European Scholar Journal (ESJ)
Available Online at: https://www.scholarzest.com
Vol. 3 No.12, December 2022
ISSN: 2660-5562

CONTENT OF STUDENTS' SCIENTIFIC RESEARCH ACTIVITY AND MAIN FORMS OF RESEARCH RESULTS

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Article history:

Received: 13th October 2022
Accepted: 13th November 2022
Published: 26th December 2022

Abstract:

Among the factors affecting the effectiveness of the quality of higher education, the effectiveness of research activities is important. The integration of the educational process with scientific research constitutes the essence of the "University-2.0" concept. This article, aimed at highlighting the content of scientific research activities and the forms of scientific research work carried out by students during their studies at HEIs, is conceptually important in the current period when the world's leading higher education institutions are developing towards the "University-4.0" concept. In the article, the content of the concept of scientific research is studied on the basis of sources related to the topic, and the content of the main forms of scientific research work performed by students in the higher education educational process is highlighted.

Keywords: higher education, scientific research, student scientific activity, research results.

INTRODUCTION. The content of research activities of students in the educational process of higher education is explained by the orientation of the educational process to research. Pedagogical technologies used in conveying the content of science to students, as well as criteria for assessing mastery, should be directed to the development of research skills in students. When studying this process, first of all, it is necessary to define the concepts of research and scientific research. The concepts of "research" and "scientific research" are among the main concepts of continuing education. These concepts are widely studied in all branches of science, including fields such as pedagogy, philosophy, science, and fan metrics. Because each field of science has its own research methods, directions, and technologies. In this regard, it is appropriate to consider the concepts of research and scientific research as interdisciplinary concepts.

LITERATURE REVIEW. A number of pedagogic scientists have studied the methodological issues of directing students to scientific research with the help of educational technologies in Uzbekistan. For example, It is reflected in the scientific, scientific-methodical works of R.Djuraev, R.Ishmukhamedov, A.Abdukadirov, A.Pardaev, N.Saidakhmedov, Sh.Abdullaeva, N.Egamberdieva, B.Khodjaev, A.Makhmudov, S.Akbarova, Z.Akhrorova, U.Tolipov, M.Usmonboeva.

Sources on the conceptual and methodological foundations of research and scientific research are also observed in the works of N.A. Shermukhamedova, M.N. Abdullaeva, A.A. Azizkulov, Sh. Koshakov, Z. Davronov, B. Kadirov, I. Saifnazarov, G. V. Nikitchenko, Kasimov, Sh. Shayakubov.

Among the foreign scientists, Akomea, M., Pantah, A., Kuupille a, F., & Asenso, J. A., Caena, F., Lamanauskas, V., Dalia Augienė Nezvalova, D., and etc., have touched on the content of the concepts of research and scientific research in their articles.

Based on the above sources, we will try to clarify the content of the concepts of research and scientific research. In the history of pedagogical research, this concept has been studied by many scientists. First of all, research is observation from the inside. Broadly speaking, it is the search for new knowledge or evidence-based systematic research toward a goal. In a narrower sense, research is a scientific method or process that studies objects and phenomena, the result of which is a scientific work.

Scientific research is the process of discovering new knowledge and theories. So, this activity is organized on the basis of constant movement and change. Any scientific research is a specially organized process of cognition, in which theoretical knowledge about reality is studied, assimilated and systematized. This definition confirms another important feature of the concept of "scientific research" - systematicity. Indeed, since knowledge is a cumulative process, the knowledge, skills and abilities that form the basis of scientific research activities develop and improve as life goes on.

