

THE ROLE AND CONTENT OF EXPERIMENTAL-RESEARCH SKILLS IN EDUCATION

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The development of modern society, socio-economic development, the rise of science and technology directly depend on the level of human capital. One of the main pillars of human capital is the education system. Education involves not only imparting certain

knowledge, but also forming a person as an independent thinker, capable of research, and capable of creating innovations. From this point of view, the formation of experimental-research skills in students and pupils is one of the important pedagogical

tasks. Because these skills increase the interest of young people in scientific and creative activities, develop in them the ability to apply theoretical knowledge in practice, analyze problems and find effective solutions.

Experimental-research skills are understood as the ability of students to see scientific problems, make assumptions, conduct experiments, record and analyze results, and draw conclusions based on generalization. This process includes not only scientific activity, but also creative thinking. Therefore, experimental and research skills are the most important means of personal development, independent learning, creative thinking and finding solutions to problem situations in the educational process.

The content of these skills consists of several components: identifying a scientific problem, putting forward a hypothesis, designing an experiment, conducting practical research, recording and analyzing results, drawing a general conclusion and applying it to practice. Each stage activates the student's thinking and turns him from a knowledge holder into a knowledge creator.

For example, in a natural science lesson, students observe phenomena by performing simple laboratory work, study the essence of the process and draw certain conclusions

from the results. This seemingly simple activity is actually an initial form of scientific research. Also, in the humanities, students develop research skills through text analysis,

observation of social phenomena, and sociological surveys.

First, these skills serve to deepen knowledge. When theoretical knowledge is confirmed through experience, students develop solid and well-rounded ideas.

Secondly, they develop creative thinking. Each study requires new thinking, a unique approach to the problem.

Thirdly, these skills increase the ability to solve problem situations. The student learns

to solve the problem set before him with the help of scientific research.

Fourthly, experimental and research skills develop a culture of working with information. In the conditions of modern information flow, the ability to select reliable

information, analyze it and process it is relevant.[1]

These skills also play an important role in the formation of students' professional competencies. For example, a medical student constantly feels the need for research, experimentation and drawing scientific conclusions in his professional activities. A specialist in a technical field relies on experimental tests in the development of new technologies. Therefore, experimental and research skills are a basic necessity not only

in the educational process, but also in future work.

These skills are formed through a consistent process.

The first stage is the initial stage, in which students are aroused in interest in science and nature, and are involved in conducting simple experiments.

The second stage - at the basic stage, the student learns to see the problem, make a hypothesis and test it through experience.

The third stage - at the practical stage, the student begins independent research, records

the results and draws conclusions.

The fourth stage is the creative stage, in which the student is able to put forward new ideas and innovative solutions.[2]

Various methods are used in pedagogical practice to develop these skills. The problem

based learning method encourages the student to research. The project method gives students the opportunity to create a scientific or practical project on a specific topic.

Laboratory work serves to consolidate students' theoretical knowledge through experience. Scientific conferences, olympiads and competitions encourage students to present their research. Also, information and communication technologies - electronic libraries, Internet resources, virtual laboratories - create wide opportunities for the formation of research skills.

Reforms in the education system of Uzbekistan in recent years have made it a priority to involve young people in research and development. Schools are introducing

“STEAM” education, and efforts are being made to guide students towards creativity based on the integration of science, technology, art and mathematics. Students in higher

education institutions are actively participating in scientific circles and startup projects.

The state is providing grants for young scientists, and scientific and technical competitions are being organized. This is an important incentive for involving young people in research activities.

The importance of experimental and research skills is not limited to education. They also play a major role in the development of society. Firstly, they form the innovative

thinking of young people. Secondly, they create the basis for the development of new ideas and technologies in various sectors of the economy. Thirdly, they strengthen the integration of science, education and production. Most importantly, they increase the competitiveness of young people and make them in demand in the international labor market. In conclusion, experimental and research skills are of immense importance in the comprehensive development of the individual in the educational process, in the formation of his ability to think independently, research, be creative and create innovations. These skills teach students to combine theoretical knowledge with practice, conduct scientific research, and find effective solutions to problems. That is why the involvement of students in research activities and the formation of experimental and research skills in them remains one of the most urgent pedagogical tasks in every educational institution.

A person with experimental and research skills will make a worthy contribution to the development of science, the development of society, and the innovative growth of the economy in the future. This fully corresponds to the main goal of the educational process - the task of educating a well-rounded person.

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