



STEAM IS A METHOD OF USING EDUCATIONAL TECHNOLOGY IN PRIMARY CLASSES

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Annotation: in this article, working with steam technology with students of elementary grades, student gaining knowledge, gaining experience and being able to apply it in independent practical activities, the characteristics of the environment and activities affecting their development, working with steam technology or directions, classification of steam according to types of activity, development of children's talent, information that illuminates its uniqueness is described in detail.

Key words: school, group of students, steam, technology, traceability, integrated teaching, natural sciences, communicativeness, educational environment, methodical features.

Introduction. The issue of development of the field of education is recognized as an urgent task in the world. Education is the foundation that determines the spiritual and cultural life and socio-economic development of every country. In the educational paradigm, taking into account the individual development opportunities of each student, in the modern education system, based on STEAM - educational technology, the formation of students' competences related to subjects, independent thinking, creativity, initiative, ability to quickly enter into communication, etc. special attention is paid to the formation of features. This, in turn, creates the need to improve the methodological foundations of the formation of natural-scientific literacy in students starting from primary education based on a comprehensive approach.

Analysis of literature on the topic. A. Zunnunov, A. Sulaymonov on the issue of organizing integrated teaching processes in our country; the problem of formation of natural-scientific and environmental knowledge among students was researched by A. Azizov, A. Some aspects of improving the methodology of science teaching were covered by M.I.Nuritdinova, J.Tolipova, Sh.R.Turdiyev, I.U.Aripov, F.Mardonova, T.L.Ochilova, L.Ch.Rajabov, F.Avazboyev, who suggested the use of the STEAM approach in education. who conducted a number of researches about its essence. The issue of applying international evaluation programs to primary education and innovative technologies to the teaching process was studied by A. Matkarimov and others as a scientific research problem.

Research methodology. The article used generally accepted theoretical analysis, pedagogical observation, interview, expert evaluation, modeling, designing, pedagogical experiment and mathematical-statistical analysis methods.

Analysis and results. Based on the STEAM-educational technology, criteria and indicators for determining the effectiveness of the formation of students' natural-scientific literacy have been developed. Based on the requirements of the international research that assesses the quality of education, didactic support for classes based on the STEAM teaching method has been developed. "STEAM lessons" for primary school teachers. An electronic methodical manual entitled "Teacher's electronic book" was prepared. With the fact that the used approach and methods are scientifically and methodologically based, theoretical information is obtained from official sources, the level of effectiveness of the presented analyzes and experimental works is determined by means of mathematical and statistical methods, the conclusions, suggestions and recommendations are put into practice and approved by the competent authorities.

explained.

STEAM - educational technology is a project activity based on collective, group and individual experiences aimed at acquiring practical knowledge with the help of contexts, electronic tools, distribution and natural tools that ensure the mutual integration of various modern methods and forms of teaching. . This technology is a modern educational technology that integrates several disciplines as a means of developing critical thinking, research skills and small group skills. STEAM - educational technology is manifested in the interpretation (Latin, interpretation, explanation) of a special educational environment that directs students to research, technical creativity and project activities based on an integrated approach. Science and technology are interpreted through engineering and art, all of which are understood through mathematical elements. According to STEAM theorist G. Yakman [3], STEAM is interpreted through science and technology, engineering and art, all of which are based on elements of mathematics. STEAM is an educational technology that connects things to each other and to authenticity. Practitioner STEAM pedagogue Michael Okino says, "STEAM prepares students for innovations in life and the ability to apply the most important laws. The important thing is not to remember, but to understand the processes and events. In order to keep new knowledge in mind, it is necessary to pass on one's own experience. STEAM - educational technology is an effective teaching method based on creative experiences.

It is known that among the subjects based on the national curriculum, natural sciences and natural science classes, which reflect ecological education, are a block of subjects that closely support the formation of a natural-scientific worldview in the younger generation. Any knowledge is determined by the result of the students' understanding process. It is very necessary for humanity to analyze information and use it in any activity or to acquire new knowledge. In this sense, the introduction of STEAM - educational technologies into the educational system guarantees an effective result in adapting foreign experiences to the national educational system and ensuring the quality of education. The application of this educational technology to the teaching process is based on the following principles: continuity and integrity; integrated approach; scientific basis; the principle of humanism of educational content; harmony of theory with practice; cognitive-visibility; free-flowing approach; incorporation activity; synergistic activity; creative-research activity; principles of a collaborative approach.

Organizing the teaching process on the basis of STEAM - educational technology, based on the design method, allows systematic learning based on the direct connection of scientific knowledge of natural sciences with the outside world. At the same time, acquiring natural-scientific knowledge makes it possible to logically observe the surrounding processes, understand their interrelationship, and discover new unusual and interesting things for oneself.

