



DEVELOPING STUDENTS' KNOWLEDGE AND SKILLS THROUGH THE USE OF STEAM TECHNOLOGY AND INCREASING EDUCATIONAL EFFICIENCY

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ABOUT ARTICLE

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Abstract: The article discusses the use of STEAM technologies in primary education in specific subjects, the development of didactic methods for effectively organizing and mastering the learning and cognitive abilities of students, and the formation of skills to apply knowledge, in order to achieve the formation of students' labor skills. To highlight methodological methods for the effective use of STEAM technologies in primary education, to assess the creative potential of students based on didactic methods in educational lessons, to achieve the formation of students' initial understanding of specific subjects.

INTRODUCTION

The rapidly developing era in the context of globalization poses modern requirements to the state and society, the relevance and scope of which are increasing day by day. In order to achieve global strategic goals, conquer new heights, and take a place among developed countries, the role of highly qualified, experienced, and modern-thinking personnel and specialists in the country is incomparable. At the heart of satisfying the need for such competitive personnel are such grandiose tasks as discovering human capital, a person and his potential, and mobilizing him to achieve great goals.

The purpose of teaching STEAM technology in primary education is: to teach students to integrate the content of various activities in the comprehensive intellectual education of preschool children; to teach the normative and methodological foundations of the use of STEAM educational technology in primary education; to teach foreign experiences in the use of STEAM educational technology in primary education; organizing integration training; providing knowledge and information on the practical application of STEAM educational technology in primary education institutions.

The task of the subject of STEAM technology in primary education is to teach students how to use STEAM educational technology, integrate various activities in the application of STEAM educational technology in the educational process, and prepare preschool children for initial research activities.

The wide use of its opportunities to enrich knowledge and achieve the formation of practical professional skills reflects the special practical significance of the educational and upbringing process. This currently forms urgent requirements for ensuring indirect communication between education and production. This directly forms a number of requirements for the development of new methods of pedagogical technology, didactic processes, and the widespread use of STEAM technologies in modern teaching in the system of indirect communication between education and production. For example, the educational information base is extensive, and its practical significance and role in increasing labor efficiency are directly related to the use of technologies only theoretically. Therefore, the development of knowledge of exact sciences based on STEAM technologies in primary education, which is considered the fundamental basis of education, and the formation of the skills of primary school students to correctly account for various practical processes in labor processes, are included in the didactic principles and features of the educational process of this article.

In highlighting the political factors of the use of STEAM technologies in primary education and the technologization of education, it is appropriate to cite the content of the processes of introducing modern principles of personnel policy formation in the public education system through the implementation of advanced and transparent organizational and legal mechanisms for the selection, training, retraining and advanced training of managerial and pedagogical personnel in the Decree of the President of the Republic of Uzbekistan PF-5538 dated September 5, 2018.

The most famous 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 created STEAM training centers in some educational institutions.

In highlighting the practical significance of modern education, STEAM technologies are now one of the most important traditions of the world education system.

This approach will help children solve life problems in the future. Today, STEAM education is developing as one of the main trends in the world, and the application of the practical approach is based on the integration of five areas into a single educational scheme. The conditions for such education are its continuity and the development of children's ability to communicate in groups, which allows them to collect and exchange ideas. Therefore, the main educational program includes: modules for the development of logical thinking, such as Lego technologies, children's research. Thanks to the STEAM approach, children understand nature and systematically study the world, thereby developing their interests, engineering thinking, the ability to overcome critical situations, teamwork skills and the basics of leadership and self-expression, which, in turn, provides a fundamentally new level of children's development.

Building self-confidence. In this approach, children "launch" bridges and roads, airplanes and cars created with their own hands, "develop" and test underwater and air structures, each time they get closer to the goal. They repeatedly test and improve the "product" that did not give good results. As a result, solving all the problems themselves, achieving the goal brings inspiration, victory, adrenaline and joy to children. Each victory instills more confidence in their abilities. Teaches active communication and organization of teamwork. STEAM programs are also characterized by active

communication and group work. During the discussion phase, children learn not to be afraid to express their opinions. During the activities, children do not sit around a table in a frontal manner, but test and develop “products” based on their own designs. During the activities, children are constantly engaged in communication with educators and their friends in a team that ensures cooperation.

At first glance, the abbreviation STEAM seems very complicated, but if we look at it separately, we can see that it is simple and clear, namely: S – science, T – technology, E – engineering, A – art, M – mathematics, or natural sciences, technology, engineering art, creativity, mathematics. In simple words, these are the subjects that are most in demand in the modern world. One of the important features of school education is the upbringing of well-rounded, healthy-thinking individuals with labor skills in school education, which is recognized as one of the urgent issues in highlighting the role of this holistic concept in didactic training in the primary education system.

