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# WAYS TO INCREASE STUDENT KNOWLEDGE BASED ON STEAM EDUCATIONAL TECHNOLOGY

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**Annotatsiya:** STEAM ta'lim texnologiyasi maktab o'quvchilarini yangicha o'qitish metodikasi bo'lib, an'anaviy o'qitish metodikasidan farqli metodika hisoblanadi. U o'quvchilarni bir vaqtning o'zida to'rtta – fan (Science), texnologiya (Technology), muhandislik, (Engineering), tasviriy san'at (Art), matematika (Math) bo'yicha o'qitishga mo'ljallangan. STEAM fan bo'yicha emas, balki mavzular bo'yicha integratsiyalashgan o'qitish tizimidir.

**Kalit so'zlar:** o'qitish usuli, fikrlash tarsi, innovatsion taraqqiyot, xalqaro mezon, o'qish savodxonlogi, xorijiy tajribalar, ta'lim sifatini baholash, pedagogik kuzatuv, falsafaviy qarashlar, g'oyalar, ilovalar.

At a time when our country is rapidly developing on the path of innovative development, the full support of the creative ideas and creativity of young people, the successors of our future, the formation of their knowledge, skills and abilities, as well as advanced foreign experience, international standards and it is important to improve the system of evaluation on the basis of requirements, to study international experience, to make a comprehensive comparative analysis of the existing system, to work closely with relevant international and foreign organizations, agencies, research institutions.

The demands of the rapidly evolving era on society are increasing day by day. Achieving strategic goals, reaching new heights, becoming one of the developed countries The role of educated, experienced and modern-minded high-level personnel specialists in the country is incomparable. At the heart of this is the glorious task of human capital, in simple terms, such as the discovery of human potential and its mobilization to achieve certain goals.

The fact that in recent years, as a result of reforms in our country, huge economic growth rates have been achieved, further increases the demand for qualified personnel and advanced specialists in all areas. This in itself requires increasing the interest of our students in the lessons and increasing the attention of teachers to comprehensive education. The fact that the above requirements are very important for the education system means that , as in most foreign countries, it is necessary to attract best practices to improve the quality of education by assessing and monitoring the development of education and science.

"In developed countries, a great deal of attention is paid to investing in the full cycle of education , that is, investing in the upbringing of a child between the ages of 3 and 22. Because this investment will bring 15-17 times more benefits to the society. In our case, this figure is 4 times. We must pay more attention to human capital, and for this we must mobilize all our resources. "Shavkat Mirziyoyev President of the Republic of Uzbekistan

Organization of international research in the field of quality assessment of education in the public education system of the Republic, the establishment of international relations, research and innovation activities of students, first of all, the creative ideas and creativity of the younger generation liq.

STEAM technology, unlike education, ensures that knowledge is carried out in a balanced way, not separately. The student develops non-standard thinking, multi-problem solving and creative skills, which will be very useful in his future activities. What is the STEAM education system? What is the STEAM education system? If we spread this abbreviation, we get: STEAM is - S - *science*, T - *technology*, E - *engineering*, A - *art* and M - *math*. In English, this would be: natural sciences, technology, engineering, art, and math. Keep in mind that these trends are becoming the most popular in the modern world. That is why today the STEAM system is evolving as one of the main trends. STEAM is based on the direction of education and the application of a practical approach, as well as the integration of all five areas into a single education system. If we spread this abbreviation, we get: STEAM is - S - science, T - technology, E - engineering, A - art and M - math. In English, this would be: natural sciences, technology, engineering, art, and math. Keep in mind that these trends are becoming the most popular in the modern world. That is why the STEAM system is the key today is evolving as one of the trends. STEAM is based on the direction of education and the application of a practical approach, as well as the integration of all five areas into a single education system.

How does the STEAM approach affect learning effectiveness?
His main idea is that practice is as important as theoretical knowledge. That is, while learning, we only interact with our brains , but we also have to work with our hands. Learning on classroom walls alone is not keeping pace with the rapidly changing world. The main difference of the STEAM approach is that children use both the brain and the hands to successfully explore a variety of topics. They "read" the knowledge they have acquired. STEAM education is not just a method of teaching, but a way of thinking. In a STEAM learning environment, children gain knowledge and immediately learn to use it. Therefore, as they grow older and face life challenges, whether it be environmental pollution or global climate change , they understand that such complex issues can only be solved by relying on knowledge in different fields and working together. It is not enough to rely on knowledge on only one topic .

