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Mezentseva A.I.

## SCIENTIFIC WORK ORGANIZATION OF THE TECHNICAL PROFILE STUDENTS

Мезенцева А. И.

### ОРГАНИЗАЦИЯ НАУЧНОЙ РАБОТЫ ОБУЧАЮЩИХСЯ ТЕХНИЧЕСКОГО ПРОФИЛЯ

**Abstract.** This article deals with the issue of the technical profile students' scientific work (SSW) organization in the P.S. Nakhimov BSHNS. The implementation of the ESW at the P.S. Nakhimov BSHNS is given in the form of reports to the conference *CMSS and SMSS* and the reports preparation that are published in the *the CMSS and SMSS Cadets and Students Reports Collection at the Conference of the P.S. Nakhimov BSHNS*. Preparation for this conference is carried out for 6 months and aims to increase the scientific training level of the specialists with higher professional education and identify talented young people for the subsequent replenishment of the university scientific and pedagogical staff. The reports are carried out in accordance with the curricula and programs. These reports contain elements of scientific research. Participation in research work helps students to comprehend the basics of their specialty, apply knowledge in solving practical problems, develops skills in working in research and production teams. In the process of carrying out educational research, students learn to work independently with scientific literature and systematize it, apply their knowledge in solving specific research tasks. The conference result was "Recommendations to the Student Heads Educational and Research Works of the BSHNS. Therefore, the main ESW goal is the self-realization of the student's personality based on the acquired research skills. Under the guidance of the supervisor (teacher), the student's personality develops in three directions: self-improvement, self-knowledge, and self-education. In the course of research activities, the following student qualities are acquired and developed: the skill of independent research activity; the skill of working with scientific and cognitive literature; initiative and creativity; use, expansion and deepening

**Аннотация.** В данной статье рассматривается вопрос организации научной работы обучающихся (НРО) ООВО технического профиля в ЧВВМУ имени П.С. Нахимова. Приводится реализация НРО в ЧВВМУ имени П.С. Нахимова в форме докладов на конференцию ВНОК и ВНОС и подготовке докладов, которые издаются в «Сборнике докладов курсантов и студентов на конференции ВНОК и ВНОС ЧВВМУ имени П.С. Нахимова». Подготовка к данной конференции проводится в течение 6 месяцев и имеет своей целью повышение уровня научной подготовки специалистов с высшим профессиональным образованием и выявление талантливой молодежи для последующего пополнения научно-педагогических кадров университета. Доклады выполняются в соответствии с учебными планами и программами. Данные доклады содержат элементы научных исследований. Участие в научно-исследовательской работе помогает студентам постигать основы своей специальности, применять знания в решении практических задач, развивает навыки работы в научно-производственных коллективах. В процессе выполнения учебных исследований студенты учатся самостоятельно работать с научной литературой и систематизировать её, применять свои знания при решении конкретных задач исследовательского характера. Итогом проведения конференции стали «Рекомендации руководителям студенческих учебно-исследовательских и научно-исследовательских работ ЧВВМУ имени П.С. Нахимова. Итак, главная цель НРО – самореализация личности обучающегося на основе полученных исследовательских навыков. Под руководством научного руководителя (учителя) происходит развитие личности студента в трех направлениях: самосовершенствование, самопознание, самовоспитание. В ходе научно-исследовательской деятельности приобретаются и развиваются следующие качества студента: навык самостоятельной исследовательской деятельности; навык работы с научно-познавательной литературой; инициатива и творчество;

of subject knowledge; the skill of working together with the participants of the study; self-affirmation of students in this subject area, etc.

**Keywords:** scientific work, organization, technical profile, students, on the example

**About the author:** Mezentseva Anna Igorevna, ORCID: 0000-0001-9868-9800, SPIN-code: 5166-5323, ChVVMU, Sevastopol, Russia, anna87-05.86@mail.ru

использование, расширение и углубление предметных знаний; навык совместной работы с участниками исследования; самоутверждение обучающихся в данной предметной области и т. д.

