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TECHNOLOGY FOR IMPROVING SCIENCE TEACHING MECHANISMS

Aziza NORMUROTOVA
Denov Entrepreneurship and Pedagogical Institute is a teacher of the "Methodology of Primary Education" department

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Abstract:
These factors are the development of the educational system Reasonable conclusions about the need to change their approach or the actions being taken creates the need for release technologies. In this article, we consider the content of improving the mechanisms of teaching natural sciences, taking into account the above information .

Keywords: STEAM, PISA, TIMSS , "fourth education", integration, mechanism, evaluation.

In the period of scientific and technical development in the world, competition in the economy related to the adoption of modern innovative technologies, leadership of new innovations, new demands on the labor market and education by high-tech manufacturers, natural- the weak provision of technical knowledge and slow adoption of advanced technologies, in turn, impose new demands on the educational system. To solve this problem, STEM education is entering education as a new trend. The promotion of STEM education in the USA by the National Research Council (National Science Foundation), "The STEM School Studio" by professors and teachers of the University of Chicago, in European countries: Austria, Germany, France, Italy, Great Britain, Spain the development of national and global educational standards for the introduction of STEM education at the pan-European level and the implementation of international projects (such as In Genious, MASCIL, INSTEM, Mind the Gap, ER4STEM) training of modern competent personnel in this field of education means that there is a need [2].

Teaching of " The world around us", "Natural science" in general secondary schools in the research works of the pedagogic scientists Sh.M.Mirzaakhmedova, R.Mavlonova, D.Sharipova, N.Rakhmonkulova, K.Matnazarova, MINuriddinova, MKShirinov problems, and in the scientific research works of AKRakhimov, FIOchilov, the issues of the methodology of teaching natural sciences based on the competence approach were studied. The problems of developing technical creativity in students were studied by Sh.S. Sharipov, OAToychiyev, NMHamdamova and others.

Scientists from the countries of the Commonwealth of Independent States (CIS) LVSheptukhovsky, MMMatveeva, IGKrokhina, NAPolyakova, LPSimonova, TGNikolenko conducted research on improving the teaching methodology of natural sciences. Also, special attention is being paid to the development of robotics and artificial intelligence in the countries of the Commonwealth of Independent States. The issues of construction and modeling were studied in the partial module program "STEM education for children of preschool and junior school age" by TVVolosoves, VAMarkova, SAAverin.
The new STEM approach to education is widely used in developed countries and is positively evaluated by the world community, and STEM education is studied by many researchers. Problems of organizing STEM education for young children in foreign countries Aaron D. Isabelle, Gilbert A. Zinn, Yehudit Judy Dori, Zemira R. Mevarech, Sanders. M, Robert M. Capraro, Mary M. Capraro, James R. Morgan researched and created didactic materials for this course [1].

According to the analysis of the literature , although scientific and methodical work on STEM education has been carried out, there is a need to study the methodology of teaching "Natural Sciences" as a pedagogical problem and to improve it.

In accordance with the decision of the President of the Republic of Uzbekistan No. 4805 of 12.08.2020 "On measures to increase the quality of continuous education and the effectiveness of science in the fields of chemistry and biology", a variant focused on natural sciences in schools introduction of educational plans was determined. That is, in addition to the basic curriculum, boys and girls interested in chemistry and biology were gathered in one class, and schools were given the opportunity to teach them more about these subjects. Second, the program of teaching chemical biology in schools was considered. But the most important work in the first stage is the introduction of teaching of natural sciences in the first and sixth grades[3].

Natural sciences are collected into a single collection, summarized within the scope of a single SCIENCE or "Natural science", and a logical sequence is provided. Natural sciences are taught as a single subject up to the 6th grade. After the 7th grade,

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biology, chemistry, physics, and geography are taught separately. One of the two main aspects provided for in the decision is the introduction of variable curricula focused on natural sciences in schools. Encouraging students to study natural sciences from a young age will help them develop a holistic view of the world. With this, the child realizes that physical chemistry is not difficult, but an interesting subject, and feels motivated to study it[4].

SCIENCE science (natural sciences) is not being introduced as a substitute for some science. On the contrary, it provides integrated teaching of existing subjects to improve the quality of education.

For example , in the process of learning about insects, the child imagines this class in the animal world in an interesting way, in which it is impossible not to master the topic. SCIENCE is taught in the 1st-2nd grade "The world around us", in the 3rd-4th grade "Natural science", and in the upper grades 4 separate subjects, geography, biology, physics (from the 6th grade), chemistry (from the 7th grade) combines in itself[5].

Today , natural sciences are taught in grades 1-11. In grades 1-6, natural sciences are taught not separately, but as a whole SCIENCE subject. In higher education, the science program "Natural Sciences in Primary Education" was developed for students of "Primary Education" and it covers all subjects. The sequence of topics is written in a simple language that can be understood by a primary school student, which will stimulate the child's interest in this subject. In "primary education", subjects such as biology, physics, astronomy, geography, nature, plants, animals, man, habitat, our planet, weather, natural resources, solar system, seasons, energy, heat, light, sound , and motion are listed in sequence [6].