A number of specific pedagogical tasks are strictly defined in the development of methods of forming natural-scientific literacy in students using STEAM-educational technology in primary grades: it is convenient to use STEAM-educational technology in the formation of natural-scientific literacy in students creating conditions; to form concepts related to natural sciences, to arouse interest in practical application of acquired theoretical knowledge; It is extremely important for students to correctly understand the material and remember it logically when learning natural sciences.

Didactic requirements for the formation of STEAM competences in the teaching of natural sciences in elementary grades, methodological system of forming a scientific worldview in elementary school students in the process of teaching natural sciences, creativity in students of natural sciences based on STEAM - educational technology practical work forms on the methodology of formation of work experience are explained.

In primary grades, science classes are 1 hour per week for a total of 33 hours in the 1st grade, and 2 hours per week for 66 hours in the 2nd grade. It is planned that the 3rd grade natural sciences will be replaced by the current science lesson, put into practice in the 2022-2023 academic years, and taught 2 hours a week. In the 3rd and 4th grades, until this academic year, it was taught as a subject of "Natural Science" and was 1 hour per week. In the section of general education subjects, a schedule for the analysis of educational programs has been developed and work is being carried out based on this schedule. According to the concept of the development of the public education system until 2030, in the process of introducing STEAM subjects, it is decided to introduce programs and new state education standards that will form the abilities of critical thinking, independent search and analysis of information in students.

Opportunities for working with didactic materials and information technologies designed for in-depth study of STEAM subjects are being created in the teaching of primary natural sciences. The theoretical topics, practical exercises and project work in the natural sciences textbook, created on the basis of the requirements of the national curriculum, are based on an integrated approach aimed not only at forming a scientific outlook on natural sciences in students, but also at developing practical skills.

Summary. The following conclusions were reached as a result of the studies conducted on the methodology of using STEAM - educational technology in primary classes: 1. Modern concepts of primary education integrated, person-oriented and approaches based on STEAM competencies improve the student's knowledge of natural sciences. , ensures the improvement of the efficiency of development, combining skills and competencies with social values. STEAM - educational technology serves to effectively apply interdisciplinary knowledge to students, to form basic and science-related competencies and natural-scientific literacy.

By enriching the "Natural Science" and "Natural Science" textbooks created for elementary grades with materials based on STEAM - educational technology - contexts, creative tasks, didactic support is created, which is convenient for the development of motivational, intellectual and emotional areas of students. . 4. Natural-scientific literacy of elementary school students is formed by acquiring theoretical, methodological, epistemological knowledge about the content of science in motivational, cognitive, meaningful, active-process, reflexive stages.

By using STEAM - educational technology together with reflexive, game, art, problem-solving, interactive and information technologies, the identity of a pragmatic (active) learning environment focused on practical projects based on a specific goal is ensured and natural-scientific raising the level of literacy is achieved. The organization of creative activities in classes based on STEAM - educational technology, the gradual exteriorization of internalized knowledge is achieved in the process of performing practical, project work, independent work tasks outside the classroom in elementary school students.

The improvement of didactic tools prepared on the basis of innovative, integrative, collaborative, person-oriented and project-oriented approaches to lessons and group activities allows to create an effective methodical system for the formation of natural-scientific literacy in students. 8. Reflexive assessment of students' literacy in natural sciences based on the requirements for completing PISA, TIMSS tasks, practical application of acquired knowledge, acquisition of creative activity experience, scientific explanation of phenomena, design and evaluation of scientific research, etc. It is determined using the criteria of scientific interpretation of data and evidence according to their assumptions.

Used sources and literature:

1. Nishonaliyev U. Yangi pedagogik va axborot texnologiyalari muammolari va yechimlari. // Pedagogik ta'lim. -2000.- 3- son. - B.11.
2. Norbo'tayev X.B. Boshlang'ich sinflarda integratsiyalashgan ta'lim. Darslik. - Toshkent : "Innovatsiya-Ziyo", 2023, 174 b.
3. Norqulova Q va boshqalar. Matematika 3-sinf umumiy o'rta ta'lim maktablari uchun darslik.- Toshkent: "Sharq" nashriyot-matbaa aksiyadorlik kompaniyasi bosh tahririyati, 2019. -213 b. 9.
4. Shavkatjonovna T. N. A Creative Approach to Teaching Geometry in the Primary Grades //International Journal on Orange Technologies. – 2021. – T. 3. – №. 9. – C. 48-53.
5. Ziyaqulova M., Ashurova S., Toshpulatova N. BOSHLANG'ICH SINFLAR O'QUVCHILARINING AQLIY SALOHİYATINI HAMDA KREATIVLIGINI OSHIRISHDA MENTAL ARIFMETIKANING O'RNI //Development and innovations in science. – 2023. – T. 2. – №. 3. – C. 92-98.
6. Niyohon T. THE WORLD OF SCIENCE IN PRIMARY CLASS STUDENTS-IMPROVING THE INTERDISCIPLINARY FORMATION OF VIEW //International Journal of Pedagogics. – 2023. – T. 3. – №. 05. – C. 113-120.
7. Toshpulatova N., Almanova D. THE CONTENT AND TASKS OF TEACHING MOTHER TONGUE AND READING LITERACY TO PRIMARY SCHOOL STUDENTS //International Bulletin of Applied Science and Technology. – 2023. – T. 3. – №. 3. – C. 391-393.
8. Toshpulatova N. BOSHLANG 'ICH SINFLAR O 'QUVCHILARIDA ILMIY DUNYOQARASHNI

