

The Reasons for the Low Efficiency of Students' Research Work at the University

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Abstract. The article discusses the reasons for the lack of interest among students in research work. An attempt is made to identify the main factors that affect the decrease in student activity in conducting scientific research and their unwillingness to engage in science. The purpose of the study is to develop proposals for the formation of a positive environment to increase students' interest in research work. The main research method is the survey of respondents. The results of the survey are compared with the data of official statistics. In the questionnaires, along with finding out the students' interest in conducting scientific research, control questions were used to determine their level of training and prospects for their further professional activity. This approach made it possible to identify gaps in the acquisition of educational skills among school graduates. On the basis of the conducted research, proposals are made for the correlation of measures to involve students in research work. The reasoned conclusions aimed at improving the effectiveness of students' research activities and increasing their interest in science are formulated. As a result of the research, the need to identify students with extraordinary thinking and to attract people with a penchant for scientific research to research work is justified.

Keywords: students research work, questionnaires, results processing, scientific work of students, education, pedagogical activity.

Introduction

The global changes taking place in the world today require a revision of the attitude to the results of scientific research and an increase in the efficiency of their implementation. Since the main centers of scientific thought are higher educational institutions, the requirements for scientific work carried out on their basis are increasing. It is within the walls of the university that the formation of a young scientist takes place and the formation of his research skills that allow him to conduct high-quality scientific research in the future.

Unfortunately, recently there has been a decrease in the activity and effectiveness of university research work among students. This conclusion is also stated by other researchers dealing with this problem [1, 2].

In this regard, there was a need to identify the causes of the current situation, to develop effective scientifically-based approaches that contribute to increasing students' interest in science and the effectiveness of research.

The Karaganda University of Kazpotreboysuz has been operating the Research Institute of Economic and Legal Research (NII EPI) for more than 10 years. Along with other functions, the staff of the institute is assigned the task of identifying creative youth and involving students in research work. This approach is associated with the need to develop appropriate

competencies among young scientists and improve the effectiveness of their research. Based on this, the staff of the Research Institute of Economic and Legal Research initiated a study to determine the interest of students in conducting scientific research and to identify the reasons that contribute to the decrease in their scientific activity.

The aim of the study is to identify the reasons for the decline in scientific activity among students and to develop proposals for the formation of a positive environment to increase students' interest in research work and the teaching profession.

Research materials and methods

The main research method used is a questionnaire survey, which is associated with a comparative analysis of the results obtained with official statistics.

The survey of students was conducted for three years, which allowed us to identify the most common problems that prevent young people from showing interest in scientific research, based on their level of readiness for research work. A fundamentally important factor for the research group was to determine the objectivity of the data obtained and the possibility of their generalization on the scale of the Republic of Kazakhstan, so the results of the survey were compared with official statistical data.

However, the idea of conducting such studies is

not new. This method, as a means of searching for meaningful information, has shown its effectiveness in conducting similar surveys in a number of universities in the CIS [3, 4]. The peculiarity of our research is to put forward and test the hypothesis that the choice of a future field of activity related to research work directly depends on the interest and participation of students in conducting scientific research. The validity of this hypothesis consists in the identity of the assessment of the survey results with the average assessment of the results of official statistical data for the Republic of Kazakhstan.

The first stage of the study was conducted with students of the 2018 set, its results were processed and published earlier. At this stage, the details of the purpose and objectives of the research were described [5]. In the second stage, students of the 2019 set were involved, this was due to the need to compare the obtained generalizations and confirm the previously made conclusions. At the same time, an attempt was made to identify priority features that contribute to increasing student activity and establishing a link between the results of the survey. The third stage was held in 2020. Due to the identity of the survey results obtained, the authors used only the main generalizing data in the further presentation of the material.

The results of the research and their discussion

The organizers of the study were interested in the reasons for the loss of students' addiction to research activities. It should be noted that this issue was raised by the majority of researchers of this problem [6-9]. At the same time, some authors highlighted the problems associated with the organization of research and development [10].

Please note that for the sake of clarity, the figures below were sorted from a larger quantitative indicator to a smaller one. The purpose of such sorting is to strive for systematization and clarity of the information presented.

