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FORMATION OF SKILLS OF RESEARCH ACTIVITY AMONG JUNIOR STUDENTS

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Abstract

The article examines the analysis of factors influencing the formation of research skills among junior university students. Research work involves the most complete and effective development of the intellectual and creative abilities of students, aimed at training highly qualified personnel for various fields of activity. The purpose of this work is to identify and state the factors that make it possible to fully reveal the scientific potential of gifted students for possible subsequent postgraduate studies and replenishment of scientific and pedagogical personnel of the university, as well as for the use of the acquired research skills in practical activities in production. The research is based on a systematic approach to the problem, using methods of modeling, analysis, comparison and generalization. The conclusions obtained as a result of work on this topic are based on the authors' long-term practice in this area of activity with students of various specialties. Among the numerous factors of the all-round development of future specialists and the realization of their scientific potential, the authors highlight the following: continuity of research experience; motivational component; competence and interest of the scientific leadership; independence; technical equipment. The use of these factors in work with junior students will ensure the intensification of research work, increase its effectiveness and bring a qualitative indicator of the training of specialists to a new level.

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1. Introduction

Currently, the structure and content of education in higher educational institutions in Russia is changing. In connection with Russia's entry into the Bologna process (Tchaikovskaya & Konovalenko, 2017), the requirements for university graduates have changed significantly – there is a need for specialists who are able to solve various creative tasks: they are able to not only formulate a problem, determine methods for solving it, but also to implement its results in practice (Grebnev, 2018).

In order to become a specialist in one's field, it is not enough just to finish a university or institute well. One also needs to be a creatively developed person, know not only the theoretical foundations of the material of academic subjects, but also be able to set a scientific task, find ways to solve it, and correctly formulate the results of research. The formation of research skills is a long process (Kuznetsova, 2014). If earlier students, as a rule, began to engage in scientific activities in the third year, then due to the reduction in the duration of training, there was a need to organize research work of students already in the first years (Enshvin, 2016; Garanina et al., 2017).

2. Problem Statement

The learning process in a modern university is multifaceted and information-rich as much as possible. The requirements for a first-year student during their studies are comprehensively diverse and numerous. The form of education is changing, school traditions are being replaced by new standards, the emphasis is more on independent work, the ability to allocate your time. Therefore, at this moment, the motivating component is more important than ever, involving yesterday's student in the active learning process, developing a creative approach to learning new things, pushing the horizons of knowledge. Possession of the skills of research work contributes to the qualitative acceleration of the assimilation of subject knowledge, their complex and systematic perception (Andreeva et al., 2019; Bohan et al., 2017; Bohan et al., 2019).

The analysis of the factors influencing the formation of research skills among junior students is an important task of training highly qualified personnel for various fields of activity, who are able to set and successfully solve new tasks, be flexible in choosing solutions.

3. Research Questions

Research activity is a special type of activity and a form of human cognition of reality. It is aimed at achieving a person's understanding of the surrounding reality. He, in one way or another, uses the acquired knowledge in his practical activities and through this is convinced of their truth or rejects them as false.

Research is the process of developing new scientific knowledge, one of the types of cognitive activity, which is characterized by objectivity, reproducibility, evidence, accuracy (Kachanova, 2018).

The concept of "Research activity" includes its awareness by the subject, purposefulness, cognitive orientation, focused on obtaining knowledge that provides a predictable change in any sphere of public life (Kuznetsova, 2006).

The subject of the article is precisely research activity, as well as the factors contributing to its implementation. The success of students work in this area depends on many reasons (Kuznetsova, 2021; Lazarev, 2006; Maloshonok, 2016).

4. Purpose of the Study

The purpose of this work is to analyze and synthesize methods that contribute to the development of research activities of students, identify and state the factors that allow the most complete disclosure of the scientific potential of gifted students for possible further training in graduate school and replenishment of the scientific and pedagogical staff of the university.

5. Research Methods

General research methods include:

- theoretical (formalization, abstraction);
- empirical (observation, comparison, experiment, measurement);
- complex (analysis, synthesis, modeling).

Depending on the subject of research activities, either individual methods of work or their complex are used (Demina & Panfilova, 2009).

