

THE IMPORTANCE OF USING THE STEAM APPROACH IN CREATIVE THINKING

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Abstract

STEAM education differs from other educational technologies in that it focuses on enhancing the creativity of elementary school students in an approach that includes the study of mathematics, technology, creativity, engineering and science. The integrated educational process allows us to prepare in-demand specialists in the field of engineering, design and modeling - modern professions.

Innovative methods and modern technologies are the main means of using STEAM technology in the process of primary education. The article talks about the importance of the STEAM approach in the development of creative thinking in primary school students.

Keywords. primary classes, creativity, education, upbringing, thinking, self-awareness, creativity, design, mathematics, intelligence, STEAM, engineering.

Introduction

In the era of current information flow, many innovations are entering all aspects of our social and political life, including the field of education. In addition to these innovations, new concepts that illuminate them are also being used in our scientific language.

In order to raise the quality of education to a new level, on September 5, 2018, the President of the Republic of Uzbekistan "On additional measures to improve the management system of public education" No. PF-5538 The decree was accepted. In it, the main directions of the reform of the public education system are the introduction of advanced foreign experience into the system of public education, modern pedagogical technologies, including innovative methods of teaching, teaching and learning. creation of a new generation of teaching and methodical literature, implementation of fundamental and applied scientific researches is defined.

At the current stage of the development of society, the reforms implemented in our country are aimed at educating every free, creative person who lives in this freedom and is able to realize his potential.

One of the factors hindering continuous education activities is the lack of knowledge, skills and high intelligence in the development of educational priorities.

Currently, the introduction of modern techniques and technologies requires serious changes in human activity and social consciousness. In fact, the role of a person in life is changing in the perception of the world, new ways of thinking and understanding of the modern world

are being built, new tools and methods are being used for acquiring theoretical and practical skills.

Identifying hidden talents in children in the educational process, creating opportunities for them to show their activity from a young age, developing their creative abilities is the guarantee of competitive personnel who can develop high potential, economically active, sharp thinking and intelligence in the future. This corresponds to one of the priorities of our country - the idea of educating a well-rounded person.

A new approach to education, STEAM technology, is a measure to improve the effectiveness of the lesson, a form of interdisciplinary communication that has risen to a new level of quality. A new approach in primary education is not a universal assessment of various life events, but a comprehensive approach to their interrelationship. For example, in the implementation of holistic education, this can be done with the help of pure scientific knowledge, literature, music, and art. It has a positive effect on the emotional and moral development of the child's personality, it causes creative thinking [3].

The development of intellectual abilities of students is crucial for the creative activity of primary school students.

In the educational process aimed at developing the student's personality, his psychological, intellectual and creative features are revealed. In the educational process based on the STEAM approach, there are more opportunities to develop the creative activity of primary school students, especially in the educational process. Because in primary education, students' mental abilities, attentiveness, and level of thinking actively develop.

LITERATURE ANALYSIS

At this point, we would like to dwell on the concept of "creativity". It can be seen that the concept of creativity has been used several times in educational processes in recent years. A number of studies have been conducted to analyze the content and meaning of this concept and to determine the level of creativity in people.

The word creativity is derived from the Latin word "creation", which is the ability of a person to come up with an unusual idea, idea, to find a non-repeating, original solution to problems, to abandon traditional forms of thinking.

K. Rogers (1944) understands creativity as a new solution to problems and new ways of expressing something, an event, a situation. Studies comparing creativity with personality and intellectual traits are of great importance. Research on comparison with intellectual properties was carried out by D. Gilford. Creativity is a personal characteristic of a person, which is related to his self-improvement and development [4].

Especially such research is widely developed in the field of psychology. A.Y. Agafonov, Y. Lotman, V. Rudnev, G.S. Batishev, M.M. Bakhtin, D.B. Bogoyavlenskaya, V.M. Vilchek, W. Dilthey, V.N. Druzhinin, D.A. Leontiev, A. Maslow, A.A. Melik-Pashayev, I. Meyerson, A.Y. Ponomarev, M. Rohrbach, S.L. Scientific works of such scientists as Rubinstein, V. Frankl, R. Jacobson are among them.

METHODS

According to scientists, the main goal of STEAM education is to develop important competencies for students to adapt to the complex social environment of the future.

STEAM technology includes an approach to combining acquired knowledge with life skills. Thus, students' ideas will not only remain in their minds, but they will be able to implement them in life. Practically tested knowledge is the most valuable knowledge.

This technology combines interdisciplinary integration and an approach based on experimental and project work. The basis of STEAM education is the integration of natural sciences with subjects such as technology, engineering, art and mathematics.

Two skills serve an important purpose for STEAM education. Mental thinking and artistic creativity. The greatest inventions, works of art and discoveries made throughout history are the product of intellectual thinking. Artistic creativity occupies an important place in a person's life. Creativity is sometimes called creativity. Creativity is a very important skill that can sometimes be overlooked. In particular, students and professionals working outside creative or artistic fields do not focus on creativity. Nevertheless, innovations and ideas are an important basis for the creation of centuries-old human discoveries. All human inventions and achievements are the direct result of creative action, the innate human ability to create something from nothing or to solve complex problems through imagination and real thinking.

Almost all educational institutions around the world, including today in our republic, try to develop students' creative thinking. However, creative activity is not always taught as an independent form of education. The STEAM approach, aimed at developing students' creative thinking, plays a key role in solving such problems.

In general, the teaching and development of creativity is done primarily with visual arts and design, as well as with other specific areas of the humanities, such as creative writing.