9. qizi Toshpulatova N. S. Ilmiy dunyoqarash va tafakkurni shakllantirish //International conferences. – 2023. – T. 1. – №. 1. – С. 238-244.
10. Toshpulatova N. BOSHLANG'ICH SINFLAR O'QUVCHILARI ILMIY DUNYOQARASHINI SHAKLLANTIRISHDA MATEMATIKADAN SINFDAN TASHQARI ISHLARNI FANLARARO TAKOMILLASHTIRISHNING AHAMIYATI //Молодые ученые. – 2023. – Т. 1. – №. 4. – С. 139-142.
11. Bobonazarovich N. K., Niyokhan T. SPECIFIC CHARACTERISTICS OF IMPROVING THE SCIENTIFIC WORLD VIEW OF PRIMARY CLASS STUDENTS ON THE BASIS OF INTERDISCIPLINARY RELATIONSHIPS //International Journal of Pedagogics. – 2023. – Т. 3. – №. 05. – С. 77-84.
12. Toshpulatova N. BOSHLANG 'ICH SINFLARDA O 'QUVCHILAR ILMIY DUNYOQARASHINI SHAKLLANTIRISHDA SINFDAN TASHQARI ISHLARNI TASHKIL ETISH TURLARI //Theoretical aspects in the formation of pedagogical sciences. – 2023. – Т. 2. – №. 8. – С. 77-83.
13. Eshboeva, S. K. Q. (2021). Use of people's oral creativity in the formation of ecological concepts of primary school students on a creative basis. *Oriental Renaissance: Innovative, educational, natural and social sciences*, 1(10), 763-769.
14. Shavkatjonovna, T. N. (2021). Boshlang'ich sinflarda geometriyani o'qitishga ijodiy yondashuv. *Orange Technologies xalqaro jurnali* , 3 (9), 48-53.
15. Toshpo'latova, N. (2023). O'QUVCHILARNI KASABGA YO'NALISHDA SHARQ OLIMLARI MA'NAVIY MORASIDAN FOYDALANISHNING PEDAGOGIK ASOSLARI. *Fan va innovatsiyalar* , 2 (B4), 273-278.
16. Eshboeva, Surayyo Kahramon Qizi (2021). USE OF PEOPLE'S ORAL CREATIVITY IN THE FORMATION OF ECOLOGICAL CONCEPTS OF PRIMARY SCHOOL STUDENTS ON A CREATIVE BASIS. *Oriental renaissance: Innovative, educational, natural and social sciences*, 1 (10), 763-769. doi: 10.24412/2181-1784-2021-10-763-769
17. Эшбоева С. и др. Бошланғич синф ўқувчиларининг экологияга оид тушунчаларини креатив ёндашув асосида такомиллаштиришнинг ўзига хос хусусиятлари //E Conference Zone. – 2022. – С. 124-130.
18. Eshboyeva, S. K. Pedagogical Fundamentals of Improving the Creative Approach in the Formation of Ecological Concepts in Primary School Students. *International Journal of Innovative Analyses and Emerging Technology| e-ISSN*, 2792-4025.
19. Eshboeva, S. K. Technology for improving the creative approach to primary school students forming ecological concepts. *Analytical journal of education and development* ISSN, 2181-2624.
20. Эшбоева, С. (2022, October). Бошланғич синф ўқувчиларининг экологияга оид тушунчаларини креатив ёндашув асосида такомиллаштиришнинг ўзига хос хусусиятлари. In *E Conference Zone* (pp. 124-130).
21. Эшбоева, С. (2023). БОШЛАНҒИЧ СИНФ ЎҚУВЧИЛАРИДА ЭКОЛОГИК ТУШУНЧАЛАРНИ ТАКОМИЛЛАШТИРИШДА КРЕАТИВ ЁНДАШУВ. *Conferencea*, 67-84.
22. Эшбоева, С. (2023, January). БОШЛАНҒИЧ ТАЪЛИМДА ЭКОЛОГИК ТАЪЛИМ-ТАРБИЯНИ ШАКЛЛАНТИРИШДА КРЕАТИВЛИКНИ ТАКОМИЛЛАШТИРИШ МЕТОДИКАСИ. In *E Conference Zone* (pp. 29-36).
23. Эшбоева, С. К. (2018). Влияние индивидуальных особенностей на развитие и воспитание школьников. *Гуманитарный трактат*, (29), 48-51.
24. Eshboeva, S. (2022). Creative approach to forming ecological concepts in primary class students.