The expression of interest among university

students in research activities is shown in Figure 1.

Respondents note that the main factors driving interest are stimulation (33%) and interesting scientific topics (22%). In terms of importance, these factors bypassed the educational process, the assessment of one's own performance and the possible prospects of a future profession. Apparently, this is due to the fact that students do not think it is promising to conduct scientific research when choosing a future profession, and its effectiveness is due to the presence of stimulating factors.

As for the incentive aimed at activating research work, this is the concretization of its forms, shown in Figure 2.

It should be noted that 40% of respondents noted that the condition for the activation of research activities is the acquisition of appropriate professional skills by students. This result indicates the desire of young people to improve their professional skills, which is a more significant factor than material (16%) and moral (19%) encouragement.

This conclusion is confirmed by the results of the survey concerning the possibility of further use of the skills acquired in the course of research work. The survey results are shown in Figure 3.

The most popular choice of students (60%) was «improving the level of knowledge». This response indicates the interest of students in alternative ways of obtaining professional skills. At the same time, they serve as a determining factor contributing to the activation of student research work. However, students do not associate the required level of knowledge with the prestige of the university (3%) or with in-depth study of certain disciplines (10%). Even the formation of creative thinking skills (27%) is not a priority for most students. However, this result causes wariness among researchers. In particular, some scientists believe that the formation and development of creative thinking should be a priority when conducting research by students [11-13].

In turn, we do not question or refute the degree of

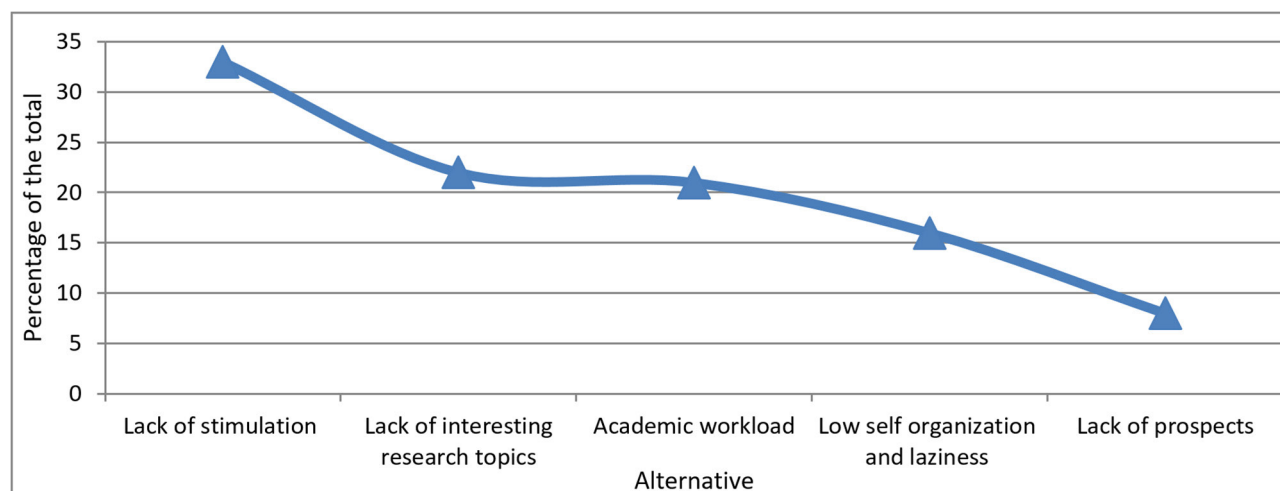


Figure 1 – Students answers to the question of interest among university students in research activities

