PRIMARY CLASS STUDENTS USING STEAM EDUCATION DEVELOPMENT OF CREATIVE THINKING

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Abstract

Teaching SCIENCE at school in primary education helps to increase students' knowledge about existence and the environment. Today, the development of continuous education and the introduction of international technologies into public education are improving in our country. This article is devoted to the importance of STEAM technology in teaching primary education subjects.

Keywords: STEAM technology, Heuristic educational method, creativity qualities, Science, Technology, Engineering, Art, Mathematics.

Introduction

At a time when our country is rapidly developing on the path of innovative development, it is necessary to comprehensively support the creative ideas and creativity of young people, who are the successors of our future, to develop their creative qualities, to form their knowledge, skills and qualifications, and to improve the evaluation system based on advanced foreign experiences, international criteria and requirements. on the way, it is important to study international experiences, do a comprehensive comparative analysis of the existing system, and closely cooperate with international and foreign organizations, agencies, scientific research institutions in the relevant direction[1][.

Analysis and Results

Teaching on the basis of STEAM education in the field of natural and economic sciences, conducting educational research in lessons and extracurricular activities to demonstrate the relevance of the acquired knowledge, skills and abilities of students to everyday life, It is aimed at carrying out experiments, educating creativity and developing interests.

(PISA, TIMSS) aimed at forming students' logical thinking and practical skills One of the main tasks for the student is to inculcate in the mind of the young generation practical training, laboratory work, and practical tasks that encourage independent performance and creative thinking[2].

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"On approving the concept of development of the public education system of the Republic until 2030" determining priorities for systematic reform of extracurricular education, spiritual, moral and intellectual development of the growing young generation quality raising to a new level in terms of educational process, innovative education It is intended to introduce forms and methods[3].

STEAM is an integrated system of learning by subject rather than by subject. STEAM education means the application of scientific and technical knowledge in real life with the help of practical training[4].

STEAM educational technology is a new method of teaching schoolchildren, which is different from traditional teaching methods.

is designed to teach students simultaneously in four **subjects: Science, Technology, Engineering, Art, and Math .** STEAM is an integrated system of learning by subject rather than by subject.

If we expand this acronym, we get the following: STEAM stands for S – science , T – technology , E – engineering , A – art and M – math . In English it goes like this: natural sciences , technology, engineering , arts and mathematics . 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. STEAM education is based on the application of a practical approach and the integration of all five areas into a single educational system[5]. Its main idea is that practice is as important as theoretical knowledge. That is, during learning, we need to work not only with our brain, but also with our hands. Learning only within the walls of the classroom is not keeping pace with the rapidly changing world. The main difference in the STEAM approach is that children use both their brains and hands to successfully learn a variety of subjects. They "read" the knowledge they received[6].

In a STEAM learning environment, 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 on knowledge of only one subject[7].

By focusing on practical skills, students develop their will, creativity, flexibility and learn to cooperate with others. These skills and knowledge constitute the main educational task, i.e. this is what the entire education system strives for. This is the logical result of combining theory and practice. STEAM was developed in[8] America. Some schools took into account the careers of their graduates and decided to integrate 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. Students believe that knowledge of these subjects, or rather, these subjects, will help students become highly qualified specialists in the future. After all, children want to get good knowledge and apply it immediately[9]. STEAM education means the application of scientific and technical knowledge in real life with the help of practical training.

Presidential schools are fundamentally different from general education schools in that studies are organized on the basis of the "STEAM" educational program, and students have the opportunity to acquire individual knowledge by choosing certain subjects depending on their interest. Because one of the main tasks of the President's schools is the in-depth teaching of natural and concrete sciences, students' assimilation of innovative knowledge, revealing and development of their intellectual, scientific and creative potential[10].

