THE STEAM EDUCATIONAL SYSTEM AND ITS EFFECT ON EDUCATIONAL EFFICIENCY IN PRIMARY SCHOOL CLASSES

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ABSTRACT. BACKGROUND

This article provides information on what the STEAM educational system is and its functions, effectiveness, and in which educational fields it can be used. A brief overview of possible outcomes is provided. Modern education requires the search for new methodological ways of making students interested in learning and imparting knowledge. STEAM education is one of the types of education that is very necessary for education today. It is also a way of thinking. The STEAM approach changes the way students think about teaching and learning. By focusing on practical skills, students develop their ability, creativity, flexibility and learn to cooperate with others. The **object** of the article is the STEAM education which is based on the application of a practical approach and the integration of all five fields into a single educational system.

The **aim** of the article is to define the reason is that the steam approach is based on the integration of five areas into a single educational system.

Methods: descriptive method and method of analyses were used to prove the in formativeness of the topic relied on the studies of well-known pedagogues.

Results (Findings): The analysis presented in the article shows that in the STEAM educational process, theoretical knowledge and practical knowledge are put on an equal level. That is, children acquire knowledge and learn to use it immediately.

Conclusion. Summing up the results, it can be concluded that the compared to traditional teaching methods, the STEAM approach in elementary grades allows children to conduct experiments, build models, independently create music and films, and turn their ideas into reality and drives the creation of the final product. This educational approach allows children to effectively combine theoretical and practical skills and facilitates university entrance and further studies.

KEY WORDS: STEAM educational system, teaching, approach, technology, pedagogue, motivation.

INTRODUCTION

What is the STEAM educational system? If we expand this acronym, we get the following: STEAM is S - *science*, T - *technology*, E - *engineering*, A - *art* and M - *math*. Do not forget that these directions are becoming the most popular in the modern world. Therefore, today the STEAM system is developing as one of the main trends. It will be no exaggeration if we say that this education is one of the most popular educational areas in the world today. According to the US Department of Education, only 16 percent of high school students are interested in learning more about math. About 28 percent of elementary school students are interested in a particular subject within STEAM. Unfortunately, in 57% of them, after finishing school, this interest fades and disappears. If we analyze on a large scale, the deterioration of the skills of pedagogues, the motivation of students and the quality of education is increasingly becoming a global problem.

LITERATURE REVIEW

In many countries, STEAM education is a priority for the following reasons: - in the near future, the world will have a significant shortage of IT specialists, programmers, engineers, high-tech production workers. In the distant future, it is difficult to imagine professions that will be related to natural sciences and high-tech production. The demand for specialists in bio and nanotechnologies will increase. Future specialists require comprehensive knowledge of various educational fields of natural sciences, engineering and technology. At the moment, many countries such as Australia, China, Great Britain, Israel, South Korea, Singapore, USA are consistently implementing state programs on STEAM education. In particular, in Russia, this issue is in the center of attention - the issue of attracting young people to engineering and robot creation is being partially resolved through the Technical Education Support Center. Reforms in this regard have been implemented in general education schools in Kazakhstan since 2015. This year, a pilot test initiative was launched in Israel. After graduating from school, the student conducts compulsory research work. A teacher of a higher educational institution or a candidate of science (PhD) was appointed as a supervisor for students to carry out this

scientific work. In addition, according to the new national educational program created this year, 70 percent of students study traditionally, and 30 percent are directed to research. In this case, even if the child is not a lawyer or an economist, he follows the path of modern science, discovery, or develops his field with professional skills through programming. Unlike traditional science and math education, STEAM envisions a blended learning environment that shows students how the scientific method can be applied to everyday life. STEAM is one of the directions of implementation of project and educational-research activities in school and outside of school. Everything is new - is it better to forget the old?

MATERIALS AND METHODS
According to the STEAM education program, in addition to physics and mathematics, students learn robotics, programming, and designing their own robots. Special technological laboratory and educational equipment such as 3D printers and visualization equipment are used in the classes. It is worth saying that the form of STEAM education is based on the old traditional approaches of teaching children about professions in the classroom, only the teaching methods and tools change. In this way, knowledge in a new format serves to expand students' thinking horizons. In the lesson, schoolchildren will have the opportunity to strictly develop their natural desires, acquire scientific research skills that will be useful in studying any subject in the future.

How does the STEAM educational system affect the educational process? In this educational process, theoretical knowledge and practical knowledge are put on an equal level. That is, children acquire knowledge and learn to use it immediately. Therefore, when they grow up and face life's problems, whether it is environmental pollution or global climate change, they understand that such complex issues can only be solved by relying on knowledge from different fields and working together. It is not enough to rely only on knowledge of one subject. By focusing on practical skills, students develop their will, creativity, flexibility and learn to cooperate with others. These skills and knowledge constitute the main task of education, that is, what this entire educational system strives for. This new approach to education is the logical result of combining theory and practice. STEAM was developed in America. Some schools took into account the careers of graduates and decided to combine subjects such as science, technology, engineering and mathematics, and this is how the STEM system was formed (Science, Technology, Engineering and Mathematics). Later, Art was added here, and now STEAM was finally formed. Teachers believe that knowledge of these subjects, or more precisely, these subjects, will help students become highly qualified specialists in the future. After all, children want to get good knowledge and apply it immediately.