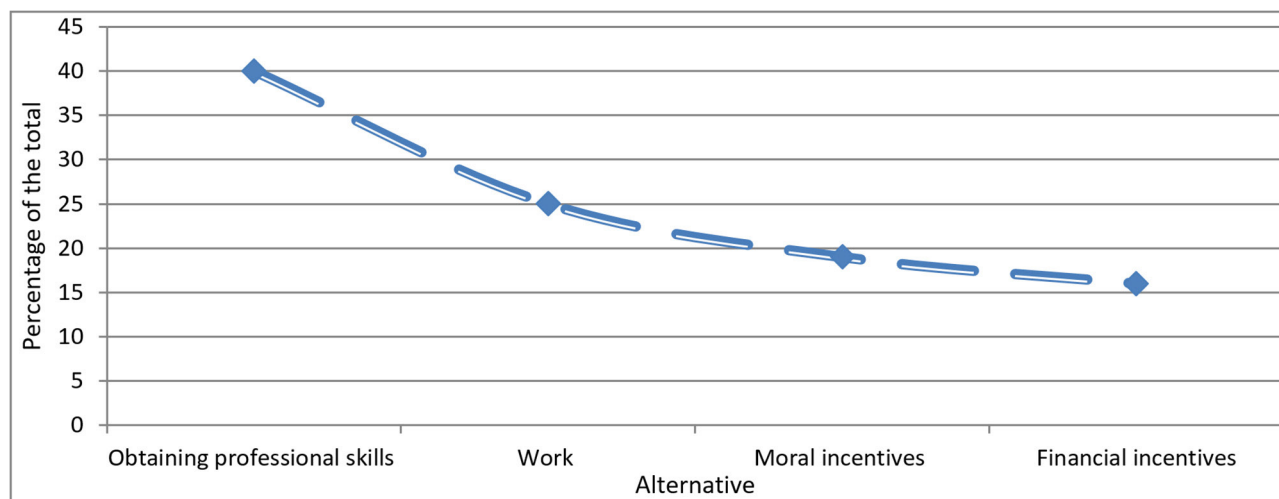


Figure 2 – Students' answers to the question about incentives for participation in research work

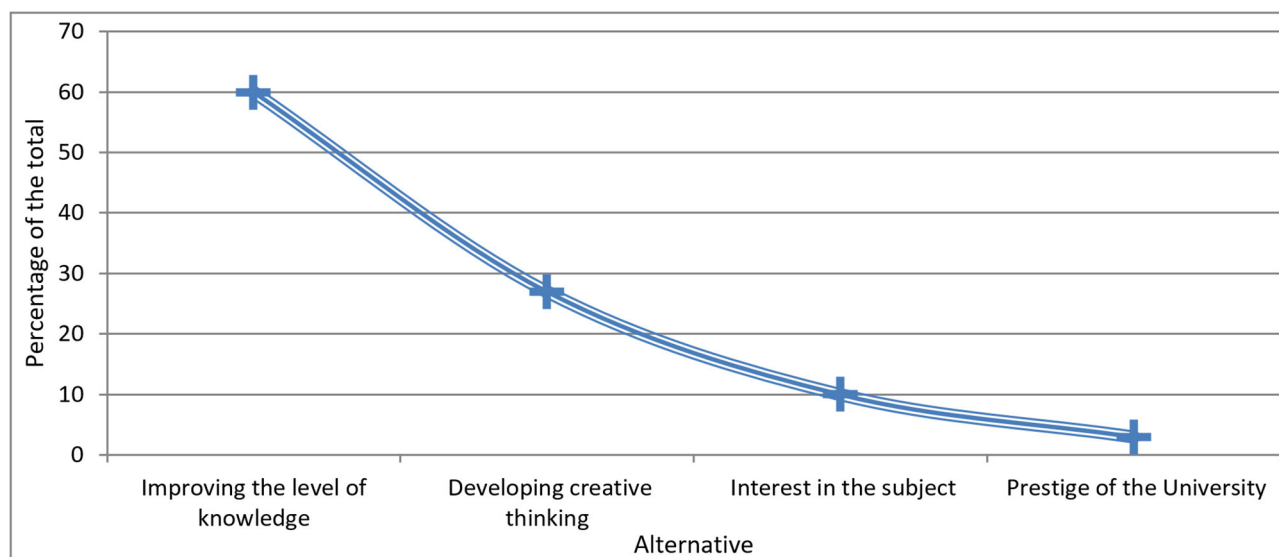


Figure 3 – Students' answers to the question about specifying the scope of professional skills

priority of a single factor. In our opinion, professional skills are the hidden features of using possible means and methods aimed at achieving the desired solution in a simpler and more effective way. Otherwise, such professional skills are called «secrets of the master».