Scientific research is the process of discovering new knowledge and theories. Any scientific research is a specially organized process of cognition, in which theoretical knowledge about reality is studied, assimilated and systematized. That is, the research process is a holistic phenomenon consisting of interrelated elements. "Scientific research is a purposeful knowledge of reality, its results appear in the form of a system of concepts, laws and theories, the process of developing new scientific knowledge is one of the types of cognitive activity characterized by objectivity, representativeness, evidence and accuracy. N. Shermukhamedova, a leading scientist of philosophy and methodology of science, reacts to the scientific research activity of students by saying that "Research activity means the active, consistent influence of the subject on the object." From this definition, it can be understood that the activity of scientific research is aimed at creating innovation. Because the active influence of the subject on the object requires the qualitative change of the object. This is manifested by finding solutions to problematic situations, one of the main tasks envisaged by the organization of scientific research activities. That is, any scientific research is ultimately evaluated by the importance of scientific innovation that solves the problem in the object.

It should also be noted that any scientific research relies on scientific knowledge. "Scientific knowledge is a socio-historical process, it is an object of study of gnoseology and epistemology. And scientific research is the activity of creating scientific knowledge, and researchers, scientists and the scientific community are engaged in this activity. It is possible to carry out the scientific research process according to the purpose only if there is scientific knowledge. According to the authors, "Scientific research is manifested as a process of creating scientific knowledge." We also agree with this opinion, and based on this, we base the following characteristics of scientific research activity:

- axiologically creating materialistic and spiritual values in scientific research activities;
- heuristically opening new, previously unavailable knowledge of creative activity;
- self-expression and self-development of a person in humanistic scientific research activities.

Also, the research activity in the higher education educational process creates the basis for the formation of the following knowledge and skills in the student:

- first, to choose a research topic based on deep theoretical knowledge of the field, to determine the scope, object and subject of the topic, to be able to explain its practical significance;

-secondly, setting the intended goal of scientific research, putting forward hypotheses related to solving the problem situation;

- thirdly, to explain the level of research based on succession, coherence, historicity, rationality and other principles, justifying what kind of scientific schools are targeted based on experience;

-fourthly, to illuminate the scientific apparatus of research in accordance with the requirements of modern paradigms;

- fifthly, based on learned sources (theory, teaching, views of scientific schools, etc.), expressing one's position on the issue, proposing a scientific solution to the problem, and formalizing the ideas in a scientific style in the form of a course work, a qualified graduation work, a thesis, an article, a pamphlet, a dissertation, etc.

In general, scientific research is an important strategic phenomenon that sustainably develops society, and it is formed and developed in a complex way at the higher education stage of continuous education. Scientific research is the process of collecting data, studying best practices, classifying, analyzing, processing them, testing new ideas (hypothetical) and proving a scientific idea-proposal on this basis in order to find a scientific solution to problems within the relevant field of science (subject).

The review of sources related to the topic requires the study of the concept of "scientific activity", which is considered a logical continuation of the concept of scientific research. The Law of the Republic of Uzbekistan on Science and Scientific Activity defines scientific activity as follows: "Scientific activity is considered to be an activity directed to the study of existence and the practical application of acquired knowledge in order to determine the properties, peculiarities and laws of objects, phenomena (processes), and consists of fundamental and applied research. In this document, the concept of scientific activity is defined in a general, broad sense, and the scientific activity of students in the educational process of higher education is of particular importance. That is, "Scientific activity is a long-term work that requires great responsibility and great independence. During this activity, the analytical thinking of students is strengthened, the skills of searching for and using information are formed; they learn how to prepare reports and scientific presentations based on the collected data. Therefore, in the course of higher education, students should have the ability to prepare the first forms of scientific activity - a course work on mastering the subject, an abstract, an independent work, a scientific-creative essay. The graduation thesis and the master's thesis are considered to be the highest form of the above scientific-methodical works in terms of volume and content, and reflect the knowledge and skills of the graduates in the specialty.

Here we describe the content of fundamental and applied research. Fundamental research focuses on obtaining new knowledge about the phenomena and laws of reality. The nature of practical research is determined by the fact that they are directly aimed at obtaining the necessary knowledge to solve practical tasks. Of course, there are other types of research, for example, innovative, project-constructive developments, start-up projects. However, in the course of higher education, researches are carried out on fundamental and practical types of research in most cases, in the preparation of course work, graduation qualification work, master's theses, etc.