The world is changing, even if education does not stand still. The changes of the last decades are pleasant, but at the same time they make us nervous. With the invention of these new things, there are many new problems that people have not faced before. New types of work and even entire professional fields appear every day, so modern teachers must think about whether the knowledge and skills they teach meet the requirements of the time. Knowledge helps you find your idea, but real work turns that idea into reality. If we say that the main goal of traditional education is to teach knowledge and use this knowledge to think and create, the STEAM approach teaches us to combine acquired knowledge with real skills. This gives schoolchildren the opportunity not only to have some ideas, but also to apply and implement them in practice. That's it. only knowledge that can be used in reality is truly valuable. 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). Massachusetts Institute of Technology introduces the concept of STEAM to children developed STEAM courses to provide opportunities for learning and familiarization, and even created STEAM learning centers in some educational institutions.

At the international conference "STEAM forward" held in Jerusalem in 2014, the following statements were made: Involvement of children in STEAM. This education should begin at preschool age, so programs should be included in kindergartens. The language of science is English. If you want to study science and become a scientist, you need to know this language. Steam educational programs for girls are needed. Girls in science can do things that boys can't because of their discipline. Teaching elementary school students based on the STEAM approach will prevent them from getting bored of science and learning all subjects with the same interest. The main approach of the STEAM education system is "science is fun!" It should be interesting and engaging for students. Despite the fact that there are no borders in science, it is important to train qualified specialists who will improve the image of the state's scientific potential. It is necessary to apply STEAM-education for patriotism and love of one's country. - Science should be a holiday that prepares a person for an independent life, it is necessary to be interested in science and strive to fully embrace it. Today, in many private and specialized schools, STEAM technology is used even in elementary grades. In addition to robotics and computer science rooms, the school also has a STEAM room, which is equipped with a modern interactive platform, work tools, sewing and knitting machines, It consists of Arduino platforms and 5 different types of cutting and scoring equipment. The interesting thing is that this equipment can be rebuilt by students to give them a different look and function. World education experts say that STEAM education helps students develop the following skills:

- *engage in meaningful learning activities;*
- *become resilient problem solvers;*
- *embrace and value collaboration;*

– *work through the creative process.*

RESULTS

It is possible to approach and organize lessons on the basis of STEAM technology to the topics given in the 1st-2nd grade mother tongue and reading literacy, natural sciences, and mathematics textbooks developed on the basis of the national program. Especially in natural sciences, each topic is presented in a theoretical and practical way. In particular, the in the subject of the natural science in the 2nd grade the topic "*Planet – Earth*" is given. In studying this topic, students will have practical training along with theoretical knowledge. Pupils will make a model of the globe and the sun. By this, they will learn practically how the globe rotates around the sun, and at the same time they will come up with measures to eliminate the global problems of the globe and their creativity can be encouraged. STEAM technology should be used wisely not only in classes, but also in extracurricular activities. If professionals are invited to the organization of classes, they will show practical knowledge of their profession along with theoretical knowledge, it will leave a good impression on the children. They will find their direction when choosing a profession in the future.

DISCUSSIONS

Let's analyze and study a topic based on this approach in elementary grades. Imagine you have 30 students in your class to teach. You have one personal computer in your classroom, and they can use the ICT room once a week. You need to make the students complete a project related to the study of air. For this, we will divide the group of students into 5 groups, and the curriculum will be divided into five areas. Tasks can be divided into groups as follows:

Group 1: Pupils are asked to read a literary work about air, record reflexive results every day, and then create their personal stories.

Group 2: Students conduct various experiments on air pollution, collect data and prepare a laboratory report.

Group 3: They prepare a weather-related wall newspaper.

Group 4: They will make a questionnaire about keeping the air clean and collect information from other classes, and then analyze the results and make a conclusion.

Group 5: They research the causes of air pollution, record the data. Then they write an advertising article for the personal blog of the class.

As you can see, 5th group students need to use computers. Before working on computers, it is very important to teach students how to sort information and evaluate websites. In this process, students learn to share their research on social sites. They also learn how to conduct discussions and monitor the progress of their work through the wiki. It goes without saying that even today's pedagogues need to learn intensive language, ICT and new methods of teaching, mastering the basics of STEAM pedagogy, emerging professions and professions that are in declining demand. it is required to conduct research on classifications and communicate with professional communities in social networks.

CONCLUSIONS

In conclusion, I would like to emphasize that, compared to traditional teaching methods, the STEAM approach in elementary grades allows children to conduct experiments, build models, independently create music and films, and turn their ideas into reality and drives the creation of the final product. This educational approach allows children to effectively combine theoretical and practical skills and facilitates university entrance and further studies.

Currently, the interest of investors and large business circles in science and innovation projects and start-ups is increasing. In order for many positive changes to occur in the future, it is necessary to create STEAM-centers, to integrate robotics into computer science, including the basics of programming in secondary schools, and to develop the existing experience based on the capabilities of teachers. Since education is a process that is renewed and requires renewal, it is very important that our teachers are in constant search and keep pace with the times.

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