS Universities [1; 2]. The peculiarity of our research is to Supplement this methodology with a comparative analysis of the results obtained and official statistics.

Fulfilling the planned task, the Institute's staff surveyed 1st-year students of Karaganda economic University in all three faculties. The first survey was conducted with students of the 2018 intake, its results were processed and published in one of the Russian journals[3]. The second was conducted with students of the 2019 set, and was associated with the need to compare the obtained generalizations and confirm previously made conclusions. Along with this, an attempt was made to identify priority features that contribute to increasing student activity, as well as to establish the relationship between the results of the survey, the state of student research and the development of science in the Republic of Kazakhstan. Since the results of both studies were mostly repeated, the authors consider it appropriate to use the term "generalizing result"in the further presentation. Therefore only the main summary data will be described below.

III. Discussion

It should be noted that for a number of years there has been a decrease in research activity of students. This conclusion was reached not only by employees of the Institute, but also by other authors [4, p.381; 5, p.208].

This situation with student science gave rise to the organization and conduct of research aimed at identifying the reasons for the decline in young people's interest in science, weak involvement in research and low performance of research.

First of all, the organizers of the study were interested in the reasons for the loss of students ' addiction to research activities. This same problem was of interest to researchers from both the far [6; 7] and the near abroad[8, p. 172; 9]. In addition, some scientists believe that the innovative activity of the University directly depends on the involvement of students in research [10, p.42; 11, p. 246; 12].

IV. Results

The results of the survey on the question of interest in research activities at the University are shown in Figure 1.

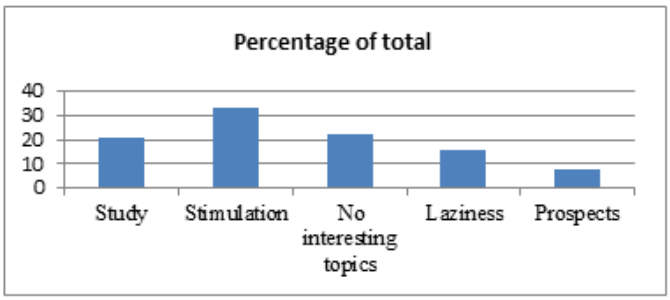

Fig. 1. Students ' answers to the question about their interest in research activities at the University

Students note that the main factors contributing to the expression of interest are stimulation (33%) and interesting scientific topics (22%). In terms of significance, these factors exceed the impact of the educational process, the assessment of one's own performance, and the possible prospects for a future profession.

The priority of selecting the specified response was not unexpected. Young people entered the university in order to get a decent education and become qualified specialists, and conducting research by students is their job, the effectiveness of which depends on the presence of stimulating factors.

The second question was to specify what kind of incentive students need to activate their research work. The results of the survey on specifying incentive forms are shown in Figure 2.

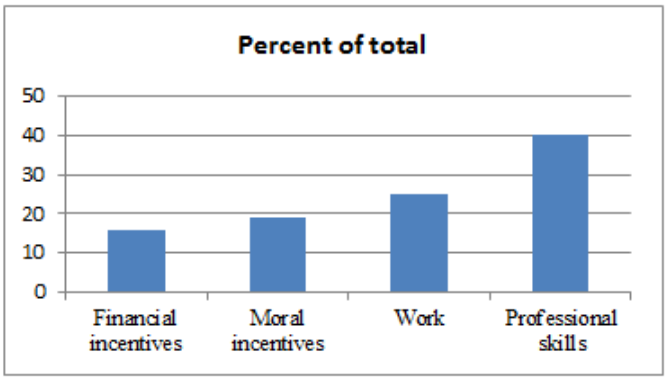

Fig. 2. Students ' answers to the question about the main incentive to participate in research work

It should be noted that 40% of respondents noted that the activation of research work will be possible if students receive appropriate professional skills. This result shows that for today's youth, obtaining professional skills is a priority factor, even more significant than material remuneration, moral encouragement, and even the provision of permanent work.

The third question of the survey was related to the students ' opinion on the feasibility and possibility of using the skills obtained in the course of research work in further professional activities.

The results of specifying the priority of research activities are shown in Figure 3.

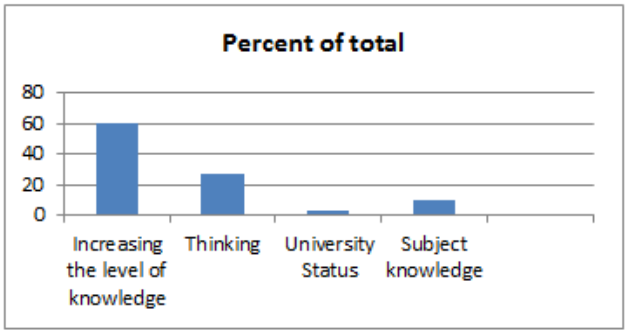

Fig. 3. The students ' answers to the question of concretization of the scope of professional skills

The most popular choice of students (60% of respondents) was "raising the level of knowledge". This response indicates the interest of students in alternative ways of obtaining professional skills, which serve as a determining factor that contributes to the activation of student research work. At the same time, students do not associate the required level of knowledge or professional skills with the prestige of the University or with a more in-depth study of certain disciplines. Even developing creative thinking skills is not a priority for most students. However, this approach causes wariness among researchers. In particular, some scientists believe that the formation and development of creative thinking should be a priority factor in conducting research by students [13, p. 34; 14, p. 176; 15, p. 172].