Complex analytical calculations can be replaced by the use of numerical methods, difficulties in mastering professional software, compensated by the use of standard software add-ons, performing numerous routine operations, replaced by the creation of a simple program and the effect of its single use. Examples of these «master's secrets» in matters of technical and legal training of students are given in the corresponding author's publications [14; 15]. Individual scientists also justify the possibility of using completely different methodologies in order to obtain an identical result [16].

In turn, the research group was interested in how many students are going to link their future

professional activities with science. The results are shown in Figure 4.

The results of the survey showed that in the future, only 6% of respondents are going to engage in scientific research. Such a rather low figure is depressing, since in any university it is considered natural to attract students of all specialties to scientific activities, and this is also provided for in the training program. The mandatory preparation of various research papers is practiced, and as a result, only a small percentage is going to professionally engage in scientific activities. Therefore, students initially have no interest in conducting scientific 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 republic as a whole. To solve this issue, we conducted a comparative analysis of official statistical information for 20 years in the Republic of Kazakhstan [17]. Based on

official statistics, table was compiled, which shows a comparison of the number of students and the teaching staff.

Table clearly shows that the ratio of the number of students and teaching staff in different years varied from 6% to 8%, and the average value was 6.7%.

Clearly, the dynamics of changes in the ratio of teaching staff and students is shown in Figure 5.

Figure 5 shows that the average ratio of the number of teaching staff and students in the universities of the Republic of Kazakhstan is 6.7%.

In this regard, it can be assumed that the updated teaching staff is mainly former students (undergraduates). Based on the above data, we can state the identity of the results obtained during the survey of students with the real ratio of the number

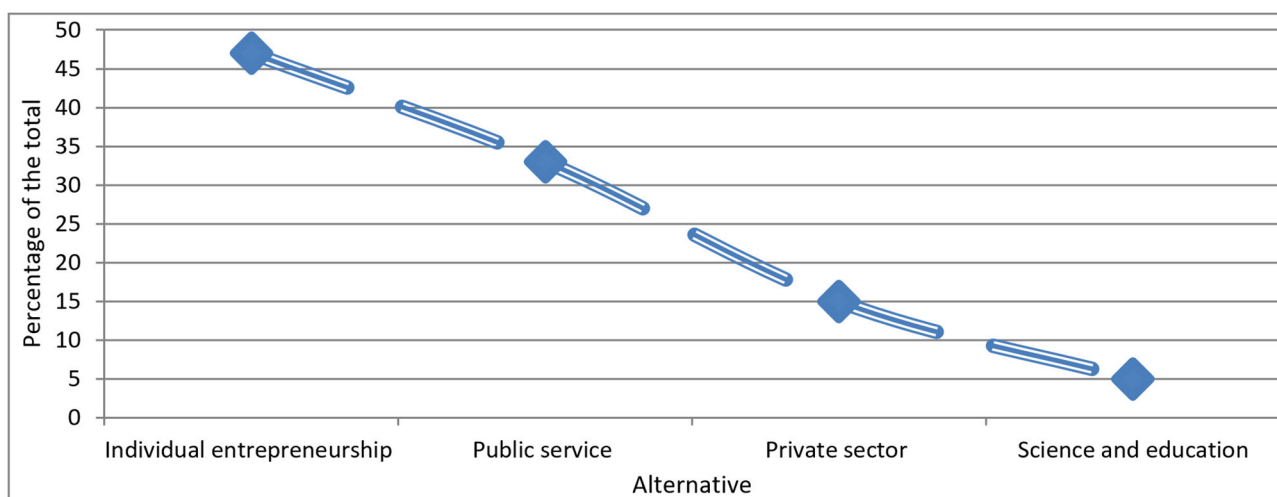


Figure 4 – Students' answers to the question about students' plans for the field of activity after graduation from a higher educational institution