Forms of results of students' research activities.

The results of scientific research activities carried out by students in the educational process are manifested in two forms:

-scientific-research works performed during the mastering of educational programs;

- scientific-research works formed on the basis of independent research.

In the process of studying in higher education, each student performs certain forms of scientific research by mastering subjects. In particular, the preparation of an abstract, independent work, term paper, graduation thesis and master's theses requires appropriate research. Since the listed scientific and creative works are directly related to the educational process, they are not considered free (independent) scientific research. Students with the ability of scientific creativity demonstrate research skills by being able to turn the given research work (abstract, term paper, graduation qualification work, master's thesis, etc.) into a real creative process during the performance of these tasks in the educational process. This causes the creation of the first forms of independent creative research - scientific articles and theses. So, based on our above opinions, we can distinguish the results of scientific research activities conducted by students according to two characteristics:

1. Scientific research works performed by the student directly for the purpose of mastering the study load. These can include abstracts, course work, laboratory work, graduation qualification work and master's thesis. These research works are measured (assessed) by the student's mastery of professional skills

2. The results of scientific research developed on the basis of the student's independent research on the direction or specialty. These include thesis, article and monograph. These scientific results are not always related to the evaluation system of the educational process, which in a sense reduces the interest of students to conduct independent scientific research. We consider this situation to be one of the issues that should be reformed in the higher education system. Theses, articles, and monographs published by students in higher education in our republic are considered mainly when recommending for state and famous scholarships. This prevents stimulating the scientific interests of young people who are not good at mastering, but have talent and ability in the relevant field.

Let's briefly touch on the content of the above-mentioned scientific research works.

An abstract is a summary of short information prepared on the basis of several literatures (or one source) on the subject. According to the style of writing and presentation, the abstract differs from other independent works in that it is structurally simpler. Therefore, not only in higher education, but also in general secondary education, students may be required to prepare abstracts when mastering the content of science. abstract is the initial form of independent scientific research activity, in which the student develops the skills of finding the necessary sources on the topic, extracting the necessary ideas from them for his research (quoting) and expressing his attitude. The abstract summarizes scientific information on the selected topic, it does not necessarily contain scientific innovation.

A slightly more complex form of independent work than an abstract is a course paper. Course paper is an independent scientific research work of a student, dedicated to the current topic of the relevant science. It is part of the student's curriculum in the field (or specialty) curriculum. During our scientific-pedagogical activity in higher education, we have developed a draft Regulation on the preparation and defense of course work (the Regulation can be found in full in the Appendix) and it is being implemented in the educational process at the Faculty of Social Sciences of the National University of Uzbekistan.

Laboratory work is control work aimed at determining the student's practical skills. In the process of working in the laboratory, the student will have the opportunity to apply the theoretical knowledge learned in the lecture. The completion of laboratory work will be the basis for conducting independent experimental research in the future.

Experimental research is an effective way to acquire new knowledge. The purpose of the experiment is to test the theoretical rules (the main idea, the justification or rejection of the hypothesis) and to study the content of scientific research more widely. Experiments are natural and artificial (socio-cultural life, experiments related to nature and laboratory experiments).

Thesis (graduation qualification work) is an independent scientific and creative work dedicated to the study of the current topic of the major by the student in the final part of the bachelor's training program. The thesis is prepared and defended in the final year. The thesis can be written by students of all majors, it should reflect not only theoretical knowledge, but also practical skills related to the major. In the manual "How to write a diploma thesis" by Umberto Eco, a professor of a number of European universities, all issues related to the purpose of writing a diploma thesis, organization of research, assignment of tasks, practical and methodical tasks, formalization of independent work and other aspects are explained in a simple, detailed and understandable manner. We emphasize that familiarization with this manual is useful not only for students, but also for teachers-experts who supervise and evaluate the graduation work.