Many years of experience working with students, scientific project management, participation in various conferences, analysis and comparison of numerous studies helped to form an idea of the factors influencing the activation of research activities of students, set out in the article.

6. Findings

As a result of the analysis, the following factors can be identified that affect the development of research activities of students at the university.

6.1. Continuity of research experience

A big advantage in the development and deepening the research skills of students is the experience of scientific work during school years. For many years, the Samara Region has successfully operated a unified regional system of measures to identify and develop creatively gifted youth in the field of science, technology and technology – a program called "Take-off". This project provides for a well-coordinated team work: a student, a teacher and a university teacher acting as a consultant. In the future, there is an opportunity to move to the next level of the program – "Flight", aimed at students. The distinctive features of these programs are the priority and initiating contribution of the sphere of science and production to the development of gifted youth, optimal individual creative development plans as the basis for long-term purposeful developmental and career work with the younger generation, as well as targeted material support for the implementation of individual creative development plans through grants of the united regional competition.

6.2. The motivational component

Continuity in the development of research skills plays a positive role in student life. However, not everyone has such work experience, the level of training in creating their own projects is different, the tasks put forward to the student are already more complex and require special knowledge. Therefore, the problem of forming the skills of research activity is relevant for a wide range of students.

The first step in attracting students to research work is the motivational component, the need to form an interest in such an activity, as well as a cognitive motive for a specific problem. Familiarity with interesting ready-made projects, practical orientation of research, analysis of the economic effect of the project implementation, alternative choice of solution methods – all this will help to activate the desire to engage in research work.

6.3. Competence and interest of the scientific management

A teacher is a guide to the world of knowledge for a student. His experience, erudition, creative approach, focus on results, methodology will help to plan research work at every stage of its implementation. And at the same time, a competent supervisor will take the necessary actions to actively participate in the work of the student himself.

6.4. Independence

The choice of the research topic can be proposed by the supervisor, or it can be the realization of the student's personal interest in a particular problem, which significantly increases the chances of success of the project. The opportunity is to put forward your own hypothesis for solving the problem, to choose your own solution method increases the significance of the project. An independent component entails responsibility for the timing and design of the work, the consistency and sequence of individual stages of the study.

6.5. Technical equipment

If the subject of the work allows us to show the practical value of the work, then the presence of the necessary base for conducting calculations, experiments, the presence of competent conclusions, comparative analysis increases the value of the research.

To achieve the goal for the development of skills of research work along with the general didactic tasks: to teach the student to analyze what they read, see, in order to identify the main and secondary, to observe and classify, draw conclusions and inferences resolved. And tasks are directly related to the methodology of the study:

- to determine the relevance of the chosen theme,
- to see the problem,
- to make a hypothesis,
- to perform target setting,
- to formalize the results of the study (Bengina, 2020).

For the successful functioning of the research component of the educational process, the teachers and the administration of the higher school face the following tasks:

- identification of talented students who are ready to engage in scientific activities;
- creation of favourable conditions for the development of various types of scientific activity;
- providing support for students to acquire the skills of independent work and work in creative teams, mastering the methodology of scientific research;
- attracting gifted students to scientific research in various areas presented at the university;
- conducting and participation of students in events of various levels for young researchers at the university.

At the Department of Higher Mathematics of Samara State Technical University, students' research activities are divided into work included in the educational process by performing standard calculations and tasks of a professional orientation, and work that is carried out outside of school hours by participation of students in various scientific conferences (Stelmakh, 2014). The management of this work is carried out by university teachers who discuss with students the purpose and direction of the work, stages of its implementation, help in processing information and forming conclusions. Various scientific events are held at SamSTU (Science Days, competitions of research papers, etc.), which allow students to gain experience in communicating the results of their scientific work to a wide audience, to receive qualified comments from researchers.

7. Conclusion

The research work may include a more in-depth study of the current material with the possibility of presenting its research in the classroom, or it may be a self-contained serious study on a topic that goes beyond the curriculum. This kind of work most fully reveals the creative potential of the student, expands knowledge and ideas about the surrounding world, forms self-study skills, which is not insignificant for future career growth.

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