In primary education, when using STEAM technologies in educational activities, education includes the features of effective development, change, improvement, and modeling, and education, in turn, is directly dependent on the criteria of using developmental factors and using a scientific basis. Therefore, based on the general characteristics of education, this article, which is aimed at obtaining the results of educational effectiveness on the example of modern methods of teaching in primary school education, methods of using new pedagogical technologies, reflects the methodological task of the article to increase the level of students' mastery, form the results of methodological analysis of labor and vocational orientation by organizing educational activities based on scientific approaches, types of technology, engineering skills, art and mathematical methods in the current educational activity. In particular, in the case of mathematics in primary education, we will cite a number of methods for increasing students' learning activity based on the STEAM integrated method.

S-Science can be used to introduce school-age children to the world of science by using books about the animal world, marine animals, plants and insects.

T-Technology Interesting books that depict technological objects found around us, in children's rooms, and in our daily activities introduce children to the world of technology. Scissors, wheels, cars, a washing machine, a telephone, etc. can be shown in books with their insides, and stories can be read about objects. Illustrations of technological objects presented with an interesting story can stimulate questions in the child's mind and stimulate analytical thinking.

E-Engineering can start introducing children to the field of engineering by studying shapes. A book with some form about shapes, their reflection in objects around us, and the relationship of shapes to each other will be a useful tool.

A – Art It is necessary to start introducing a child to the world of art from childhood. Works of great national and world artists, books consisting of art samples, illustrations that take into account the psychology of the child's eyes are worthy of the principle of STEM education. Activities such as showing shapes through Malevich's "Black Square" painting, expressing emotions through Monk's "Fear" can interest children.

M – Math It is possible to teach the basics of counting even to children of school age who cannot read. Only this is not a boring education like $1 + 1$, which does not correspond to the neurophysiological development of the child, but an education with an interactive innovative approach. The number of animals, the number of fingers, the number of limbs on the surface of the book next to the number "1" (one mouth) or "2" (two eyes) helps the child to form the foundations of mathematics and awaken his interest in numbers. Most importantly, when choosing a book for the child related to the STEM system, it ensures that it is not boring and is appropriate for the child's age psychology. These books contain

illustrations that can attract the child's attention, correspond to the psychology of school-age children, provide information appropriate to their age, and at the same time are based on STEM education.

STEAM helps children develop the following important characteristics and skills: a comprehensive understanding of problems; creative thinking; engineering approach; critical thinking; understanding and application of scientific methods; understanding of the principles of design, etc.

This approach will help children solve life problems in the future. Today, STEAM education is developing as one of the main trends in the world, and the practice of applying the approach is based on the integration of five areas into a single educational scheme. The conditions for such education are its continuity and the development of children's ability to communicate in groups, in which they collect and exchange ideas. Therefore, the main educational program includes: modules for the development of logical thinking, such as Lego technologies, children's research. Thanks to the STEAM approach, children understand nature and systematically study the world, thereby developing their interests, engineering thinking, the ability to overcome critical situations, teamwork skills and the basics of leadership and self-expression, which, in turn, provides a fundamentally new level of children's development.

In this approach, children "launch" bridges and roads, airplanes and cars created by their own hands, "develop" and test underwater and air structures, each time they get closer to the goal. They repeatedly test and improve the "product" that did not give good results. As a result, solving all the problems themselves, achieving the goal brings inspiration, victory, adrenaline and joy to children. Each victory instills more confidence in their abilities.

STEAM programs are also characterized by active communication and group work. At the discussion stage, they learn not to be afraid to express their opinions. Often, they do not sit around a table, testing and developing "products" based on their own designs. They are constantly engaged in communication with educators and their friends in a team that provides cooperation. Developing interest in technical sciences. The task of STEAM education in preschool and primary school age is to create the initial conditions for the development of interest. For children, it is the basis for developing interest in natural sciences and technical sciences, to love what they do. STEAM is very interesting and dynamic for children, which prevents them from getting bored. They do not notice the passage of time and do not get tired.

The conclusion is that it is important to focus the content of school lessons on preparing for research, strengthen the creative atmosphere among the school teaching staff and students, ensure interdisciplinary integration in the lesson process, establish modern circle classes with high vitality and practical significance, as well as further improve the quality of the educational process, focus control materials on assessing competence and creative thinking, and constantly analyze student results.

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