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Steam Education - An Important Factor that Increases the Effectiveness of Teaching Technology

Abdurasulova Malohat Tulkinjanovna
Teacher of technology at the 30th general secondary school of
Izboskan district

Abstarct. In the context of new technological changes, training on the basis of STEAM education in general secondary education schools forms basic competencies and worldviews in students, which will be necessary when developing creativity and labor skills, in which the stage of after-school education or a step towards an independent life. This article highlights the essence of STEAM educational technology, the importance of using STEAM education in the effective organization of technology science training and in the training of highly qualified, professional specialists who contribute significantly to the development of society and the state.

Keywords: Technology, STEAM, innovation, competence, practical skills, ability, thinking, creativity, profession, expert.

The globalization of education and the introduction of innovative technologies are the reason for the increase in the quality of education in educational institutions. It is known that any technology is based on educational principles that form new content of education. The active subjects of the educational process are the teacher and the students, and their collaborative activities allow in-depth assimilation of theoretical and practical knowledge on a certain subject. Currently, in the field of education, great attention is paid to informatization of teaching. It is known that the use of modern teaching technologies in the course of the lesson gives great positive results. Interactive teaching methods can be shown as such modern teaching technologies.

The state policy of the Republic of Uzbekistan in the field of education and upbringing, the professional competence and skills of the pedagogue, the theory and methodology of technology science teaching, the use of foreign experiences and innovative technologies, the analysis of educational literature and textbooks on technology science education, technology and the teaching methodology of design and service areas, includes modern methods of organizing the educational process and is directed to the formation of relevant new knowledge, skills, qualifications and competencies.

STEAM education is used to develop students' spiritual, artistic and moral culture, to develop creative skills, artistic and aesthetic taste, to guide them to a profession, to be physically fit, to follow a healthy lifestyle, to educate them in the spirit of patriotism and to prepare them for military service, to develop life skills.

The subject of technology is to develop technical creativity, ability, and thinking in students, to further strengthen career orientation by teaching methods of processing natural, metallic and non-metallic materials based on new technology, basics of crafts, basics of production and economics, electrical engineering works, basics of electronics, aimed at forming the ability to apply the knowledge, skills and qualifications acquired in the technology of creative project preparation, career guidance. By teaching the subject, special attention is paid to the development of students' technical creativity and creative skills. By introducing STEAM (S-Science-natural sciences, T-Technology, E-Engineering, A-Art, M-Mathematics) education, it increases the level of literacy of schoolchildren based on the integration of sciences; technology education-formation of scientific and technical literacy, initial engineering skills and competencies of school graduates, at the same time allows to master the professional use of modern technical systems and technologies, design and management of technical systems; science of technology acts as the main integrative mechanism in the system of general secondary education, teaches to apply the knowledge acquired

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within the framework of natural, scientific-technical, technological, entrepreneurship and humanitarian sciences at a high level and helps to strengthen the practical aspects of general secondary education.

STEAM education takes a special place in students' independent creative work, formation of research elements in them, and in their conscious choice of the right profession in the future. STEAM education has an educational value in the formation of students' personalities, awareness of responsibility for assigned work and preparation for future work activities. It is necessary to ensure the continuity of STEAM education in the educational work at all times, during each lesson, in technology classes. STEAM education is beneficial not only for students but also for teachers. In doing so, the teacher tries to get to know his students better, deal with them, and always familiarize himself with modern science and technology news. The process of STEAM education is one of the important and constituent parts of educational activities. Its main task is to comprehensively develop students' independent activities and creative abilities in the fields of modern science and technology. It is time to introduce modern innovative methods of teaching students in general secondary education schools.

STEAM is a general plan aimed at strengthening the interdisciplinary connection and practical approach in the education of students at the international level based on the needs of the times. STEAM represents an integrative approach to education with scientific research, technical development concepts of everyday life. The purpose of such an approach is to promote scientific literacy and competitiveness by involving the school and the public in ensuring the sustainable development of the world's economy and development through education. Based on international experiences, the introduction of STEAM will change the approach to the education system today and the attitude towards learning and education. By focusing on practical skills, students develop willpower, creativity, flexibility and learn to cooperate with others. Development of technical creativity, ability, and thinking of students in technology classes, orientation to profession by teaching various, natural, metal and non-metal materials processing methods based on technology during the course of the lesson, knowledge and skills of orientation to profession in the basics of folk crafts, economics, electrical engineering work and formation of the ability to acquire skills and apply them in life is envisaged.