**Ключевые слова:** научная работа, организация обучающихся, технический профиль, на примере

**Об авторе:** Мезенцева Анна Игоревна, ORCID: 0000-0001-9868-9800, SPIN-код: 5166-5323, ЧВВМУ, г. Севастополь, Россия, anna87-05.86@mail.ru

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**Introduction.** Now, the higher education quality-enhancing subject is vital. This is due to the modern innovative society demands change for highly qualified specialists [15].

Research means a thorough problem analysis or a specific problems detailed study using special scientific methods (<https://clck.ru/yXt8g>). In addition “the student scientific work (SSW) is an activity of a student, both as a training program, as well as a special programs” (<https://goo.su/bZD4>). Moreover, SSW is the most important component of the specialist training at the university; it becomes an integral part of an organic holistic educational process [9].

The SSW is one of the most important quality improving means of specialists’ training and education with higher professional education in the technical field, who are able to creatively apply in practice the scientific achievements, technical and cultural progress. The students’ research work is aimed at the students’ skills formation in research work, the creative initiative development and the ability to put into practice the scientific and technological progress achievements (<https://goo.su/ONrypH>).

According to the researches of N. Pak and D. Barkhatova “students’ research activity is an integral part of educational process” of any educational organization, “an efficiency and work quality indicator” [14].

Y. Belianina [6] says that the students’ research work assists the future specialists’ qualification improvement, because they study to apply scientific and technical progress achievements in practice.

According to A. Kucherenko “research activity is one of the human activity forms based on interest, cognitive factor, active attitude to the world, desire to alter and improve surrounding environment” [11].

The students' participation in the SSW allows them to use their creative potential to solve urgent research tasks in the educational organization of higher education (EOHE).

The SSW main tasks:

1. Mastering the scientific method of cognition by students, in-depth and creative educational material mastering;
2. Teaching methodology and means of scientific problems independent solution;
3. Instilling work skills in research teams, familiarization with the methods and techniques of organizing research [2].

The SSW is a continuation and deepening of the educational process and is organized directly at the Foreign Languages Department. The SSW management is carried out by the department teachers (<https://goo.su/ZZzZEid>).

The SSW is divided into research work included in the educational process and performed outside of school hours. The SSW included in the educational process provides for: performing various tasks; studying the theoretical methodology foundations, scientific research formulation, organization and execution, generalization, scientific data processing, conclusion formulation, etc. [1; 4; 7].

The SSW is represented in different projects, in researches and experiments, in scientific research. The research results can be represented at conferences and scientific seminars, various competitions, forums, etc. [6.]

Students who perform elements of independent scientific work in the technical and humanities field are considered to participate in the SSW. The SSW ends with a mandatory report, a report at a scientific conference. The SSW consists of some stages; they are:

1. First stage: mastering the scientific literature analysis and generalization methods: philosophy, psychology, history, sociology, literature, culture and country studies.
2. Second stage: analyzing scientific literature.

Third stage: writing of the paper [10].

A student nowadays must be ready to work in accordance with the professional standard [8]. However, in practice students' training shows that the level of their research work willingness does not meet modern requirements [12]. The technical universities educational system does not create favorable environment for students to complete the research work. The system does not reveal students' creative potential and it does not contribute to their personal and professional development [14].

**Materials and methods of research.** Object of research is the students' scientific work.

Aim of the research – to illustrate the scientific work organization of the technical profile students.

To achieve this aim, general scientific research methods were used, such as description, analysis, comparative-comparative method.

**Results and the discussion.** The SSW is an integral part of the education and training of qualified specialists who are able to independently solve professional, scientific and technical problems. Research activities contribute to the future specialists' readiness formation for the creative knowledge realization, skills and abilities acquired at the university, helps to master the scientific research methodology, gain research experience.

The main purpose of the organization and development of the SSW is to increase the specialists' scientific training level with higher professional education and to identify talented young people for the subsequent replenishment of the university scientific and pedagogical staff.