Master's dissertation is a unique type of scientific creation, it is an independent scientific research work performed by a student in cooperation with a scientific supervisor. A master's degree is an academic degree, not a scientific degree. In this regard, the master's thesis is the final work of a student studying at the master's level. Dissertation work is the result of scientific research done on the basis of theoretical and practical knowledge acquired by the student during his studies.The master's thesis should be an independent and logically completed work related to solving the problems of the type of activity the master is preparing (research, law-making, law enforcement, expert consulting, organizational management, pedagogy, etc.). There are many differences between a master's thesis and a graduate thesis, the most important of which is that the thesis must contain a small amount of scientific innovation. In this respect, we consider the master's level of education to be the stage that forms and develops the skills to conduct scientific research activities.

A thesis, a scientific article and a monograph are examples of independent scientific research.

A thesis is an independent scientific work that reflects the main content of a scientific research work. Evidence (citations and references), comments are not given in the thesis, it reflects the summary content of the research results. The theses are usually published in large-scale conferences and forums. These collections allow you to get acquainted with the most general scientific conclusions in a particular field. In the thesis, the author's clear attitude to the relevant topic, scientific innovation is clearly expressed.

A scientific article is the most common form of independent scientific research, which reflects the research carried out by the author on a specific topic. A scientific article, as a completed scientific work, should bring a small scientific innovation to the relevant field (topic). The relevance of the subject, scientific problem, approaches to its solution, methods used in research, obtained results and conclusions are reflected in the article. While studying a scientific problem, the author should contribute to the development of science by offering a solution (methodology, approach, etc.) to the problematic situation in the article. "A scientific article is the most common form of a researcher's scientific product. Articles are published in scientific journals, scientific or methodological collections. The volume of the article usually consists of 5 to 15 written pages. The description of the text in a scientific article should be systematic and coherent, and the components should be logically connected. Special attention should be paid to the method of scientific work. The following main requirements are characteristic of the scientific method: clarity of presentation, accuracy of word usage, comprehensibility, strict adherence to scientific terminology, consistency of presentation of positions, interdependence of rules. It is important to present scientific conclusions and proposals in a scientific article. In the concluding part of the article, it is necessary to briefly and clearly explain the important aspects of the research results and show the ways of their implementation." Journals set requirements for the composition, size, and content of scientific articles, so they differ. For example, the IMRAD content of the article is well known to the scientific community. It is derived from the initials of the words Introduction, Methods, Results, and Discussion. It should be mentioned here that there are significant differences between the requirements for articles of local journals published by the High Attestation Commission of our republic and the requirements for articles of journals contained in fan metric databases such as Scopus and Web of Science.

A monograph is a scientific work aimed at a detailed study of a specific topic or problem. A monograph is written as a result of several years of research. A monograph is the largest volume of independent scientific research, in which the author (or team of authors) puts forward scientific hypotheses and conclusions that contribute to the development of the relevant field of science. There are individual and collective monographs. The concept of "mono", that is, "single", is determined by the fact that the work is dedicated to a single topic, and not to the authors. It should be noted that the reputation and recognition of scientists is related to the value of monographs - scientific works they have created. For example, works such as "The City of Virtuous People" by Farobi, "The Great Didactic" by Jan Amos Comenius, "The Ruler" by Niccolo Machiavelli, and "The Structure of Scientific Revolutions" by Thomas Kuhn.

CONCLUSION

In general, scientific activity is formed at the bachelor's level of higher education and develops at the master's level. However, it should be noted that not all students who are studying in higher education can fully engage in scientific activities, there are a number of subjective and objective reasons for this situation. In our opinion, it is recommended to consider the following in order to effectively organize the scientific research activities of students:

- the use of modern educational methods by teachers that help to think critically and find new information during the lesson;

-teachers involve students in scientific cooperation as assistants (data collection, arrangement, etc.) in performing and presenting their research work;

- organization of participation of students in the process of scientific research at the higher educational institution, national and international level (in the form of participation in scientific competitions, conferences, projects);

- inclusion of requirements that develop research skills in the criteria of education and assessment based on the curriculum, etc.