The ratio of the teaching staff and students in the universities of the Republic of Kazakhstan					
Time period	The Number of Universities of RK	The Number of students of RK (people)	The Number of faculty, people	The ratio of teaching staff and students	Average value
2000/01	170	440 715	29 577	6,71	6,7
2001/02	185	514 738	34 508	6,70	6,7
2002/03	177	590 982	37 602	6,36	6,7
2003/04	180	658 106	40 972	6,23	6,7
2004/05	181	747 104	42 333	5,67	6,7
2005/06	181	775 762	43 382	5,59	6,7
2006/07	176	768 442	42 788	5,57	6,7
2007/08	167	717 053	41 207	5,75	6,7
2008/09	143	633 814	37 814	5,97	6,7
2009/10	148	610 264	39 155	6,42	6,7
2010/11	149	620 442	39 600	6,38	6,7
2011/12	146	629 507	40 531	6,44	6,7
2012/13	139	571 691	41 224	7,21	6,7
2013/14	128	527 226	41 635	7,90	6,7
2014/15	126	477 387	40 320	8,45	6,7
2015/16	127	459 369	38 087	8,29	6,7
2016/17	125	477 074	38 241	8,02	6,7
2017/18	122	496 209	38 212	7,70	6,7
2018/19	124	542 458	38 275	7,06	6,7
2019/20	125	604 345	38 470	6,37	6,7

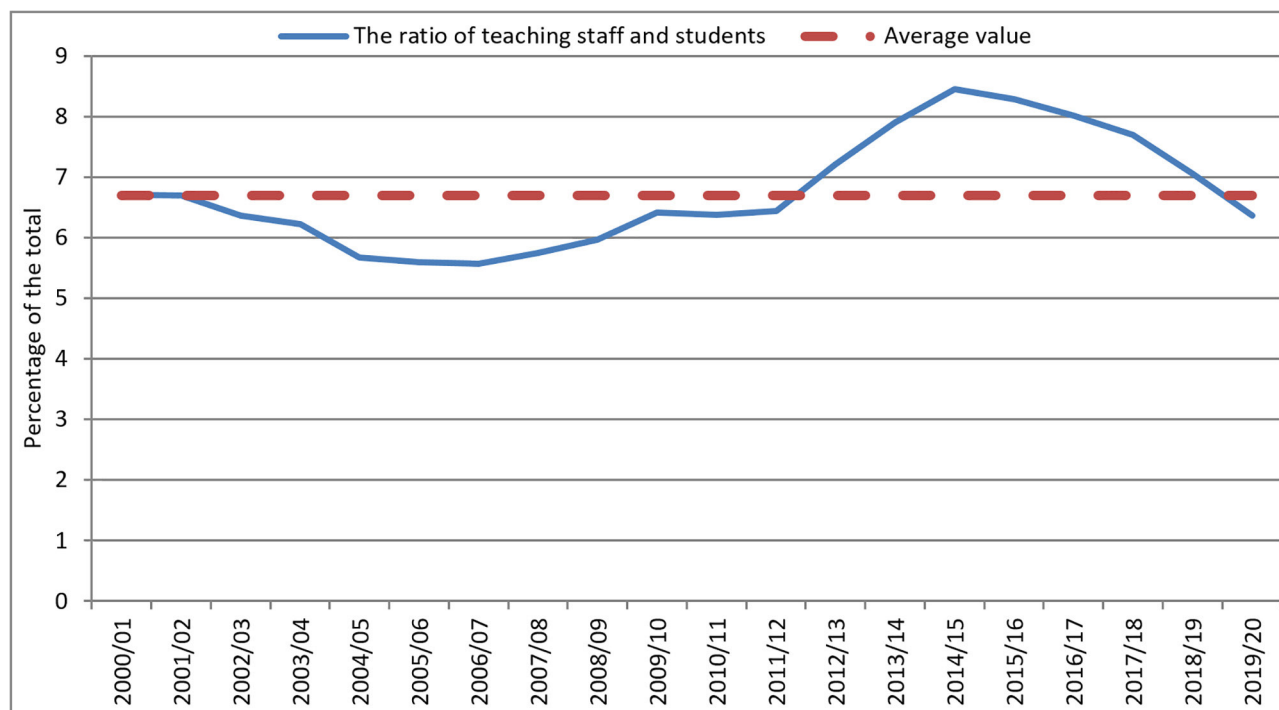


Figure 5 – Ratio of the number of teaching staff and students in higher education institutions of the Republic of Kazakhstan

of teaching staff and students in the Republic of Kazakhstan. Such an identity allows us to make an assumption about the possible generalization of the results of the survey and its projection on the entire system of higher education in the Republic of Kazakhstan.

