

DEVELOPMENT OF 4K SKILLS IN STUDENTS THROUGH SCIENCE TEACHING

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Abstract. *It is about the development of students' scientific outlook in the world educational processes, the integration of natural sciences in the public education system, and one of the modern educations and new innovative methods is the "4K" module. By using this model, students will be able to develop such concepts as collaboration, communication, creative thinking, and critical thinking. This article talks about new pedagogical technologies, which is very important in modern education, to organize natural science classes based on the "4K" module.*

Keywords: *modern education, method, educational technologies, innovative technologies, integration, model, collaboration, communicative, creative thinking, critical thinking.*

Introduction: Pedagogical technologies that are successfully used in the educational system of the developed countries of the world and developed in didactics are focused on the individual, on the organization and management of students' cognitive activities, on the attitude towards the individual, and on the traditional education system that dominates in the modern education system. Pedagogical technologies are used as they aim to fundamentally change the organization of education and educational process. The issue of activating students' cognitive activity and increasing the effectiveness of teaching is one of the main problems in teaching natural sciences, like all other subjects. In particular, "Didactic game technologies" and "Modular educational technologies" are of great importance in the use of pedagogical technologies in the teaching of natural sciences. Creative games are especially important in developing students' creative search, independence, logical thinking, and satisfying their needs for additional knowledge. Therefore, it is important to develop the student's outlook on nature, critical and creative thinking based on a new innovative approach in the educational system. A portrait of a 21st century student should include 21st century skills. This is the main purpose of using an innovative approach. In addition, the main goal of education is not only to give students knowledge, but also to teach them how to apply the knowledge they have acquired in life. The innovative approach based on the "4K" module does not require special conditions for use in schools. *For example:* students' critical thinking skills are developed through quizzes, and communication skills are developed through quizzes and exercises. A high result can be achieved by using this model in the teaching of natural sciences. It is the sum of the initials of the words creative thinking, critical thinking, communication and collaboration, which are the most important skills of the 21st century. Critical thinking skill is a system of judgment that is used in the development of reasonable conclusions for the analysis of things and events from a critical point of view and allows for rational evaluation, interpretation, as well as the correct application of the results to situations and problems. This is the ability to control the flow of information, see cause-effect relationships, filter out the unnecessary, and draw conclusions. Critical thinking is the ability to objectively analyze and reflect on facts to form a clear judgment or opinion. Although there are many different definitions of the term, they all include rational fact-checking as a key component of critical thinking.

Today, the further development of our country and its place among the leading developed countries of the world largely depends on the growing young generations. Therefore, it is a priority for every pedagogue working in the education system to seriously fulfill his responsible task of educating and educating today's youth, to organize educational processes in a high-quality and efficient manner based on modern educational technologies. After all, the President of the Republic of Uzbekistan, Shavkat Mirziyoev, in his address to the Oliy Majlis on December 22, 2017, said, "Today, we are moving to the path of innovative development aimed at the radical renewal of all spheres of state and community life. It's not for nothing, of course, because in today's fast-paced world, who wins? A country that relies on new ideas, new ideas and innovation will win. Innovation is the future. If we start building our great future today, we should start it on the basis of innovative ideas and an innovative approach" [1]. *In particular*, PF-5712-conli[2] of the President of the Republic of Uzbekistan dated April 29, 2019 "On approval of the concept of development of the public education system of the Republic of Uzbekistan until 2030", January 28, 2022 "Development strategy of New Uzbekistan for 2022-2026 Decree No. PF-60[3] defines the main tasks of organizing educational processes in accordance with the requirements of the time. Analysis of literature on the topic. Many definitions of Science are given in many literatures. In particular, the term (Science) is an educational tool that recommends proposals designed as both a broad and international science, oriented to modern education and implementing interdisciplinary integrations, according to Decree 414 of the Minister of Public Education of the Republic of Uzbekistan dated December 24, 2021. approval of the basic curriculum for the 2022-2023 school year for general secondary schools in accordance with order [4].