The STEAM approach is changing our approach to education and training. By focusing on practical skills, students develop their willpower, creativity, flexibility, and learn to collaborate with others. These skills and knowledge constitute the basic educational task , viz. what is this whole education system striving for.How did this new approach to education come about? This is the logical result of combining theory and practice. STEAM Made in America. Some schools took into account the careers of the graduates and decided to combine subjects such as science, technology, engineering and mathematics, and the STEM system was formed in this way. (Science, Technology, Engineering and Mathematics). Later Art was added here and now STEAM has been formed to the end. Teachers believe that knowledge of these topics, more precisely from these subjects, will help students to become highly qualified professionals in the future. After all, children strive to acquire good knowledge and immediately put it into practice. The world is changing, even if education does not stand still. The changes of the last decade are pleasant, but at the same time worrying. With the invention of these new things, there are many new challenges that people have never faced before. Every day new types of work and even entire professional fields appear, so modern teachers need to think about whether the knowledge and skills they teach meet the requirements of the time. Knowledge helps to find your idea but real work makes this idea a reality. If we say that the main goal of traditional education is to teach knowledge and use that knowledge to think and create, the STEAM approach is to combine the knowledge we have acquired with real skills. 'rgatadi. This allows school students not only to have some ideas, but also to put them into practice and put them into practice. That's it. only knowledge that can actually be used is really valuable. The most popular example of the STEAM approach is the Massachusetts Institute of Technology (MIT). The motto of this world university is “Mens et Manus” (Mind and Hand). The Massachusetts Institute of Technology has developed STEAM courses to give children the opportunity to learn and get acquainted with the concept of STEAM in advance, and has even established STEAM training centers in some educational

institutions. According to statistics, the demand for STEAM professions since 2011 the rate has increased by 17%, while the demand for basic occupations has increased by only 9.8%, indicating a huge demand for this education system worldwide. But what is the reason for such a high demand? In many countries, STEAM education is a priority for a number of reasons:

In the near future, the demand for engineers, high-tech production specialists in the world and therefore in Uzbekistan will be very high.
In the long run, we will have professions related to technology and high-tech manufacturing in conjunction with the natural sciences, especially bio and nanotechnology professionals. lim and need experience.Integrated educationWhat is the difference between this education system and the traditional method of teaching sciences? STEAM-education refers to a mixed environment in which students begin to understand how to apply scientific methods in practice. In this program, students, in addition to math and physics, learn about robots that design and develop their own robots. Special technological equipment is used in the lessons. In 2014, the following statements were made at the international conference "STEAM forward" in Jerusalem:

- Involve children in STEAM. This education should start from preschool age, so programs should be included in kindergartens.
- The language of science is English. If you want to study science and become a scientist, you need to know this language.
- Girls need Steam training programs. Girls in science can do things that boys can't do because of their orderliness.
- Science is fun! Science should be fun; it should be fun and engaging for students.
- **STEAM** technology, unlike education, ensures that knowledge is carried out in a balanced way, not separately. The student develops non-standard thinking, multi-problem solving and creative skills, which will be very useful in his future activities.
  For example: In today's world of technology, robotics is one of the most promising areas. When STEAM and robotics classes are combined, students will have the following knowledge and skills :

- *C programming language*
- Basics of electronics
- Create simple and complex schemes
- 3D design and 3D modeling
- Extract 3D models from a 3D printer
- Arduino programming
- Work with transistors and microchips
- Work with additional modules and sensors (RGB, WiFi, PIR, LCD display , RFID)

- Independently create various Arduino projects.
In our country, the President's schools provide education under the STEAM program. 4th grade graduates of secondary schools can enter based on the results of logical thinking tests, written exams and interviews. Assessment is carried out in accordance with the procedure established by the Ministry of Public Education. The educational process is carried out in English according to the curricula and programs developed in collaboration with foreign educational institutions. In grades 9–11, teaching involves the individualization of the learning process by selecting individual subjects and levels of study, taking into account the interests and characteristics of the students. The program "STEAM - education" (Science - natural sciences, Technology - technologies, Engineering - technical creativity , Art - art, Mathematics - mathematics) will be introduced in schools. Extracurricular activities are planned based on

students' interests . Graduates will be awarded a state-approved certificate of education (certificate, certificate) and a diploma of international program (International Baccalaureate , Advanced Placement or International Advanced Levels). With such a diploma, you will be able to enter the leading higher education institutions of foreign countries.
Doctor of Pedagogical Sciences, Professor Carly Womak-Wen of the University of North Georgia will start working in Uzbekistan in September. For two months, the state will assist in the assessment and revision of educational standards. In particular, it will advise the educational process based on its experience in implementing the STEAM program. was appointed as a consultant. This program allows you to attract highly qualified U.S. professionals and scientists to share experiences.

In summary, compared to traditional teaching methods, the STEAM approach in high school encourages children to experiment, model, create music and films independently, turn their ideas into reality, and create the final product. Applying this education to preschool children in the process of education and upbringing and making it widely available in practice will enable them to effectively combine theoretical and practical skills and facilitate university entry and further education.