However, in order to form and justify the final conclusions, it is necessary to conduct additional studies with an expanded sample coverage.

Conclusions

The results of the study revealed the following patterns.

1. The majority of students do not associate their future life and career with scientific activities, so they are not active in carrying out research work. The analysis of the results of the survey of students and official statistical information also indicates an increase in the teaching staff, mainly due to young people who showed interest in scientific activities during their studies at a higher educational institution.

2. It is necessary to take active measures to identify and attract students to research activities. Such students, as a rule, are distinguished by efficiency, attentiveness, extraordinary thinking, good academic performance, the desire to acquire new knowledge and the possibility of their practical application. Such students need to set interesting tasks, show acceptable solutions to them, 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, contractual

and grant research.

It should be emphasized that these 6% are able to make a breakthrough in the effectiveness of scientific 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.

3. The condition for involvement in student science is the authority of the teacher, who should use his example to attract students to research work. The teacher's lack of interest in conducting scientific research negatively affects the student's initiative to participate in student scientific research. A teacher who ignores research activities cannot master the «secrets of the master» and, therefore, is not interesting to the student. Therefore, the activity of student scientific work directly depends on the involvement of the university faculty in research activities.

4. To develop students' creativity and originality of thinking, it is advisable to focus on the development of skills of non-standard ways of solving educational situations. It seems effective to use mechanisms for comparing a complex standard method with a simple, but effective non-standard solution. Faculty members are encouraged to practice such comparisons, especially when conducting practical, laboratory classes, round tables, and other forms of training sessions.

The authors hope that a well-thought-out implementation of the above conclusions and recommendations will increase the activity of student research work.

REFERENCES

1. Lee, S. The emergence of the modern university in Korea. High Educ 18, 87-116 (1989). <https://doi.org/10.1007/BF00138962>.
2. Cheng, M.Mh. Identifying Strategies to Support Junior Secondary Students to Engage in Scientific Investigation Tasks. Can J Sci Math Techn 8, P. 99-120. (2008). <https://doi.org/10.1080/14926150802169222>.
3. Kosintseva T.D., Horsetail R.N. Organization of research work of students in the educational process in a modern Russian university // News of higher educational institutions. Sociology. Economy. Politics. 2019. No. 2. pp. 73-80.
4. Silina D.O. Statistical research of university students on the problem of involvement in research work (SRWS) // Student science and the XXI century. 2020. Vol. 17. No. 1-1 (19). pp. 311-313.
5. Bashirov A.V., Khanov T.A. Factors of increasing the activity of students' research work // Modern problems of science and education. 2018. No. 4. P. 91.
6. Anderhag, P., Wickman, P. & Hamza, K.M. How can teaching make a difference to students' interest in science? Including Bourdieuan field analysis. Cult Stud of Sci Educ 10, 377-380 (2015). doi.org/10.1007/s11422-014-9630-z.
7. Anderhag, P., Hamza, K.M. & Wickman, P. What Can a Teacher Do to Support Students' Interest in Science? A Study of the Constitution of Taste in a Science Classroom. Res Sci Educ 45, pp. 749-784 (2015). doi.org/10.1007/s11165-014-9448-4.
8. Kennedy, D., Perky, J., Lougee, C. et al. The discussion about proposals to change the Western Culture program at Stanford University. Minerva 27, pp. 223-411 (1989). <https://doi.org/10.1007/BF01102569>.
9. Oh, K., Kang, N.H. Participation patterns of elementary students in scientific problem finding activities. Asia Pac. Sci. Educ. 5, 16 (2019). <https://doi.org/10.1186/s41029-019-0039-6>.
10. Ilyina T.G. Problems of organizing research work of students of economics // Problems of accounting and finance. 2014. No. 4 (16). pp. 65-71.
11. Dolan, E., Grady, J. Recognizing Students' Scientific Reasoning: A Tool for Categorizing Complexity of Reasoning During Teaching by Inquiry. J Sci Teacher Educ 21, P. 31-55 (2010). <https://doi.org/10.1007/s10972-009-9154-7>.
12. Bettencourt, L.M.A., Kaiser, D.I., Kaur, J. et al. Population modeling of the emergence and development of scientific fields. Scientometrics 75, p. 495 (2008). <https://doi.org/10.1007/s11192-007-1888-4>.
13. Scardamalia, M., Bereiter, C. Smart technology for self-organizing processes. Smart Learn. Environ. 1, 1 (2014). <https://doi.org/10.1186/s40561-014-0001-8>.
14. Bashirov A.V., Khanov T.A. The use of applied software add-ons in the practical training of students of technical specialties // Trends in the development of science and education. 2020. No. 62-4. pp. 8-10. DOI: 10.18411 / lj-06-2020-73.
15. Khanov T.A., Bashirov A.V. Training of lawyers using information technologies: problems of instilling practical skills // Trends in the development of science and education. 2020. No. 62-17. pp. 10-13. DOI: 10.18411 / lj-06-2020-380.
16. Laudel, G. How do National Career Systems Promote or Hinder the Emergence of New Research Lines? Minerva 55, pp. 341-369 (2017). <https://doi.org/10.1007/s11024-017-9314-4>.
17. Science statistics // Electronic resource. Access mode: <https://stat.gov.kz/official/industry/24/statistic/6> (date of access: 20.07.2021).