One of the important directions is the improvement of the teaching methodology of natural sciences in general higher education schools. That is why, even though not enough research has been carried out on improving the methodology of teaching natural sciences in our country, there is a need to develop students' natural science teaching skills, to work on themselves, to form knowledge and creative thinking. how many approaches are there. One such approach is the new innovative "4K" approach. Before introducing the new innovative approach in the schools of Uzbekistan, foreign experiences were also studied. Countries with advanced education, such as Singapore, China, England, Finland, and Estonia, focus on the development of 21st century skills in students, including the "4K" principle [5].

This way of thinking is not automatically developed at birth, but it must be practiced in order to be able to use it. A person who uses critical thinking does not jump to conclusions or rely on emotions to make decisions. Rather, it collects the information it needs to fully understand the situation, and then analyzes it to draw the most logical conclusion. Therefore, any judgment based on feelings or opinions rather than evidence cannot be considered critical thinking.

The skill of creative thinking is derived from the English word "create", which means to create. Creativity means a person's creative ability to create new things and solve problems. Creative thinking is a creative approach to unusual solutions to problems or situations from a new perspective. As Albert Einstein said, "Imagination is more important than knowledge." Creative thinking is not only a characteristic of a "creative person". Only creative geniuses have innovative ideas. Creative thinking is essentially a process of acquiring new concepts and different ideas through existing information [6]. Creative thinking often involves using different ways of thinking and exploring information from different perspectives to create something new. Everyone can develop the ability to think creatively! The development of students' ability to think creatively

begins with changing their point of view and worldview. Learning new and different ways of thinking helps generate powerful ideas.

Before the implementation of natural sciences, the experience of private and foreign schools operating in Uzbekistan was studied. The new science helps to increase students' knowledge of the universe and existence. In the future, students will realize that chemistry, physics, and biology are not difficult, but they are very interesting. Usually, schoolchildren think that mastering these subjects is very difficult, because all these subjects are very related to our lives. Natural sciences are not introduced instead of some sciences. On the contrary, it ensures the teaching of existing subjects in an integrative way to improve the quality of education. *For example*, by observing the process of rain, the student learns about its composition (biology concepts), how it is formed (physical properties), in which seasons and where it rains more (geographical characteristics), the rain will have information about changes in the earth and benefits for plants[7].

Mutual integration of sciences should lead students to understand nature as a whole being, a single view of the universe. At the same time, students should understand the negative and positive effects of human activity on nature, global environmental problems at the scale of time and space, and a sense of responsibility towards nature. and aims to educate a competent person who can contribute to the development of society [8].

In order to successfully use pedagogical technologies in the educational process, teachers of natural sciences must acquire special methodological knowledge and skills, and have methodological training necessary for pedagogical practice. Educational technologies used in the teaching of natural sciences are understood as technologies used to help students think and think, to think critically about a newly learned topic. These include the “4K” module based on a new innovative approach. The advantages of this module are that the main focus of the traditional lessons was on the teacher, while the “4K” module focuses on the students [9].

On the basis of the “4K” module, based on a new innovative approach, it is possible to explain the topic to students in a simple and understandable way, to form critical thinking in them and to learn about different social societies. It is mentioned in the table below.

№	Traditional education	4K Module
1	Lessons are conducted in the same way.	The module is conducted based on program requirements.
2	Time is used effectively.	Time is not used efficiently.
3	Mastering the educational material is at the initial stage. The amount of homework will increase.	Pupils are given the opportunity to master the educational material at a high level, to work independently on themselves.
4	Pupils have limited opportunities to develop their communication, independence, and speech.	Pupils work alone or in pairs in small groups, friendly communication, mutual assistance, cooperation is created between them, speech is developed.
5	Learning a new topic is aimed at an intermediate student. Pupils' activity is	Each student learns new knowledge independently and creatively in order

	focused on acquiring slow, ready-made knowledge.	to improve his knowledge based on his interest and talent.
6	The teacher evaluates the students' knowledge.	Self-control, mutual control and teacher control are implemented.
7	Pedagogical relations are based on authoritarian technology.	Pedagogical relations are based on mutual cooperation.