However, the authors of this article do not question or refute the degree of priority of a single factor, but describe the results of processing the results of actual research related to the problems of increasing the activity of research work by University students.

According to the authors, the above-mentioned professional skills are hidden features of using possible tools and methods that allow you to get the desired solution in a simpler and more effective way. There is another, simplified and frequently encountered name for these professional skills – "The secrets of the master».

Complex analytical calculations can be replaced by the use of numerical methods, difficulties in mastering professional software using standard software add-ons, performing numerous routine operations, is replaced by the creation of a simple program and the effect of its single use. More detailed examples of these "The secrets of the master “ in matters of technical and legal training of students can be found in the corresponding author's publications [16; 17].

The fourth test question concerned students ' plans. The research group was interested in how many students are going to link their future professional activities with science.

The results of orientation of research activities as a further professional activity are shown in Figure 4.

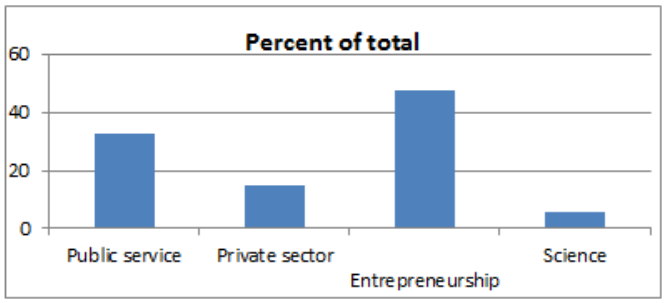

Fig. 4. Students ' answers to the question about specifying the scope of professional skills

As a result of the survey, it turned out that in the future, only 6% of the surveyed students are going to engage in scientific research. This rather low indicator of the survey results was unexpected, because in any University it is considered natural to attract students of all specialties to scientific activities, and this is also provided by the training program. There is a system of rewards and punishments, the practice of mandatory preparation of research papers, and as a result, only 6% of students are going to engage in scientific activities. Therefore, students initially do not plan to engage in scientific research, showing low activity and lack of interest in conducting research.

In this regard, a natural question arises: is such a low indicator typical only for our University or is such a trend observed in the whole country. To answer this question, we used data from official statistics for the Republic of Kazakhstan for 10 years[18]. By finding out the ratio of the number of students who have graduated from educational institutions and young teachers who have been hired, table 1 is compiled.

Table 1 clearly shows that the ratio of the number of students and teaching staff in different years varied from 6% to 8%.

TABLE I. NUMBER AND RATIO OF TEACHING STAFF AND STUDENTS IN UNIVERSITIES OF THE REPUBLIC OF KAZAKHSTAN

	2010/ 11	**2011/ 12**	**2012/ 13**	**2013/ 14**	**2014/ 15**	**2015/ 16**	**2016/ 17**	**2017/ 18**	**2018/ 19**	**2019/ 20**
Number of students (thousand people)	620	630	572	527	477	459	477	496	542	604
Number of teaching staff(thousand people)	40	41	41	42	40	38	38	38	38	38
The ratio of professors and students in Universities of Kazakhstan (percent)	6,38	6,44	7,21	7,90	8,45	8,29	8,02	7,70	7,06	6,37

In this regard, we can assume that the updated teaching staff is mainly former students (undergraduates). Based on the data shown in table 1, the actual ratio coincides with the seemingly unexpected result obtained when interviewing KEUK students for the prospects of engaging in research, and, consequently, teaching.

V. CONCLUSIONS

As a result of the research, the following patterns were established.

First. There is an objective reality that the majority of students (approximately 94%) do not connect their future life and career with scientific activities. This established fact does not have any negative connotation and is completely natural. The coincidence of data from the survey of Karaganda economic University students with official data on the ratio of University graduates and young teachers who came to work in Universities of the Republic of Kazakhstan confirms this conclusion.

Second. Six percent of students who want to connect their life with science must be identified and involved in research activities. Their identification will not be a serious problem. Such students, as a rule, are distinguished by efficiency, attentiveness, originality of thinking, good academic performance, desire to obtain new knowledge and the possibility of their practical application. Such students need to set interesting tasks, show acceptable solutions, and pay attention to the existing problems. It is advisable to entrust them with the preparation of scientific projects, to involve them in the implementation of initiative, contract and grant research.

It should be emphasized that these 6 % are able to make a breakthrough in the effectiveness of research work of University students. In the future, these young scientists should be interested in linking their professional activities and scientific careers with the University.

The third. The fact that 94% of students do not consider it possible to link their career with research does not mean that they should not be involved in research work. However, the condition for involvement in student science is the authority of the teacher. If the teacher himself is not sufficiently interested in conducting scientific research, then he can not encourage the student to engage in science and participate in student scientific research. Professional skills or "The secrets of the master" are shown only during work. A teacher who ignores research activities cannot master the "secrets of the master" and, therefore, is not interesting to the student.

In this regard, we can conclude that the activity of student scientific work directly depends on the involvement of the University's teaching staff in research activities.

Fourth. It is advisable to focus on comparing different ways to solve the existing problem. This will be most effective if you compare a complex standard solution method and implement a quick and effective non-standard solution. The teaching staff is recommended to practice such comparisons during lectures, practical classes, round tables and other forms of training.

The author's team hopes that the well-thought-out implementation of the above conclusions and recommendations will increase the activity and effectiveness of student scientific work.

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