REFERENCES:

1. Law of the Republic of Uzbekistan on Science and Scientific Activity. LUR-576. 29.10.2019. Chapter 3. Article 12. https://www.lex.uz/docs/4571490
2. Akomea, M., Pantah, A., Kuupille a, F., & Asenso, J. A. (2022). Evaluation of remote teaching and learning in Universities in Ghana during the COVID-19 pandemic. Journal of Education, Curriculum and Teaching Studies, 3(1). Retrieved from https://royalliteglobal.com/ects/article/view/765
3. Caena, F. (2011). Literature review Teachers' core competencies: requirements and development. Education and Training 2020 Thematic Working Group 'Professional Development of Teachers'. Retrieved from: http://ec.europa.eu/education/policy/strategicframework/doc/teacher-competences_en.pdf
4. Lamanauskas, V. (2012). Development of scientific research activity as the basic component of science education. Journal of Baltic Science Education, 11 (3), 200-202.

5. Nezvalova, D. (2011). Can the pre-service science teacher be a researcher? Problems of Education in the 21st Century, 37, 90-97.
6. Shayakubov Sh.Sh. Scientific (legal) research methodology: Study guide / Tashkent: Tashkent State University of Law, 2022.
7. Vincentas Lamanauskas and Dalia Augienė Development of Scientific Research Activity in University: A Position of the Experts // Procedia - Social and Behavioral Sciences 167 (2015). - p. 132.
8. Aganov S. S., Kerimov Sh. A. Experimental study of technological fundamentals, development of physical culture and training in GPS MChS Rossii. - 2020.
9. Allayarova, S. N. (2020). Use of pedagogical technologies IN the teaching process of higher education (in the example of Uzbekistan). *Scientific Bulletin of Namangan State University*, *2*(7), 342-350.
10. Allayarova, S. N. (2021). The formation of research skills in students as an important indicator of higher education. *ACADEMICIA: An International Multidisciplinary Research Journal*, *11*(5), 1177-1187.
11. Akhrarova Z.B., Abdullaeva N.B. Pedagogical technologies and modern methods of teaching that direct students to scientific activity. Methodical guide. - Tashkent: MUMTOZ SOZ, 2022.
12. Belevitin V. A., Gnatyshina E. A., Chernobyl I. G. Master's dissertation: recommendations and recommendations. - 2016.
13. Busheneva Yu. How to correctly write a report, coursework and diploma thesis. – Litres, 2022.
14. Valieva S., Tulenova G. Methodology of scientific research. -T.: TDPU named after Nizomi, 2020.
15. Gergova I. J. and etc. Virtual laboratory work as a form of independent student work //Sovremennye naukoemkie tekhnologii. – 2017. – no. 1. – p. 94-98.
16. Djuraev R.Kh. and etc. Dictionary of pedagogical terms / Slovar pedagogicheskix terminov. - Tashkent: Science, 2008 Novikov A. M. Kak napisat monograph //M.: Librokom. - 2009.
17. Novikov A. M., Novikov D. A. Methodology of scientific research. - 2010.
18. Dictionary of pedagogical terms. -T.: UzPITI named after Kori Niaziy, 2017.
19. Pedagogical research: content and results / E.V. Yakovlev, N.O. Yakovleva. – Chelyabinsk.: Izd-vo RBIU, 2010. – P.5.
20. Pedagogical research: content and presentation of results / E.V. Yakovlev, N.O. Yakovleva. - Chelyabinsk.: Izd-vo RBIU, 2010.
21. Umberto E. Kak napisat diplomnuyu rabotu //Humanitarian science: Uchebnometodicheskoe posobie/Per. s it. E. Kostyukovich.-M.: Knijnyy dom "Universitet. - 2003. - T. 2.
22. Shermuhammedova, N. (2012). Methodology and philosophy of science.
23. Shermukhamedova N. Methodology of scientific research. - T.: 2014
24. https://www.xn-----8kcodrdcygecwgg0byh.xn--p1ai/nauchnyye-raboty/kak-sostavit-nauchnye-tezisy-dlya-publikatsii/