Textbooks and study guides related to the STEAM approach have been published by Cambridge University Press, including Oxford University Press and Collins. The main advantage of the curriculum offered by Cambridge is the emphasis on the formation of relevant modern knowledge and skills in students based on the principles of the global labor market[2.4;62;page]

In addition to local students who are qualified in teaching these subjects, foreign students also give lessons in cooperation. Work is carried out in cooperation with the recruiting companies "Teachaway" (Canada) and "TIC Recruitment" (Great Britain), which have many years of experience in recruiting highly qualified foreign specialists[11]

students , education at the President's school is carried out in an individualized manner. The demand for preparing students for innovative activities on the basis of creative approaches is increasing day by day, therefore the development of science, technology and technology of our country is currently gaining strength. That is why it is natural to set demands based on the latest achievements of modern science for the training of pedagogues in higher educational institutions. These show that it is the demand of the times to prepare primary

school students to be modern competitive, i.e. innovatively developed. To fulfill such requirements, it is necessary to pay attention to the following aspects[12]:

1. Development of creative abilities in the process of training elementary specialists.

The educational process is considered as a multi-stage dynamic process, it is taken into account that educational methods and technologies are updated with the times, and more attention than ever to the effective use of information technologies becomes a permanent activity[13]. When implementing innovative methods and technologies into practice, if the blocks of subjects and their connection and integration with the basic subjects of the curriculum in the educational direction under consideration are taken into account, a promising pedagogical effect will be achieved in this field.

2. Formation of an information technology system for primary school students and their further improvement based on new requirements[14].

In this case, the creation and improvement of information technologies for preparing elementary school students for innovative activities is carried out based on the following sequence:

- use of computers as a technical-didactic tool to increase students' ability to think independently;

- introducing primary school students to effective forms of computer use;

- to find optimal ways of forming knowledge, skills and abilities in working with a computer among elementary school students[15];

- equipping primary school students with intellectualized teaching systems and the skills to use interactive work programs developed in accordance with them.

3. Continuously conducting research on the preparation of innovative-integrative complexes for the preparation of primary school students for innovative activities.

In this case, it is necessary to look at the preparation of innovative-integrative complexes based on informational educational environment, as well as innovative educational environments, as a promising direction in education. This process is carried out by establishing an intellectualized interface between the traditional educational process and the intellectualized educational processes, and in this process it is necessary to take into account the critical need for programmed provision[16].

4. Always take into account professional intellectual potential and regular improvement of the student in order to organize innovative activities.

In this, the student should know the basics of the sciences related to his field and effectively use the knowledge he has acquired in explaining the subject he teaches, armed with innovative methods and technologies suitable and specific to the subjects he teaches. to be, regularly aware of socio-economic changes in our society and state, educational-methodical, educational-programmatic, educational-didactic, informative methodical in the subject he teaches It is important to be armed with supplies, etc[17].

5. Perfect creation of teaching-methodical information support for preparing primary school students for innovative activities. In this, the main attention will be focused on increasing and improving the mentioned provision in accordance with the level of modern development, and it will be possible to implement them in the following directions:

- implementation of the formation of information culture in the educational process in the process of complete mastering of information and communication technologies by primary school students;

- electronic educational literature: preparation of electronic textbooks, electronic study guides, electronic portfolios and electronic encyclopedias[18];

- preparation of "didactic portfolio" for interactive methods and their use in practical activities;

- collecting information on subjects related to the educational process using the Internet, etc.

6. Achieving regular improvement of professional knowledge based on the needs of the times. In this:

- continuous improvement of knowledge in the specialty to be acquired and effective use of tools for their further enrichment;

- regular familiarization with literature on pedagogical and information technologies, using them regularly in practical and professional activities, etc[19].

7. Achieving creative ability in preparing elementary school students for innovative activities.

If creative ability is based on:

- to understand what are the actual problems of preparing primary school students for innovative activities;

- creation of scientific-methodical, software-didactic, software-informational support for elementary school students related to their specialties;

- participating in competitions with scientific, scientific-methodical, innovative projects on the innovative training of elementary school students in higher educational institutions, and conducting regular creative activities on the wide introduction of them to the preparation of elementary school students for innovative activities .

8. Ensuring the regularity of their spiritual maturity and intellectual potential in preparing elementary school students for innovative activities.

Fulfilling the requirements of this component can be done by paying attention to the following aspects:

- forming a sense of spiritual maturity in elementary school students;

- regular use of information related to the subjects of the educational program in the preparation of primary school students for innovative activities;

- to regularly acquaint primary school students with information about the responsibility of the student's profession, that is, the driving force of society's development;

- to develop a perfect perspective plan for organizing spiritual events on various topics of spiritual and educational activity and to be always attentive to the creation of innovative methods of conducting them, etc[20].