In the process of primary education, STEAM education plays a key role in increasing students' creativity. We know that STEAM education subjects include natural sciences, mathematics, technology, etc.

A number of methods can be used to develop students' creative thinking based on the STEAM approach. It is in the 3rd class natural sciences that the experimental work on calculating the daily water consumption was given in the textbook. During the implementation of this experiment, students will learn how to prevent water pollution, how to calculate daily water consumption, and how to use water correctly.

A cloud in a dish

Fill 1/3 of the jar with hot water and place the ice cubes on a net or cheesecloth. Soon we will see a real cloud appear in the jar. If we remove the cover, the cloud will fly away and disperse in the air. Using this example, we can explain to children the water cycle in nature, and also clearly show how water turns into steam and ice, and then turns back into water. In addition, from this experience, children understand how natural phenomena - rain, fog or snow - work.

Water and oil

Pour a glass of water and then add oil. We ask the children to dissolve the oil in water, and then when they fail, we encourage them to use a spoon or sponge to remove the oil from the water. This experiment shows children different properties of liquids. Based on this example, it will also be easy for students to explain how when oil products get into water resources, the film covering them creates an environmental hazard that prevents the passage of oxygen underwater, which is harmful to flora and fauna. necessary for normal operation. It is explained that the lives of aquatic plants and fish that feed on them may be in danger. Very few students call mathematics their favorite subject. Because this subject requires maximum concentration, as well as the ability to think abstractly, which is not easy for many children. In this case, STEAM education helps the student to understand and love mathematics.

As a result of the practical activity called "My Farm" with the students, the students will get information about how many types of domestic animals there are, and about the raw materials needed for their nutrition. They are told to calculate the cost of raising pets and the students calculate what they need. We can also ask how many animals a family of five would need to raise during the year to consume eggs, dairy products and meat. We can complicate the task by adding to the task the necessary fruits and vegetables, and, accordingly, the calculation of the costs of field and garden products.

In this activity, students work on the integration of natural sciences and mathematics based on the STEAM approach. It is also possible to tell students that they can draw pictures of pets and products according to their wishes. Making a scene with the participation of animals helps students to concentrate more and learn new material better.

RESULTS AND DISCUSSIONS

In primary education, organizing classes with visual aids is effective in forming students' creative activity. Organizing lessons based on STEAM education helps students to understand and remember information better.

Game tools based on the STEAM approach have been developed to develop engineering, thinking and creative imagination in preschool children and primary school students.

Salt dough. It is a great toy for children over 3 years old. Crafts made of salt dough are toys, and for the first time in a child's life, he encounters 3D dimensions: height, width, length. From the process of making salty dough to making the desired figure from the finished product, the child learns by doing it himself.

It is a good idea to use such doughs in elementary school technology classes.

A set of cardboard constructions is a great alternative to a set of construction samples. Colored geometric numbers and figures made of cardboard help the child to recognize shapes, colors, and learn design well. By learning how to properly place a set of constructions, children develop basic engineering skills.

Geometric shapes - this game helps toddlers learn geometric shapes and how to count them. Elementary school students can knit animals, objects, letters and numbers, colorful patterns

with rubber bands. Such toys develop children's imagination and help children learn to aim in space.

Astronomical geoboard

Toddlers use the geoboard to develop fine motor skills, while older children use the geoboard to explore area and perimeter through hands-on exercises. Able to inspire children to study the constellations.

Flexagon is a special symbiosis of mathematics and origami. Children sit spellbound and unravel the paper puzzle. What is Flexagon? a legitimate question arises.

Flexagons are flat models made of strips of paper that can be folded and bent in a certain way. When you fold a flexagon, previously hidden surfaces in the flexagon structure become visible, and previously visible surfaces are indented. Most flexagons are square or hexagonal in shape.

Wooden Jenga is not only a fun game for the whole family, it's also a great way to learn more about Islam.

This popular board game has been known since the middle of the 20th century. This game is about skill, logic and attention. The rules are very simple and easy to understand, so it will not be difficult to teach even a child how to play it.

First, players build a tower from the available blocks and bricks. Then, one by one, they are removed from it and placed on top of the tower to support it. With each subsequent move, the game becomes more difficult, but also more fun. To win, the student will have to show his intelligence, accuracy of actions, patience, ingenuity and skill. After removing the last block, the tower will collapse and the game will end. 2-8 players can play the game. Designed for children over 6 years old. The set includes more than 50 wooden bricks, all of which are neatly packed in a box.

Spirograph is mathematics combined with art. Spirographs are popular in the US. They make creating complex shapes easy and fun.

A spirograph is a children's toy consisting of a plastic plate with circles of different diameters cut into it and a set of smaller diameter wheels with holes inside. The first spirograph was developed by English engineer Denis Fisher in 1962 to detect aerial bombs, but this invention failed. But the spirograph he created is accepted by his children as an interesting toy.

CONCLUSION

In conclusion, every creative and creative elementary school teacher must identify and constantly develop the creative thinking abilities of his students. aimed at identifying and developing the unique creative abilities of students and young people and organizing their free time meaningfully and effectively. As a result of observing the data, the following conclusions were drawn:

- 1) first of all, there should be clarity in the organization of each lesson process. Of course, the teacher should provide students with freedom in moderation;
- 2) one of the unique features of primary education is that children's level of preparation for school, social experience, and psychophysiological development are not the same. According to this, although in the tasks of the primary education curriculum, attention is paid to the formation of knowledge, skills and abilities of students, but it is necessary to improve them from the point of view of the development of creative activity of students. . That is, teachers should be responsible and attentive.

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