

# **STEAM TEACHING TECHNOLOGY IN PRESCHOOL EDUCATIONAL INSTITUTIONS AS A FACTOR OF EARLY DEVELOPMENT**

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**Annotation.** This article discusses STEAM teaching technology in preschools. As a result of the great attention paid to the development of children's practical skills in STEAM education, their teamwork, creativity and will are strengthened. Such knowledge and skills are the main task of teaching, and the whole teaching system strives for it.

**Key words:** STEAM program, preschool organization, teaching technology, project, science.

**Аннотация.** В данной статье рассматривается технология обучения STEAM в дошкольных учреждениях. В результате большого внимания, уделяемого развитию практических навыков детей в обучении STEAM, их сотрудничество, творчество и воля укрепляются. Такие знания и умения - основная задача обучения, и к этому стремится вся система обучения.

**Ключевые слова:** программа STEAM, дошкольная организация, технология обучения, проект, наука.

STEAM is an alternative approach to traditional teaching. At the same time, children learn Science, Technology, Engineering, Art and Mathematics based on interdisciplinary connections and practical approaches. STEAM allows children to carry out project and research activities in and out of preschool.

STEAM education is developed in America. Some schools decided to integrate the natural sciences, technology, engineering skills, and mathematics to track the subsequent activities of their graduates, thus giving rise to the STEM (Science, Technique, Engineering and Math) system. Later, art was added to it,

and now STEAM was formed to the end. According to educators, the knowledge gained in these disciplines will help children to become highly qualified professionals in the future.

The basic idea of the STEAM approach is that practice is as important as theoretical knowledge. At the same time, children have to use not only their minds but also their hands in the learning process. The main feature of the STEAM approach is that children use their minds and hands to effectively learn most subjects, and "acquire" knowledge independently. Children experiment with learning, design models, create music and movies independently, build robots, that is, implement their ideas and create products.

Today's world is not like yesterday, and tomorrow will not be like today!

In the STEAM learning environment, children can apply their knowledge in practice as they grow up, and when they face a variety of real-life challenges, such as environmental pollution, climate change, and other complex issues. They understand that in order to solve, they need to rely only on their own knowledge and work together in different fields of science. It is not enough to rely on knowledge in one discipline. Therefore, the STEAM approach is also a way of thinking.

Every day new types of work are emerging, as well as new areas of specialization, which should make today's educators think. Are the knowledge and skills of the children they teach up-to-date?

In many countries, STEAM education is highly valued for the following reasons:

- In the coming years, there will be a severe shortage of IT specialists, programmers, engineers, high-tech manufacturing specialists and other similar specialties in the world;
- In the future, there will be professions that are hard to imagine now, all of which are related to technology and high-tech production in connection with the natural sciences. In particular, the need for bio and nanotechnology specialists is

increasing;

- Future professionals are required to have comprehensive training and knowledge in various fields of education: natural sciences, engineering and technology.

STEAM education teaches students to compare their knowledge with real skills. It allows children not only to come up with ideas, but also to put them into practice.

The Massachusetts Institute of Technology (MIT) is a prime example of the STEAM approach. The motto of this university is “Mens et Manus” (“Thinking and Hand”) and it has opened STEAM training centers and STEAM training centers in some educational institutions for children to get acquainted with the concept of STEAM in advance.

In 2014, the STEAM Forward International Conference was held in Jerusalem, Israel. It stated:

- Involve children in STEAM. Such education should begin at preschool age, so the program should be included in kindergartens;

- Science language - English. Those who want to study science and become scientists must know this language;

- STEAM education programs are needed for girls. Girls are capable of many things in science because they are by nature attentive and orderly;

- Science should be fun, it should be interesting and engaging for children.

STEAM helps children develop important issues and skills to analyze:

- Comprehensive understanding of problems

- Creative thinking

- Engineering approach

- Critical thinking

- Study and application of scientific methods

- Learn the basics of design

This approach will help solve life problems in children in the future. In many developed countries, including the United States, Japan, Israel, Singapore, and Russia, this approach has been used effectively to develop children's creative and inventive skills in preschools.

Today's world is not like yesterday, and tomorrow will not be like today! Dynamically evolving technologies are being introduced in all spheres of human activity.

Sixty-five percent of modern children have occupations that do not exist today. Future professionals will need comprehensive training and knowledge in various fields of technology, science and engineering.

STEAM gives our children - the next generation of inventors, inventors, to conduct research as a scientist, to shape technology, to design as an engineer, to be creative as an artist, to think analytically as a mathematician through play.

Today, STEAM education is evolving as one of the major trends in the world and is based on the integration of five areas into a single curriculum in the application of a practical approach. The conditions for such education are its continuity and the development of children's ability to interact in groups so that they can gather ideas and exchange ideas. Therefore, the core curriculum includes modules for developing logical thinking, such as Lego technology and children's research.

Thanks to the STEAM approach, children understand nature, explore the world on a regular basis, and thereby learn their interests, engineering thinking style, ability to overcome critical situations, develop teamwork skills, and the basics of leadership, self-expression, in turn, provides a radically new level of child development.

Active communication and teamwork. STEAM programs are also characterized by active communication and teamwork. During the discussion phase, they learn not to be afraid to comment. Often, they do not sit around a

table, but test and develop "products" based on their own designs. They are always busy interacting with educators and their friends in a collaborative team.

Develop an interest in technical sciences. The task of STEAM education in preschool and primary school age is to create the preconditions for the development of interest. For children in the natural and technical sciences, a love of what they do is the basis for developing interest. STEAM is very fun and dynamic for children and prevents boredom in children. They don't notice that time is passing, but they are not tired. There is a growing interest in rockets, cars, bridges, skyscrapers, electronic games, factories, logistics networks, submarines, science and technology.

Creative and innovative approaches to projects. STEAM training consists of six stages: question (task), discussion, design, construction, testing and improvement. These steps are the basis of a routine project approach. In turn, collaboration or sharing opportunities is the basis of creativity. Thus, the simultaneous use of science and technology in children can lead to new innovations.

In short, STEAM encourages children to experiment, design models, create music and movies independently, implement their own ideas, and create products. This approach to teaching allows children to effectively combine theoretical knowledge and practical skills. Increases the creativity of children, provides a solid foundation for the training of highly qualified, up-to-date personnel.

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