The student's innovative activity is an integrative feature that allows the level of readiness and the formation of an innovative culture among students. In order to achieve the desired result and the appropriate level in the professional field, it is necessary to focus more than ever on the preparation of future students for innovative activities.

A model of pedagogical innovation			
Why teaching?	**What for teaching?**	**How to teach?**	**How to the result reach?**
Pedagogical innovation - any innovation in the educational system that develops the teaching process and ensures its effectiveness		Pedagogical innovative activity - any of the goals, content, methods, forms, tools, technologies, management and organizational goals of the educational process are modern changes	
Three foundations of pedagogical innovation			
Socio-economic	**Pedagogical-psychological**		**Organizational management**

Figure 1. Pedagogical innovation model.

Innovative pedagogy is the process of regular improvement of pedagogical technologies, enrichment of the content of pedagogical education, maximum use of pedagogical methods, tools and methods in the educational process for this purpose.

Innovative pedagogy is new systems and directions that lead to any positive results in the educational system, and mobilize them to produce a quality and final product.

Based on the above considerations, the objective characteristics of innovative activities of elementary school students were developed.

Innovative activity field	professional professional tasks	Make it happen Mechanism	Innovative activity result
Pedagogical search	search - information	In training The disadvantages are unclear meaning. Searching for contradictions and understanding the problem situation	To be formed n innovative problem. Real of the training course description
	Analytical-critical	Critical evaluation of existing knowledge and information on the problem of innovation. Preparation of an analytical description of the training course. Identifying opposing variables. Pedagogical innovation determination of the topic. Variables operationalization and formulating initial criteria	of innovation purpose and duties. Innovations of assessment initial criteria
Pedagogical create new	Model-Projective	Adequate independent of opposite variables defining variables.	Training course project and innovative make a proposal exit
	Standard - Constructive	New didactic, pedagogical develop recipes exit Conducting an experiment.	Pedagogical test Results
Innovative field of activity	Normal Professional Tasks	A typical professional solving tasks operations for	Innovative activity result
Pedagogical Implement innovations increase	Software supply and scenario	Creation of an innovative project implementation program. Development of an optimal scenario for the implementation of an innovative project	Pedagogical innovations make it happen program and measures action plan
	organizational Management	Approval, innovative execute the scenario.	Waiting Results
Pedagogical didactic to innovation orientation	experienced-evaluation	Criteria are systematic orientation. Pedagogical the purpose of the study and formulation of tasks, implementation program compilation, collection, processing and systematization of evidence. Analysis of general results making, summarizing and interpreting. Forming conclusions and determining the scope of their actions.	Updated criteria. News as a result effect. Conclusions

Figure 2. Objective characteristics of innovative activity.

The process of preparing elementary school students for innovative activity begins with the development of innovative activity, further improvement of professional activity, raising it to the level of professional skill. Such a process is carried out by creating an innovative educational environment focused on the continuous

search for the content and methods of teaching, creating an innovative consciousness and an activity model of a modern student.

If we pay attention to the above, we can distinguish two vectors of the effectiveness of pedagogical activity from the point of view of its innovative character:

- the student implements the techniques and technologies already created in his activity by adapting them to the real conditions of professional activity;

- the student can create new methods, tools and technologies of objective training of professional activity.

" **STEAM - education** " (Science - natural sciences, Technology - technologies, Engineering - technical creativity, Art - mathematics - mathematics) is introduced in schools. Based on the interests of the students, it is envisaged to conduct practical training outside the classroom. Graduates are given a diploma of an international program (International Baccalaureate, Advanced Placement or International Advanced Levels) along with a state-approved educational document (certificate, attestation). With such a diploma, it will be possible to enter the leading higher education institutions of foreign countries.

Conclusion

In conclusion, it can be said that the use of scientific research methods in general education schools, the wide introduction of STEAM technology in educational processes, not only improves the theoretical knowledge of the young generation, but also encourages them to enter practical and professional processes. This is one of the achievements of modern education of our country.

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