

PROBLEMS OF DESIGNING AND ORGANIZING EDUCATIONAL AND RESEARCH ACTIVITIES OF LEARNERS

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Abstract. *There is no single point of view on the classification of research skills. In a number of scientific works, research skills are described as separate elements of research activity (gathering information, posing a problem, proposing a hypothesis, etc.).*

Keywords: *problem, skill, learning, approach, activity, research, understanding, method, scientific knowledge, learning process, learning research process.*

There are different approaches to the concept of "educational-research activity" in pedagogical literature, and those who express this concept perceive its place and goals in the educational process in different ways. Sometimes there are cases where there is no significant difference between the concepts such as "organization of educational and research activities" and "use of research methods in education", "educational and research activities" and "designing". In our opinion, it is important to analyze the approaches used to the definition of the concept of "educational and research activity of learners" and to clarify the true nature of this concept.

First of all, we believe that it is necessary to clarify the definition of the term "research" and to consider the existing definition, which has a wide field of application in science. This definition is as follows: "Scientific research is one of the manifestations of cognitive activity, a process aimed at creating new knowledge. Research is characterized by features such as objectivity, reproducibility, provability and accuracy.

From the point of view of the active approach, research is considered as a special type of activity. In the dictionary compiled by A. Shashenkova, the concept of "research activity" is defined as follows: "Research activity is a specific activity directed to the satisfaction of intellectual-cognitive needs and controlled by means of human consciousness and activity, and its product is new knowledge."

I. Savenkov, developing the psychological foundations of research-based teaching, notes that research activities are carried out on the basis of research behaviors that arise as a result of research activity.

In some cases, research-based education is opposed to traditional education. The position of believing that there are contradictions between these two methods has been manifesting itself for many years. In this case, the educational process based on reproductive methods is considered traditional education. The essence of the reproductive method is reflected in the process of acquiring knowledge and skills as a result of the student receiving information under the guidance of the teacher. However, it will not be correct to completely abandon reproductive methods during the development of the methodology of organizing educational research activities. Teaching best practices, including the tiered models discussed above, show that when inquiry-based learning is skillfully combined with reproductive methods based on curriculum it will be effective.

A.S. Bichkova reflects on the options of making students' educational and research activities a component of the educational process. According to him:

- organization of difficult lessons;
- creative tasks to be given at home;
- independent practical experiences of students;
- organization of research classes;
- conducting conferences;
- it is possible to introduce options such as the organization of elective courses or their generalized view.

In our opinion, depending on the increasing level of complexity of the listed options and the possibilities of independent implementation, they can be divided into three groups: 1) educational and research activities during the lesson; 2) extracurricular collective educational and research activities; 3) student's individual educational and research activities.

V. V. Mayyer developed a direction called "learning physics" in the methodology of teaching physics. This direction provides opportunities for teachers and students to achieve new results in physics. The organization of students' research activities is carried out during the study of physical phenomena in the 'noosphere'. The conducted research will be the basis for the discovery of new elements of learning physics. In this case, students become participants in the process of scientific knowledge in the study of physics: they directly participate in the process of creating new elements, new sections, and applying them to the existing program of studying physics. The principle of periodicity is used as a basis for this didactic model.

The model of the educational process aimed at students' acquisition of theoretical methods of knowledge based on an active approach to physics was proposed in the N. I. Odinsova's works. The goal of the author's educational process, when viewed from the perspective of an active approach, is not to introduce students to the methods of scientific knowledge, but to make these methods an integral part of the general activity of students. The necessary conditions for students to master the generalized methods of activity are the repeated use of educational methods and reflexive analysis of the performed actions and their consistency.

In this study, the issue of developing students' thinking productivity in physics teaching is solved from the point of view of the general theory of management. The author distinguishes separate components of knowledge and emphasizes that most of them form the core of research activities; therefore, they can be called research components of knowledge.

Ch. Kizovski considers solving problems in physics to be a factor in the development of thinking (in this place, various problems, including non-standard problems, can be understood). In this, the teacher uses a special method of student activity management.

N.Ye. Vajeyevskaya is one of the experts who dealt a lot with the problems of students' acquisition of scientific methods of learning physics. In his works, the importance of adding epistemological knowledge to the content of physical science is justified. The expert suggests developing a methodology for studying the epistemological foundations of science in a school physics course and consistently introducing epistemological structural components into the content of physics. Empirical methods of knowledge - the formation of ideas about observation and practical experience should begin from the first lessons in physics, and the process of fully mastering these elements should be completed in the general education school.

In our opinion, looking at the model as a form of knowledge, modeling as a method of learning should already be formed in the upper grades of the general education school.

N.V. Kochergina's research on the problems of formation of methodological knowledge in teaching physics at school states that methodological knowledge is reflected in the content of physical science "in the form of problem-based teaching methods during the acquisition of creative activity experiences."

G. M. Anokhin notes research training as the main type of educational activity while developing the methodology of introducing the personality-developing and developing method of teaching physics in a general education school. In the technology of exploratory training, the situation in which the student is motivated to raise more issues, and then to implement the optimal number of solution options in an individual and collective manner, is of great importance. However, it is not possible to fully master the norms of educational and research activities through research training. In our opinion, the main goal of the system proposed by G.M. Anokhin is to develop the student's cognitive activity at the expense of personally significant situations.

A person-oriented approach to learning physics in a comprehensive school was also studied in S.V. Bublikov's research. According to the expert, the research approach in education is a necessary condition that develops the student's individuality in mastering the educational materials of the varied series. Educational research carried out by a group of students (community) provides each student with a great opportunity to "clearly demonstrate the methods of priority in their cognitive activity."

There are other interpretations aimed at classifying research methods, for example, according to B. M. Kedrov, the following methods of knowledge are used:

- general (philosophical methods);
- special (related to one of the forms of matter movement and used in many fields of science);
- specific methods (used in a particular field of science).

According to B. M. Klarin, in the process of scientific knowledge, it can be observed that certain methods "turn" into other more complex methods, that is, specific methods become special, and special methods become general methods and are used in other fields of science.

In the researches of specialists such as L. A. Buriyeva, M. D. Dammer, Y. V. Maslennikova, M. V. Potapova, N. V. Romashkina, YE. M. Shulejko, it is recommended that the teaching of physics should begin in the 5th-6th grades based on experimental studies in secondary schools. According to the authors, if this is done, students of the 5th-6th grade will have initial ideas about research activities, and the ability to conduct practical experiments will be formed in them.

The conclusion is that it is important to develop not only research skills, but also research skills in students. In this regard, the relationship between skills and abilities is viewed differently from the viewpoints of psychology and pedagogy. From the perspective of psychology, a skill relies on previously formed skills to perform a specific practical task. There is another point of view, according to which a skill becomes a skill at a certain stage of its formation and development. We also consider this position correct in our research.

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