**References**


1. Decree of the President of the Republic of Uzbekistan No. PF-4947 of February 7, 2017 "On the Action Strategy for further development of the Republic of Uzbekistan".
2. Preschool educational pr actice. Guidelines for preschool teachers. State of israel ministry of education preschool education division. 2010.
3. “ IV Grosheva, LGYevstafeva, DTMaxmudova, Sh.B.Nabixanova, SVPak, GEDjanpeisova “First step” state curriculum T: 2018. 1-81-p;
4. F. Kadyrova, Sh. Toshpulatova, M. Azamova. "Preschool pedagogy" .- T., "Spirituality". 2019.
5. Tosheva Nurzoda Toshtemirovna. Methods and techniques of developing cognitive activities of primary school pupils // ACADEMICIA. An International Multidisciplinary Research Journal, 2020. № 10. (7.13.) Pp. 80-87 . https://journal.buxdu.uz/index.php/journals_buxdu/article/view/1537/943
6. NTTosheva, MH Mustafoyeva Registration of age and individual characteristics in education as a pedagogical problem. European scholar journal ISSN (E): 2660-5562 Journal Impact Factor: 7.235 Volume 2, Issue 4 Apr 2021. - P. 85- 90 https://scholar.google.com/citations?user=jJE1SeoAAAAJ&hl=ru&oi=ao
7. NTTosheva, AMIbodullayeva P edagogical bases of training of qualified pedagogical staff . International Engineering Journal For Research & Development: Vol. 6 No. 3 (2021): VOLUME 6 ISSUE 3 SJIF: 7.169 http://iejrd.com/index.php/%20/article/view/2228
8. Tosheva N. T. Pedagogical and psychological approaches to the development of cognitive activity uchashchixsya nachalnoy school // Pedagogical sciences. - 2011. - №. 6. - S. 44-46.
9. Tosheva N. ОРГАНИЗАЦИЯ УЧЕБНО-ПОЗНАВАТЕЛЬНЫХ СИТУАЦИЙ НАЧАЛЬНЫХ КЛАССОВ НА ОСНОВЕ ДИДАКТИКО-ПСИХОЛОГИЧЕСКИХ ПОДХОДОВ //Buxoro davlat universitetining Pedagogika instituti jurnali. – 2021. – Т. 1. – №. 1.
10. Toshtemirovna T. N. Education process directed to the person as the basis of increasing knowing activity of pupils //The advanced science open access journal. United states. – 2013. – №. 6. – С. 83-85.
11. Toshtemirovna T. N. Methods and techniques of developing cognitive activities of primary school pupils //ACADEMICIA. An International Multidisciplinary Research Journal. – 2020. – №. 10. – С. 7.13. https://journal.buxdu.uz/index.php/journals_buxdu/article/view/1540/942

12. Tosheva N. T. Peculiarities of the formation of cognitive activity in primary school students The teacher is also constantly informed. - Nukus, 2020. - №2. - B. 126-132. https://journal.buxdu.uz/index.php/journals_buxdu/article/view/1544/941
13. Tosheva Nurzoda Toshtemirovna. Education process directed to the person as the basis of increasing knowing activity of pupils. // The advanced science open access journal. United States, 2013. №6. . Str. 83-85.
14. Boymurodova G. T. O ‘qituvchining kasbiy kompetensiyasini rivojantirish masalalari: doi: 10.53885/edinres. 2021.54. 99.132 Nizomiy nomidag I TDPU Uzluksiz ta’lim pedagogikasi va menejmenti kafedrasi dotsenti, pfn (DSc)
15. Boymurodova G. T. Particular Characteristics of Scientific Research Methods to Continuous Rising Qualification //Eastern European Scientific Journal. – 2017. – №. 5. – С. 29-34.
16. Olimov, S. S. (2021). The innovation process is a priority in the development of pedagogical sciences.
17. Olimov, S. S., & Mamurova, D. I. (2021). Graphic Information Processing Technology and its Importance. *European Journal of Life Safety and Stability (2660-9630)*, *10*, 1-4.
18. Olimov, S. S., & Mamurova, D. I. (2022). Information Technology in Education. *Pioneer: Journal of Advanced Research and Scientific Progress*, *1*(1), 17-22.
19. Toshtemirovna T. N., Mahmudovna I. A. ZAMONAVIY DARSLARNI TASHKIL ETISHDA TEXNIK VOSITALARDAN FOYDALANISH IMKONIYATLARI //Научно-практическая конференция. – 2021.
20. Toshtemirovna T. N. et al. ZAMONAVIY DARS TURLARI VA UNGA QO’YILADIGAN TALABLAR //Научно-практическая конференция. – 2021.
21. Toshtemirovna T. N., Shukurulloevna M. M. REGISTRATION OF AGE AND INDIVIDUAL CHARACTERISTICS IN EDUCATION AS A PEDAGOGICAL PROBLEM. – 2021