Today, the formation of students studying in general secondary schools, necessary skills for studying, living and working in an industrialized country, is becoming an urgent issue. Nowadays, news, high technical-technological innovations, and the growth of the flow of information are creating the fourth technological revolution in all aspects of life. Individual interests and society's demands are changing. Introduces STEAM education, an integrative approach of education to the concepts of scientific research, technical development of everyday life. The purpose of such an approach is to promote scientific literacy and competitiveness by involving the school and the public in ensuring the sustainable development of the world's economy and development through education. Previously, girls only learned to sew aprons in labor classes, boys learned to work with wood and metal, and in fine arts and drawing classes to paint and draw and draw by hand with a pencil, nowadays this is not enough. Today, schoolchildren all over the world are interested in robotics, modeling, construction, programming, 3D design and many other innovations. In order to test such interests in practice, it is necessary to acquire more complex knowledge, skills, skills and competences. This requires not only knowledge and ability, but also research and invention. STEAM education is aimed at developing students' interest in conducting educational research, performing experiments, cultivating design-oriented creativity, and creating innovations by showing how the knowledge, skills, and abilities provided on the basis of DTS are scientifically related to everyday life.

"Technology", along with other subjects, is important for students to grow up as a mature generation, to fully express their talents, to reveal all their abilities, and to find their place in society. In the "Technology" course, STEAM education provides students with knowledge, skills and competencies related to intellectual thinking, creativity, increasing professional training based on the requirements of market relations of modern production, and effective use of physical labor

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types. encourages the acquisition of practical competences. The advantages of STEAM education are as follows.

1. To carry out education not by academic subjects, but by "topics". STEAM education combines interdisciplinary communication and the design method, which is based on the integration of natural sciences with technology, engineering creativity and mathematics. In this, preparation for professions related to engineering is carried out.

2. Application of scientific and technical knowledge in real life. In STEAM education, with the help of practical exercises, students are shown the use of scientific and technical knowledge in real life. In each lesson, students develop, build and improve models of modern design. They study a specific project, and as a result, create the appearance of a real product. For example, students get acquainted with such concepts as a simple mobile device, engineering profession in making a robot, engineering design, electrical engineer, designer, design, technological process, technological map.

3. Development of critical thinking skills and problem solving. The STEAM program develops the critical thinking and problem-solving skills that students need to overcome the challenges they face in their daily lives. For example, children assemble a model of a fast moving car, and then test it. If the expected result is not achieved after the first test, they think about the reasons and find it. After each test, existing deficiencies are eliminated.

4. Increasing confidence in one's own strength. Students work to achieve their goals in robotics, operating model cars and airplanes, and performing other tasks. After each test, they improve the model. In the end, they overcome all problems with their own strength and achieve their goals. This means inspiration, victory and joy for students. After each victory, they are more confident in their abilities.

5. Active communication and teamwork. The STEAM program is distinguished by active communication and teamwork. During the dialogue period, a free environment is created to express one's opinions and conduct debates. They learn to speak and make presentations. Students always communicate with the teacher and classmates. If students actively participate in each work process, they will remember the lesson well.

6. To develop their interest in technical sciences. The task of STEAM education in primary education is to develop students' interest in technology, and it serves as a basis for developing their interest and love for what they do. If STEAM lessons are very upbeat and interesting, students will not get bored during the lesson and will make the most of the lesson.

7. Creative and innovative approach to projects. STEAM education consists of six stages: question (task), discussion, design, construction, testing and development. These steps are the basis of a systematic design approach. The coexistence or joint use of various opportunities is considered the basis of creativity and innovation. Thus, the joint study of science and technology leads to the creation of many new innovative projects.

8. A bridge between education and production. According to various evaluations, 9 of the 10 most in-demand specialists require STEAM knowledge. Such professions include: chemical engineer; petroleum engineers; computer systems analysts; mechanical engineers; civil engineers; robotics and others.

9. Preparing students for a technologically innovative life. STEAM education prepares students to live in a technologically advanced world. Technologies have developed rapidly over the years. Examples include the advent of the Internet, GPS technology, DNA scanning, and more. It uses all smartphones today. The world today cannot be imagined without technologies. Technologies will continue to evolve, and STEAM skills will be at the core of that evolution.

10. STEAM as an addition to school programs. STEAM programs not only teach technology, but also other subjects and increase students' interest in regular activities. For example, in physics lessons, when studying the gravity of the earth, formulas are explained on the board, while in STEAM circles, they strengthen their knowledge by performing rockets, airplanes, electrical engineering works, robotics, folk crafts and other practical works.

In conclusion, STEAM education allows students to systematically explore the world, make logical observations of the processes taking place around them, realize the interaction in them,

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develop creativity and labor skills, open up something new, unusual and interesting for themselves. In the context of new technological changes, the teaching of technology in general secondary education schools will be the main solution in developing creativity and labor skills in students, in the formation of baseline competencies and worldviews that will be necessary in the post-school stage of education or a step towards an independent life.

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