МЕКТЕПКЕ ДЕЙІНГІ, БАСТАУЫШ БІЛІМ БЕРУ, АРНАЙЫ ЖӘНЕ ҚОСЫМША БІЛІМ БЕРУ МӘСЕЛЕЛЕРІ ПРОБЛЕМЫ ДОШКОЛЬНОГО И НАЧАЛЬНОГО, СПЕЦИАЛЬНОГО И ДОПОЛНИТЕЛЬНОГО ОБРАЗОВАНИЯ

МРНТИ 14.23.09 https://doi.org/10.51889/2959-5762.2024.81.1.034

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DEVELOPMENT OF IT SKILLS OF SENIOR PRESCHOOL CHILDREN THROUGH STEAM TECHNOLOGY

Abstract

The article discusses the issue of developing IT skills in children of senior preschool age through STEAM technology. The characteristic features of generations "Z", "Gen Alpha" and "Beta Dreamers" are analyzed. The main directions of the Concept for the development of preschool education in the Republic of Kazakhstan for 2023 - 2029, the National Report of the 1st Congress of Teachers "Quality education available to everyone" (2023), the global conference EdCrunch 2023 "Equal access to quality education for everyone" are considered. A characteristic is given of the development of the intellectual sphere of a preschooler. A review of the works of foreign teacher-researchers on the use of STEAM technology in the educational process of a preschool organization is made. According to STEAM technology, as defined by the authors, children learn to see the interconnection of current events, better begin to understand the principles of logic, and in the process of creating their own models discover something new and original. An integrated approach contributes to the development of their curiosity, initiative, and involvement in the educational process. The authors give a brief description and expected result of the educational modules of STEAM technology: the didactic system of F. Froebel; experiments with living and inanimate nature; LEGO construction; mathematical development; robotics; cartoon studio "I create the world".

In order to determine the effectiveness of STEAM technology in the development of IT skills of children of senior preschool age, the authors developed a plan for the implementation of this technology in the educational process of a preschool organization, and proposed a system of activities with parents and students of the senior group.

Keywords: children of senior preschool age, IT skills, STEAM technologies, the "Gen Alpha" generation, "Beta Dreamers", quality education.

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РАЗВИТИЕ IT-НАВЫКОВ ДЕТЕЙ СТАРШЕГО ДОШКОЛЬНОГО ВОЗРАСТА ПОСРЕДСТВОМ STEAM-ТЕХНОЛОГИИ

Аннотация

В статье рассмотрен вопрос развития IT-навыков детей старшего дошкольного возраста посредством STEAM-технологии. Проанализированы характерные особенности поколений «Z», «Gen Alpha» и «Бета-мечтателей». Рассмотрены основные направления Концепции развития дошкольного образования РК на 2023 – 2029 годы, Национального доклада I съезда педагогов «Качественное образование, доступное каждому» (2023), глобальной конференции EdCrunch 2023 «Равный доступ к качественному образованию для каждого». Дана характеристика развитию интеллектуальной сферы

дошкольника. Сделан обзор трудов зарубежных педагогов-исследователей о применении STEAM-технологии в воспитательно-образовательном процессе дошкольной организации. Согласно STEAM-технологии, по определению авторов, дети учатся видеть взаимосвязь происходящих событий, лучше начинают понимать принципы логики и в процессе создания собственных моделей открывают для себя что-то новое и оригинальное. Комплексный подход способствует развитию их любознательности, инициативы, вовлечению в воспитательно-образовательный процесс. Авторами дана краткая характеристика и ожидаемый результат образовательных модулей STEAM-технологии: дидактическая система Ф.Фрёбеля; эксперименты с живой и неживой природой; LEGO-конструирование; математическое развитие; робототехника; мультстудия «Я творю мир».

С целью определения эффективности STEAM-технологии в развитии IT-навыков детей старшего дошкольного возраста авторами разработан план реализации данной технологии в воспитательно-образовательный процесс дошкольной организации, предложена система мероприятий с родителями и воспитанниками старшей группы.

Ключевые слова: дети старшего дошкольного возраста, IT-навыки, STEAM-технологии, поколение «Gen Alpha», «Бета-мечтатели», качественное образование.