SSW is implemented in the form of reports to the conference *CMSS and SMSS* and the reports preparation, which are published in *The CMSS and SMSS Students Reports*.

This conference is organized for students to discuss the results of their independent and scientific work. The reports are carried out in accordance with the curricula and programs. These reports contain scientific research elements.

The SSW is performed both individually and collectively. The work forms are determined according to the level of training. Preparation for writing a report begins with choosing a topic that is close to the specialty in which the student is studying. Then a *Personal work plan of a member* is drawn up, in which the work on the report is signed monthly. Then the direct work begins.

Participation in the SSW helps students to comprehend the basics of their specialty, apply knowledge in solving practical problems, develops skills in research working and production teams.

In the process of carrying out educational research, students learn to work independently with scientific literature and systematize it, apply their knowledge in solving specific research tasks.

The main tool for the research behavior development in education is research teaching methods. They are traditionally included in the arsenal of methods used by teachers, but the current situation requires not a simple fragmentary research methods use, but their dominance in educational practice over reproductive methods. The use of research teaching methods creates conditions for students to master the scientific research logic. The specificity of this activity, which distinguishes it from traditional teaching, is that the student acts as an active cognitive process subject.

The research training mechanism in a short form can be expressed in such a sequence: the teacher poses a problem to the students (or brings the students to the formulation of the problem) and shows a scientific knowledge example by its example.

In the course of solving the problem, it reveals the scientific knowledge logic, and students carefully monitor it, while assimilating new information for themselves and theoretically mastering ways to obtain it. Special methodological techniques allow us to achieve that the proposed task turns into an internal problem of the student himself. This, in turn, creates prerequisites for the solution analysis, which in itself are the educational work next stage and an

educational system necessary component. Further, in full accordance with logic, it is necessary to assess the each solution option merits. This is usually followed by a generalization of what was found and so on. In the most fully developed form, such training assumes that the student: identifies and poses a problem; suggests possible solutions; draws conclusions in accordance with the test results; applies conclusions to new data; generalizes [3].

Such training content has a number of features:

- Educational problems should meet personal and professional needs;
- The teacher leading role remains, but students should have the feeling that the problem and the ways to solve it were chosen by them independently;
- The topics chosen by students usually go beyond the scope of one discipline;
- The problem should correspond to age characteristics and professional orientation;
- Choosing a problem, you need to take into account the availability of the necessary funds and materials;
- The lack of literature, the necessary research base, the inability to collect the necessary data usually leads to a superficial solution, generates empty talk.

All this not only does not contribute, but on the contrary, significantly hinders the critical thinking development based on evidence-based research and reliable knowledge.

**Conclusions.** This method of SSW is aimed to: 1) see problems; 2) ask questions; 3) hypothesize; 4) define concepts; 5) classify; 6) observe; 7) conduct experiments; 8) structure material; 9) draw conclusions; 10) prove and defend your ideas [16].

The conference result was “Recommendations to the Heads of Student Educational and Research Works”. So, it is recommended:

1. Systematically analyze the conferences held.
2. The student research papers subject and focus should be made taking into account the modern requirements of the specifics of the educational institution and practical orientation.
3. At the beginning of the academic year, it is necessary to develop a plan for the work preparation and progress, determine the students' candidates involved in research activities discuss and approve at a department meeting.
4. The work performance should become a joint activity of the supervisor and the student: during the work, the teacher provides all possible assistance in the selection, material systematization and their design.
5. Immediately before the speech, the head must, together with the student, highlight the main substantive part, taking into account the rules of entry.
6. The head presence of student work at the conference is mandatory.

So, the main goal of the SSW is the student's personality self-realization based on the acquired research skills. Under the supervisor (teacher) guidance, the student's personality develops in three directions: self-improvement, self-knowledge, and self-education.



During the SSW, the following student qualities are acquired and developed: Independent research activity skill; The working skill with scientific and educational literature; Initiative and creativity; Subject knowledge use, expansion and deepening of; The skill of working together with the study participants; Students Self-affirmation of in this subject area, etc.