Университетте студенттердің ғылыми-зерттеу жұмыстарының төмен тиімділігінің себептері

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Аңдатпа. Мақалада студенттердің ғылыми-зерттеу жұмыстарына қызығушылығының болмау себептері қарастырылады. Студенттердің ғылыми зерттеулер жүргізудегі белсенділігінің төмендеуіне және олардың ғылыммен айналысқысы келмеуіне әсер ететін негізгі факторларды анықтауға әрекет жасалды. Зерттеудің мақсаты студенттердің ғылыми-зерттеу жұмыстарына қызығушылығын арттыру үшін жағымды ортаны қалыптастыру бойынша ұсыныстар әзірлеу болып табылады. Зерттеудің негізгі әдісі респонденттерге сауалнама жүргізу болып табылады. Сауалнама нәтижелері ресми статистика деректерімен салыстырылады. Сауалнамаларда студенттердің ғылыми зерттеулерге деген қызығушылығын анықтаумен қатар, олардың дайындық деңгейін және одан әрі кәсіби қызмет перспективаларын анықтау үшін бақылау сұрақтары пайдаланылды. Бұл тәсіл мектеп түлектерінің білім алуындағы олқылықтарды анықтауға мүмкіндік берді. Жүргізілген зерттеу негізінде студенттерді ғылыми-зерттеу жұмысына тарту жөніндегі шараларды келісу бойынша ұсыныстар енгізіледі. Студенттердің ғылыми-зерттеу қызметінің тиімділігін және олардың ғылымға деген қызығушылығын арттыруға бағытталған негізделген тұжырымдар жасалды. Зерттеу нәтижесінде ерекше ойлау қабілеті бар студенттерді анықтау және студенттерді ғылыми-зерттеу жұмыстарына тарту қажеттілігі негізделген.

Кілт сөздер: студенттердің зерттеу жұмысы, сауалнама жүргізу, нәтижелерді өңдеу, студенттердің ғылыми жұмысы, білім беру, педагогикалық қызмет.

Причины низкой эффективности научно-исследовательской работы студентов в университете

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Аннотация. В статье рассматриваются причины отсутствия интереса у студентов к научно-исследовательской работе. Предпринята попытка выявить основные факторы, влияющие на снижение активности студентов в проведении научных исследований и их нежелание заниматься наукой. Целью исследования является разработка предложений по формированию позитивной среды для повышения интереса студентов к научно-исследовательской работе. Основным методом исследования является опрос респондентов. Результаты опроса сопоставляются с данными официальной статистики. В анкетах наряду с выяснением заинтересованности студентов в проведении научных исследований использовались контрольные вопросы для определения уровня их подготовки и перспектив дальнейшей профессиональной деятельности. Такой подход позволил выявить пробелы в приобретении образовательных навыков выпускниками школ. На основе проведенного исследования вносятся предложения по согласованию мер по вовлечению студентов в научно-исследовательскую работу. Сформулированы обоснованные выводы, направленные на повышение эффективности исследовательской деятельности студентов и повышение их интереса к науке. В результате проведенного исследования обоснована необходимость выявления студентов с неординарным мышлением и привлечения студентов к научно-исследовательской работе.