In the process of analyzing this article, we determined the following tasks:

- Analysis of the basis and history of teaching "Natural Sciences" in schools ;
- Collection and study of scientific materials suitable for the subject of natural sciences;
- Analysis of the distribution of class hours and main topics in teaching "Natural Sciences" in schools;
- of the development of the natural sciences and the unique aspects of the natural sciences .

We all know that it is no exaggeration to say that the place of natural sciences is the heart of today's science. Because knowing the laws of nature is important in solving the problems posed to such sciences as genetics, evolutionary theory, mathematics, physics, chemistry, systematics of the plant and animal world, anthropology, geology, geophysics, and the interaction of living and dead nature. becomes important [7].

In addition, natural sciences play an important role in the scientific development of our society and the world. They help us understand the interesting processes of nature and develop skills that are important for sustainable learning. Science education also exposes young people to new skills, ideas, and independent thinking .

The main goal of teaching natural sciences is to help understand the characteristics of nature, its laws and rapidly developing processes. This knowledge serves to increase students' ability to see the world, understand, solve problems and think critically. The natural sciences also help students to analyze issues related to physical health, environmental change, and global prudence, and to educate themselves as informed and responsible consumers [8].

Teaching methods and tools are very important in the improvement of natural science teaching. Hands-on activities, labs, field trips, visual materials, and more help students learn and apply their theoretical knowledge.

Also, interactive textbooks, video lessons, and online resources are also important in strengthening students' understanding and knowledge [9].

Cooperation between teachers and organizations is important in teaching natural sciences. Teachers should collaborate in analyzing the problems and processes of nature, determining the level of understanding of students, and identifying the problems that need to be done in adapting them to strengthen learning. Also, urban learning centers, environmental organizations, and academic institutions should cooperate in encouraging students to study natural sciences, orienting them to enter laboratories and test their new knowledge in practice [10].

Experimentation and innovation are important in science teaching. Educators and organizations should strive to learn from their experiences, monitor innovations, and improve the learning process in order to monitor the learning process and evaluate its effectiveness. Also, new technologies and innovative methods help to engage students in the study of nature and provide them with interesting and effective tools for self-understanding.

natural science teaching mechanisms requires the study of pedagogical, practical and innovative methods to make natural science learning effective and interesting. This knowledge helps students to

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analyze the problems and processes of nature, to learn themselves as stewards of the world, and to develop critical thinking [11].

By addressing these components, educators can improve the quality and effectiveness of science teaching mechanisms, resulting in students' deeper understanding of scientific concepts, development of critical skills, and increasingly complex and interrelated learning. empowers them to become knowledgeable, critical thinkers who are ready to contribute to the world.

Natural sciences in the modern understanding - science, a science that is a set of sciences about nature taken in their relations. At the same time, under nature, everything, the whole world is understood in the variant of its forms. Natural sciences are a collection of natural sciences taken in their relations in the modern understanding. Modern natural science is a complex set of natural sciences. This includes biology, physics, chemistry, astronomy, geography, ecology , etc. Natural sciences differ from their subjects of study [12].

For example, the science of biology - living organisms, chemistry - substances and their changes. Astronomy covers the celestial geographical bodies, geography - the special (geographical) crust of the earth, ecology - the relationship between organisms themselves and the environment. Each natural science itself is a set of sciences that arise at different stages of the development of natural sciences. Thus, biology includes botany, zoology, microbiology, genetics, cytology , etc. At the same time, the object of studying Botany is plants, zoology - animals, microbiology - microorganisms. Genetics will and organisms, studies the main types of cytology. Chemistry is divided into a number of branches , for example: organic chemistry, inorganic chemistry, analytical chemistry [13]. Geographical sciences include geology, fractography, geomorphology, economics, physical geography. Classification of sciences in small areas of scientific knowledge. For example, biological sciences include zoology, ornithology, entomology, heromology, ethology, institute, ethology , etc. Ornithology - science, study birds, entomology - insects, geretology - reptiles. Ethology is the science of animal behavior, iology is the study of fish. The field of chemistry - organic chemistry is divided into polymers, petrochemical and other sciences. Inorganic chemistry includes, for example, the chemistry of metals, hydrogen chemistry, coordination chemistry [14].

The current trend in the development of natural science is the creation of opposite processes of differentiation of scientific knowledge - individual knowledge, synthetic scientific sciences. At the same time, it is important to combine both in different fields of scientific sciences and among them in the unity of scientific sciences.

In conclusion, it can be said that natural sciences have gained great importance in the life of mankind during several thousand years of history. Introduction of today's SCIENCE makes the young student more interested in science [15]. The most necessary and elementary knowledge in separate biology, physics, astronomy, geography, and chemistry will encourage people to understand the environment more easily and apply knowledge in life. Now chemistry is not difficult, biology is more interesting and physics is easy . (SCIENCE) provides integrated teaching of biology, chemistry, geography and physics. It is recommended that the teacher thoroughly prepares for the lesson of practical training.

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