A significant number of students are overloaded with the educational process and do not even know that the scientific work is an opportunity for them. This is a huge opportunity to open the doors to a research experience. Many students start doing research at the end of their student career, often by accident. Any educational institution can improve its educational activities for students by offering to engage in scientific activities to those who show interest.

### REFERENCES

1. Vostroknutov, E.V. (2012). Organizatsiya nauchno-issledovatel'skoi deyatel'nosti studentov tekhnicheskogo vuza v usloviyakh kompetentnostnogo podkhoda. *Sibirskii pedagogicheskii zhurnal*, (1), 317-322. (in Russ.).
2. Buranova, N.Sh. (2021). Metodika organizatsii nauchno-issledovatel'skoi deyatel'nosti uchashchikhsya srednei shkoly. *Aktual'nye nauchnye issledovaniya v sovremennom mire*, (4-7), 122-125. (in Russ.).
3. Platonov, A.A. (2016). Nauchno-issledovatel'skaya rabota v obrazovatel'nykh uchrezhdeniyakh. *Gumanitarnye nauchnye issledovaniya*, (9), 106-132. (in Russ.).
4. Organizatsiya nauchno-issledovatel'skoi i uchebno-issledovatel'skoi raboty v professional'nykh obrazovatel'nykh organizatsiyakh srednego professional'nogo obrazovaniya: metodicheskie rekomendatsii dlya professional'nykh obrazovatel'nykh organizatsii Evreiskoi avtonomnoi oblasti (2018). Birobidzhan. (in Russ.).
5. Voznesenskaya, A.O., & Bakholdin, A.V. (2014). Metodicheskie rekomendatsii po organizatsii i provedeniyu praktiki i nauchno-issledovatel'skoi raboty studentov. St. Petersburg. (in Russ.).
6. Belyanina, Yu.V. (2011). Nauchno-issledovatel'skaya rabota studentov: rukovodstvo, organizatsiya, formy (1946-1955 gg.). *Omskii nauchnyi vestnik*, (3 (98)), 44-46. (in Russ.).
7. Carrero-Martínez, F.A. (2011). Rethink summer student research. *Science*, 334(6054), 313-313. <https://doi.org/10.1126/science.1209555>
8. Golubchikova, M.G., & Byshlyago, A.A. (2020). Organization of independent research work of technical university students. *Nauka o cheloveke: humanitarnye issledovaniya*, 14(2), 113-117. <https://doi.org/10.17238/issn1998-5320.2020.14.2.19>
9. Kalandarishvili, Z.N., & Kochisov, Ch.V. (2015). Nauchno-issledovatel'skaya rabota studentov kak komponent podgotovki spetsialistov v sovremennom vuze. *Mezhdunarodnyi studencheskii nauchnyi vestnik*, (1), 23-23. (in Russ.).
10. Kamenskaya, I.B., & Kamenskiy, A.I. (2014). Philological students' scientific research work: organization and essential gains. *Procedia-Social and Behavioral Sciences*, 154, 209-213. <https://doi.org/10.1016/j.sbspro.2014.10.137>
11. Kucherenko, L.V., & Baulo, E.N. (2014). Primer vnedreniya rezul'tatov nauchno-issledovatel'skoi raboty v uchebnyi protsess. In *Aktual'nye problemy osvoeniya biologicheskikh resursov Mirovogo okeana*, 388. (in Russ.).
12. Madan, C.R., & Teitge, B.D. (2013). The benefits of undergraduate research: the student's perspective. *The mentor: An academic advising journal*, 15, 1-3.

13. Martyushev, N.V. (2012). Nauchnaya rabota studentov i molodykh uchenykh v institute fiziki vysokikh tekhnologii TPU. perspektivy. problemy. puti resheniya. *Fundamental'nye issledovaniya*, 1(9), 103-106. (in Russ.).

14. Pak, N.I., & Barkhatova, D.A. (2017). Research Activity of Students of a Pedagogical Profile in Conditions of Smart Education. *Zhurnal Sibirskogo federal'nogo universiteta. Seriya: Gumanitarnye nauki*, 10(7), 1043-1052.