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STEAM-ТЕХНОЛОГИЯЛАР АРҚЫЛЫ ЕРЕСЕК МЕКТЕП ЖАСЫНА ДЕЙІНГІ БАЛАЛАРДЫҢ IT-ДАҒДЫЛАРЫН ДАМЫТУ

Аңдатпа

Мақалада STEAM-технологиясы арқылы ересек мектеп жасына дейінгі балалардың IT-дағдыларын дамыту мәселесі қарастырылған. «Z», «Gen Alpha» және «Бета-армандаушылар» ұрпақтарының тән ерекшеліктері талданады. ҚР Мектепке дейінгі білім беруді дамытудың 2023 – 2029 жылдарға арналған тұжырымдамасының негізгі бағыттары, Педагогтердің I съезінің «Барлығына қолжетімді сапалы білім беру» ұлттық баяндамасы (2023), EdCrunch 2023 «Әрқайсысы үшін сапалы білімге тең қолжетімділік» жаһандық конференциясы қаралды. Мектеп жасына дейінгі баланың зияткерлік саласын дамытуға сипаттама берілген. Мектепке дейінгі ұйымның білім беру процесінде STEAM технологиясын қолдану туралы шетелдік педагог-зерттеушілердің еңбектеріне шолу жасалды. STEAM технологиясына сәйкес, авторлардың анықтамасы бойынша, балалар болып жатқан оқиғалардың өзара байланысын көруге үйренеді, логика принциптерін жақсы түсіне бастайды және өз модельдерін құру барысында олар жаңа және ерекше нәрсені ашады. Кешенді тәсіл олардың қызығушылығын, бастамасын дамытуға, білім беру процесіне қатысуға ықпал етеді. Авторлар STEAM-технологияның білім беру модульдеріне қысқаша сипаттама және күтілетін нәтиже берді: Ф. Фребельдің дидактикалық жүйесі; тірі және жансыз табиғатпен тәжірибелер; LEGO-құрылыс; математикалық даму; робототехника; «Мен әлемді жасаймын» мультстудиясы.

Мектеп жасына дейінгі балалардың IT-дағдыларын дамытуда STEAM-технологияның тиімділігін анықтау мақсатында авторлар осы технологияны мектепке дейінгі ұйымның тәрбие-білім беру процесіне енгізу жоспарын әзірледі, ересек топтың ата-аналарымен және тәрбиеленушілерімен іс-шаралар жүйесін ұсынды.

Түйін сөздер: ересек мектеп жасына дейінгі балалар, IT-дағдылар, STEAM-технологиялар, «Gen Alpha», «Бета-армандаушылар» ұрпағы, сапалы білім беру.

Basic provisions. “Gen Alpha” (Generation “Alpha”) are the children of the new world, capable of large-scale renewal of the planet in all areas - from ecology to culture. “Alpha” connect the Internet and life, creating content of their generation, scanning graphic and text material with lightning speed, and are capable of continuous learning. However, there are also weaknesses of this

generation, primarily dependence on technology, loss of important skills, emotional poverty, and more.

Today, a dynamically developing world places new demands on the individual for the education system: digital skills, communication skills, working with information, independence, individuality and entrepreneurial inclinations. In this regard, there is a need to develop IT skills in children of senior preschool age. An effective means of developing these skills is the use of STEAM technology in the educational process of a preschool organization.

Introduction. Artificial intelligence systems and chatbots are rapidly being integrated into all aspects of our lives. Unlike other technologies, such as the Internet, which took years to spread, artificial intelligence is rapidly transforming our world. For example, Generation Z was born into the era of social media, while Generation Alpha was one step ahead, growing up in the early developments of artificial intelligence. Now Generation Beta, children born in the 2020s, will grow up in a world dominated by artificial intelligence. The question is how will they shape the future and what will their thinking, education, learning and interaction look like?

In the Concept for the Development of Preschool Education of the Republic of Kazakhstan for 2023 - 2029, the creation of infrastructure that ensures a comfortable and safe stay for the child is relevant. During the COVID-19 pandemic, distance education and training was available only for children of preschool age; for the rest, duty groups with a small number of children were organized. The work was also complicated by the practical absence of high-quality developmental content for preschoolers in electronic format, due to the fact that the education system focused on ensuring quality at other levels of education. In this regard, it is necessary to expand digital developmental content for preschool children, aimed at improving the quality of preschool education and training [1].

According to the National Report at the First Congress of Teachers, "Quality education available to everyone" (2023), includes the following tasks:

1. improve the quality of human capital in the face of technological and demographic challenges;

2. create the basis for technological, digital modernization... [2].

On the threshold of the 21st century, leading national educational systems and international organizations (UNESCO, OECD, World Bank) came to the conclusion that it was necessary to reform national educational systems. The set of key competencies is changing, the most relevant of which are: analytical thinking and innovation, a proactive approach to education, the complex nature of problem solving, critical thinking and analysis, creativity and originality.

