International Journal of
Inclusive and Sustainable Education

ISSN: 2833-5414
Volume 2 | No 4 | April-2023

Steam Education in Teaching Talented Students

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Abstract: Detailed information on the education of gifted children is given, and at the same time, ideas are also given about the role of STEAM education in the education of gifted children. A number of methods that can be used

Keywords: STEAM education, gifted children, scientific methods, technical applications, mathematical modeling, engineering design.

I. Introduction

A trend that is still outlandish for some, but for some is already quite understandable, is taking wide strides across the country. Not a single educational conference, not a single serious event from the world of pedagogy can do without these five letters, intricately combined into a catchy "STEAM"; and what wide opportunities and potential for an intelligent teacher he hides in himself.

What is STEAM education?

It all started with the term STEAM, which appeared in the USA. The difference between STEAM is just one letter A - Art (art), but the difference in approach is huge! Recently, it is STEAM education that has become a real trend in the US and Europe, and many experts call it the education of the future.

The need to combine science and art was also written by such thinkers as the Chinese mathematicians of the 11th century Enlightenment.

Almost all inventors and scientists were also musicians, artists, writers or poets:

Galileo as a poet and literary critic, Einstein played the violin, Morse as a portrait painter, etc. Thus, creativity was stimulated and strengthened through the practice of disciplines associated with the right side of the brain.

School is indispensable without art. This is children's art.

II. Analysis. STEAM is a new educational technology that combines several subject areas as a tool for developing critical thinking, research competencies and teamwork skills. STEAM is an extension of the well-known acronym STEAM, except that art is included.

S - science, T - technology, E - engineering, M - maths, the queen of sciences - mathematics. Art, a new component of the abbreviation A - art, can be understood as completely different areas - painting, architecture, sculpture, music and poetry. The addition of art broadens the pool of students involved in the project; so that students who are less proficient in design and math can help the group achieve the aesthetics of the project.

The STEAM curriculum is based on the idea of teaching students through an interdisciplinary and applied approach. Instead of studying each of the five disciplines separately, STEAM integrates them into a single curriculum.

STEAM education allows you to use scientific methods, technical applications, mathematical modeling, and engineering design. Which leads to the formation of innovative thinking of the student, skills and abilities of the 21st century.

According to teachers, integration allows you to be successful in most professions. Almost all experts note that progressive technologies increase motivation for learning and expand basic knowledge in the field of design and programming.
STEAM education is an innovative methodology that allows us to reach a new level of improving the skills of our children. With its help, we will be able to form a progressive personnel base that will allow us to become an economically independent and competitive country.
Benefits of STEAM education:
- Integrated learning by topic, not by subject.
- Application of scientific and technical knowledge in real life.
- Development of critical thinking and problem solving skills.
- Building self-confidence.
- Active communication and teamwork.
- Development of interest in technical disciplines.
- Creative and innovative approaches to projects.
- Development of motivation for technical creativity through children's activities, taking into account the age and individual characteristics of each child.
- Early professional orientation.
- Preparing children for the technological innovations of life.
- STEAM, as an addition to the compulsory part of the main educational program (MEP).
Scientific and technical orientation (STEAM)
The rapid development of technology leads to the fact that in the future the professions associated with high technologies will become the most in demand: IT specialists, big data engineers, programmers. The education system responds to such a social demand with the emergence of a large number of circles of robotics, programming, modeling (STEAM). However, the idea that scientific and technical knowledge is not enough is heard more and more often. In the future, the skills of the 21st century often referred to as 4K, will be in demand.
Future Skills (4K)
Skills of the 21st century is a special area that is being actively discussed now at different levels. The essence of the concept is this: the key skills that determined literacy in the industrial age were reading, writing and arithmetic. In the 21st century, the emphasis is shifting towards the ability to think critically, the ability to interact and communicate, and a creative approach to business. Thus, the main skills of the future 4K were formed:
• Communication
• Cooperation
• Critical thinking
• Creativity
These skills cannot be obtained only in laboratories or from the knowledge of certain mathematical algorithms. That is why specialists have to study STEAM disciplines more and more often.
The proposed program "STEAM-education of preschool and primary school children" is a partial modular program of preschool education aimed at developing intellectual abilities in the process of cognitive activity and involvement in scientific and technical creativity.
The program can also be successfully used in extracurricular activities within the framework of the main educational program of primary general education, and each of its sections - an educational module - can be independently used both in the above educational organizations and in the system of additional education.

III. Discussion. The modern world poses difficult tasks for education: to prepare a child for life in a society of the future, which requires special intellectual abilities from him, aimed primarily at working with rapidly changing information. The development of skills to receive, process and practically use the information received is at the heart of the STEAM education program.
The STEAM approach gives children the opportunity to study the world systematically, to delve into the logic of the phenomena occurring around them, to discover and understand their interconnection, to discover new, unusual and very interesting things. The expectation of meeting something new develops curiosity and cognitive activity; the need to determine an interesting task for themselves,

choose methods and draw up an algorithm for solving it, the ability to critically evaluate the results - develop an engineering style of thinking; Collective activity develops the skill of teamwork.
All this provides a radically new, higher level of development of the child and provides more opportunities in the future when choosing a profession.
What is included in the program and what educational tasks are solved:
Educational module "Didactic system of F. Fröbel"
- Experimenting with objects of the surrounding world;
- Mastering mathematical reality through actions with geometric bodies and figures;
- Mastering spatial relationships;
- Designing in various angles and projections.
Educational module "Experimenting with animate and inanimate nature"
-formation of ideas about the world around in experimental activities;
- awareness of the unity of all living things in the process of visual-sensory perception;
-formation of ecological consciousness
"LEGO - construction"
- the ability for practical and mental experimentation, generalization, establishing cause-and-effect relationships, speech planning and speech commenting on the process and result of one's own activity;
- the ability to group objects;
- ability to show awareness in different spheres of life;
- fluency in the native language (vocabulary, grammatical structure of speech, phonetic system, elementary ideas about the semantic structure);
- the ability to create new images, fantasize, use analogy and synthesis.
Educational module "Mathematical development"
- a comprehensive solution of problems of mathematical development, taking into account the age and individual characteristics of children in the areas: size, shape, space, time, quantity and count.
Educational module "Robotics"
-development of logic and algorithmic thinking;
-formation of the basics of programming;
-development of abilities for planning, modeling;
-data processing;
-development of the ability to abstract and find patterns;
- ability to quickly solve practical problems;
- mastery of the ability to accentuate, schematize, typify;
- knowledge and ability to use universal sign systems (symbols);
-development of abilities to assess the process and results of their own activities.
Each module is aimed at solving specific tasks, which, when integrated, ensure the implementation of the goals of STEAM education: the development of intellectual abilities in the process of cognitive research activities and the involvement of young children in scientific and technical creativity.

IV. Conclusion. Each separate module includes a thematic selection of manuals that provide an integrated approach to the implementation of educational tasks for the development of intellectual abilities in the process of cognitive research activities and the involvement of young children in scientific and technical creativity.
Such education can, of course, be only creative, creating conditions for the child to find his own path of development in accordance with what interests him. What needs to be learned and taught in order to achieve the personal development of every child who will have to live in a high-tech world.
It is important that each child understands in time which direction he is interested in, so that he is carried away at school and continues to develop in this direction. Therefore, in the modern world, the teacher faces a responsible task: to teach children to develop intuition. Establish causal relationships, look for patterns, and solve open problems.

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