15. Legkova, I.A. (2017). Rol' nauchno-issledovatel'skoi raboty obuchayushchikhsya pri podgotovke budushchikh spetsialistov. *NovaInfo. Ru*, 1(71), 119-123. (in Russ.).

16. Vaganova, N.O., & Lopatkin, V.M. (2016). Scientific-research work of students in organizations of secondary vocational education. *The Education and science journal*, (5), 55-68. <https://doi.org/10.17853/1994-5639-2016-5-55-68>

## ЛИТЕРАТУРА

1. Вострокнутов Е.В. Организация научно-исследовательской деятельности студентов технического вуза в условиях компетентностного подхода // Сибирский педагогический журнал. 2012. №1. С. 317-322.

2. Буранова Н.Ш. Методика организации научно-исследовательской деятельности учащихся средней школы // Актуальные научные исследования в современном мире. 2021. №4-7. С. 122-125.

3. Платонов А.А. Научно-исследовательская работа в образовательных учреждениях // Гуманитарные научные исследования. 2016. №9. С. 106-132.

4. Организация научно-исследовательской и учебно-исследовательской работы в профессиональных образовательных организациях среднего профессионального образования: методические рекомендации для профессиональных образовательных организаций Еврейской автономной области. Биробиджан, 2018. 32 с.

5. Вознесенская А.О., Бахолдин А.В. Методические рекомендации по организации и проведению практики и научно-исследовательской работы студентов. СПб: Университет ИТМО, 2014. 99 с.

6. Белянина Ю.В. Научно-исследовательская работа студентов: руководство, организация, формы (1946-1955 гг.) // Омский научный вестник. 2011. №3 (98). С. 44-46.

7. Carrero-Martínez F.A. Rethink summer student research // Science. 2011. Vol. 334. №6054. P. 313-313. <https://doi.org/10.1126/science.1209555>

8. Golubchikova M.G., Byshlyago A.A. Organization of independent research work of technical university students // Наука о человеке: гуманитарные исследования. 2020. Vol. 14. №2. P. 113-117. <https://doi.org/10.17238/issn1998-5320.2020.14.2.19>

9. Каландаришвили З.Н., Кочисов Ч.В. Научно-исследовательская работа студентов как компонент подготовки специалистов в современном вузе // Международный студенческий научный вестник. 2015. №1. С. 23-23.

10. Kamenskaya I.B., Kamenskiy A.I. Philological students' scientific research work: organization and essential gains // Procedia-Social and Behavioral Sciences. 2014. Vol. 154. P. 209-213. <https://doi.org/10.1016/j.sbspro.2014.10.137>

11. Кучеренко Л.В., Бауло Е.Н. Пример внедрения результатов научно-исследовательской работы в учебный процесс // Актуальные проблемы освоения биологических ресурсов Мирового океана. 2014. С. 388.

12. Madan C.R., Teitge B.D. The benefits of undergraduate research: the student's perspective // The mentor: An academic advising journal. 2013. Vol. 15. P. 1-3.

13. Мартюшев Н.В. Научная работа студентов и молодых ученых в институте физики высоких технологий ТПУ. перспективы. проблемы. пути решения // Фундаментальные исследования. 2012. Т. 1. №9. С. 103-106.

14. Pak N.I., Barkhatova D.A. Research Activity of Students of a Pedagogical Profile in Conditions of Smart Education // Журнал Сибирского федерального университета. Серия: Гуманитарные науки. 2017. Т. 10. №7. С. 1043-1052.

15. Легкова И.А. Роль научно-исследовательской работы обучающихся при подготовке будущих специалистов // NovaInfo. Ru. 2017. Т. 1. №71. С. 119-123.

16. Vaganova N.O., Lopatkin V.M. Scientific-research work of students in organizations of secondary vocational education // The Education and science journal. 2016. №5. P. 55-68. <https://doi.org/10.17853/1994-5639-2016-5-55-68>

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