Ключевые слова: исследовательская работа студентов, анкетирование, обработка результатов, научная работа студентов, образование, педагогическая деятельность.

REFERENCES

1. Lee, S. The emergence of the modern university in Korea. High Educ 18, 87-116 (1989). <https://doi.org/10.1007/BF00138962>.
2. Cheng, M.Mh. Identifying Strategies to Support Junior Secondary Students to Engage in Scientific Investigation Tasks. Can J Sci Math Techn 8, P. 99-120. (2008). <https://doi.org/10.1080/14926150802169222>.
3. Kosintseva T.D., Horsetail R.N. Organization of research work of students in the educational process in a modern Russian university // News of higher educational institutions. Sociology. Economy. Politics. 2019. No. 2. pp. 73-80.
4. Silina D.O. Statistical research of university students on the problem of involvement in research work (SRWS) // Student science and the XXI century. 2020. Vol. 17. No. 1-1 (19). pp. 311-313.
5. Bashirov A.V., Khanov T.A. Factors of increasing the activity of students' research work // Modern problems of science and education. 2018. No. 4. P. 91.
6. Anderhag, P., Wickman, P. & Hamza, K.M. How can teaching make a difference to students' interest in science? Including Bourdieuan field analysis. Cult Stud of Sci Educ 10, 377-380 (2015). doi.org/10.1007/s11422-014-9630-z.
7. Anderhag, P., Hamza, K.M. & Wickman, P. What Can a Teacher Do to Support Students' Interest in Science? A Study of the Constitution of Taste in a Science Classroom. Res Sci Educ 45, pp. 749-784 (2015). doi.org/10.1007/s11165-014-9448-4.
8. Kennedy, D., Perky, J., Lougee, C. et al. The discussion about proposals to change the Western Culture program at Stanford University. Minerva 27, pp. 223-411 (1989). <https://doi.org/10.1007/BF01102569>.
9. Oh, K., Kang, N.H. Participation patterns of elementary students in scientific problem finding activities. Asia Pac. Sci. Educ. 5, 16 (2019). <https://doi.org/10.1186/s41029-019-0039-6>.
10. Ilyina T.G. Problems of organizing research work of students of economics // Problems of accounting and finance. 2014. No. 4 (16). pp. 65-71.
11. Dolan, E., Grady, J. Recognizing Students' Scientific Reasoning: A Tool for Categorizing Complexity of Reasoning During Teaching by Inquiry. J Sci Teacher Educ 21, P. 31-55 (2010). <https://doi.org/10.1007/s10972-009-9154-7>.
12. Bettencourt, L.M.A., Kaiser, D.I., Kaur, J. et al. Population modeling of the emergence and development of scientific fields. Scientometrics 75, p. 495 (2008). <https://doi.org/10.1007/s11192-007-1888-4>.
13. Scardamalia, M., Bereiter, C. Smart technology for self-organizing processes. Smart Learn. Environ. 1, 1 (2014). <https://doi.org/10.1186/s40561-014-0001-8>.
14. Bashirov A.V., Khanov T.A. The use of applied software add-ons in the practical training of students of technical specialties // Trends in the development of science and education. 2020. No. 62-4. pp. 8-10. DOI: 10.18411 / lj-06-2020-73.
15. Khanov T.A., Bashirov A.V. Training of lawyers using information technologies: problems of instilling practical skills // Trends in the development of science and education. 2020. No. 62-17. pp. 10-13. DOI: 10.18411 / lj-06-2020-380.
16. Laudel, G. How do National Career Systems Promote or Hinder the Emergence of New Research Lines? Minerva 55, pp. 341-369 (2017). <https://doi.org/10.1007/s11024-017-9314-4>.
17. Science statistics // Electronic resource. Access mode: <https://stat.gov.kz/official/industry/24/statistic/6> (date of access: 20.07.2021).