On the basis of the “4K” module, if the topic is explained to the students in a simple and understandable way, the students will develop the following qualities:

- Working with literature: studying and summarizing published literature on natural sciences (on the topic);

- Quantitative-mathematical: It is used in solving problems related to natural sciences (including the amount of water in the air at different temperatures, lengths of parallel arcs, etc.);

- Comparison: Natural sciences are used to compare objects with each other. Ms Australia and Greenland can be used to explain the area error by comparing their size on the natural map of the world;

- Systematic composition: Determining the main important aspects of a complex entity in nature, determining the interdependence of certain parts.

- Observation: it should be used constantly in everyday life, because it is necessary to constantly monitor vegetational changes in the climate or the weather of the area where one lives (such as air temperature, precipitation, air pressure, wind direction and speed). is required. It is required to monitor the migration of birds, the fall of fog and snow, and the freezing of the soil surface throughout the year, and in the necessary places, especially in local history circles, this information is available to him. At the same time, the teacher of natural sciences is required to monitor the level of mastery of students during the lesson. In turn, one of his main tasks is to monitor nature and present the results of observation to students, as well as to organize their control;

Conclusions and suggestions: a new innovative approach based on the “4K” module, which can be used in natural sciences, cannot be covered in detail in one article. At the same time, there is no doubt that new teaching methods and technologies will be formed in the methodology of teaching natural sciences in the future. In general, the use of the “4K” module in the teaching of natural sciences increases the efficiency, and the use of different options by teachers creates the basis for increasing interests in science. At this point, science teachers would do well if they followed the following suggestions and recommendations in the lessons:

- firstly: to always be ready to attend classes, to be able to connect the previous lesson and the new topic with each other;

- secondly: to be able to ensure the presentation of the lesson and use them in their place;

- thirdly: to teach about natural processes, events and phenomena in nature and to ensure that they have “4K” skills about natural objects;

- fourthly: by developing the skills of a new innovative approach based on the “4K” module, to continuously work with students and monitor the performance of assigned tasks;

- fifth: to pay close attention to practical work in natural science lessons and to form “4K” skills in self-improvement between teachers and students;

- sixthly: it is desirable to find ways to bring teachers of natural sciences and students interested in natural sciences to the level of continuous self-improvement and to encourage them in this regard.

REFERENCES

1. President of the Republic of Uzbekistan Shavkat Mirziyoyev in his address to the Oliy Majlis on December 22, 2017.
2. Decree of the President of the Republic of Uzbekistan dated April 29, 2019 "On approval of the concept of development of the public education system of the Republic of Uzbekistan until 2030" PF-5712-conli.
3. Decree No. PF-60 dated January 28, 2022 "On the Development Strategy of New Uzbekistan for 2022-2026".
4. Order No. 414 of the Minister of Public Education of the Republic of Uzbekistan dated December 24, 2021.
5. Berikhanova A.E. (-2017) Creating a collaborative learning environment as a means of forming the success of the future personality. Vestnik KazNPU. Almaty
6. Obrazovanie: odnim bolshe, drugim menshe? Regional research and education in Central and Eastern Europe and the CIS. - M: "UNICEF", 2007c48
7. K. T. Suyarov, Z. B. Sangirova, M. T. Umaraliyeva, S. G. Hasanova, M. K. Yuldasheva, D. T. Hasanova (2022)–Natural sciences [Text]: Textbook for the 6th grade Tashkent: Republican Education Center.–224 p.
8. B.E.Turayev, H.Isayev, G.O.Akbarova//Modern concept of natural science // study guide. - T.: "Barkamol fayz media", 2018.-164 pages.
9. Abdullayeva D (2021) Use of educational methods in teaching sciences. Innovations in primary education.
10. www.ta'lim.uz, www.pedagog.uz, www.ziyonet.uz