Thus, from November 15 to 16, 2023, the "Anniversary global conference on digital technologies in education EdCrunch 2023 "Equal access to quality education for everyone" was held. As noted, today the education industry faces the great challenge of digitalization. New technologies are changing many industries, and relatively recently this trend has reached the education industry, which still remains conservative. But teaching methods cannot remain the same as before. Today, we all must raise a new generation of children who are more adaptive and stress-resistant, which will lead them to great achievements in the future [3].

It's hard to imagine Generation Alpha and Beta Dreamers without tablets, phones, TVs and computers. As a rule, a preschooler is surrounded by digital technologies rather than real people. This affects communication difficulties; children do not know how to build relationships with peers, express their own emotions, control and manage their behavior, which leads to anxiety and stiffness [4]. The answer to the challenge of our time can be the development of IT skills of children of senior preschool age through STEAM technology (S - science, T - technology, E - engineering, A - art and M - mathematics) - natural sciences, technology, engineering, creativity, mathematics in the educational process of a preschool organization.

Materials and methods. Currently, one of the most pressing problems in education is achieving modern quality of education. The problem is to improve the quality of the results of

creative human activity in all sectors of production, science and education, which is the cornerstone of world civilization, since creativity is an integral element, result, means of knowledge and self-knowledge. "Creativity" is defined as self-actualization of the individual, independence and frequency of interest in creative activities, the ability to plan and produce a unique, non-standard product of creative, voluntarily chosen activity [5].

Today we are witnessing a technological revolution (IT sphere). High-tech products and innovative technologies are becoming integral components of modern society. Thus, studies devoted to various aspects of interaction between preschoolers and IT note their significant impact on children's lives.

An analysis of psychological and pedagogical literature and advanced pedagogical experience confirms the sensitivity of older preschool age for the formation of IT skills in children. This is confirmed by: the fairly rapid pace of development of the intellectual sphere (L.V.Zankov, E.E.Kravtsova, A.M.Matyushkin); features of the development of cognitive activity of children (M.V.Grineva, T.P.Zaichenko, G.N.Kotelnikova, T.N.Lukyanchenko, T.A.Starovoytova); improvement of psychophysical capabilities (L.S.Vygotsky, V.V.Gerbova, V.S.Mukhina, S.L.Rubinstein); age-related changes in the understanding of cause-and-effect relationships and changes in the degree of generalization of explanations (D.B.Elkonin); patterns of personality development (L.I.Bozhovich, A.L.Wenger, A.V.Zaporozhets); the formation of leading personality formations (understanding the value of personal relationships, communication, activities, etc.) (T.I.Alieva, N.I.Nepomnyashchaya, L.A.Paramonova); expanding children's horizons, active interest in experimentation (N.N.Podyakov, E.A.Flerina) [6].

Based on the analysis, the development of the intellectual sphere of a preschooler is considered as a process of complex personal education, since it is at this age that the child actively strives to learn everything new, to achieve new results that no longer fit into the framework of previously acquired knowledge and ideas, and master's methods of analysis and solving various problems. A fundamental change occurs in the mental processes of children:

– "attention" – mastering voluntary attention, consciously directing it to certain objects. Involuntary attention in preschool age remains dominant, and only towards the end of senior preschool age children's ability for voluntary attention receives intensive development;

– "memory" becomes the leading cognitive function. The child easily remembers a wide variety of material. Gaming activity is the most favorable condition for the formation of voluntary memory;

– "imagination" has a recreating nature, arises involuntarily and mechanically reproduces received impressions in the form of images. The object of imagination becomes something that made a strong emotional impression on the child, excited and interested him. The child develops the ability to create a plan and plan its implementation, which indicates an increase in the arbitrariness of the imagination.

The main vector of development of intellectual abilities in older preschool age should be aimed at improving the processes of cognition - perception, memory, imagination, thinking. The level of intellectual development of a child can be judged by the level of formation of cognitive processes, the ability for independent creative cognition, practical and mental experimentation, generalization, the ability to analyze the process and results of one's own activities, draw analogies and make inferences [7].

Researchers studying various aspects of the development of preschool children are convinced that IT skills stimulate children's creativity, their self-expression, and allow the development of the child's abilities to be most fully and successfully realized (L.A.Gabdulislamova, Yu.M. Gorvits, T.N. Grinyavichene, T.FGabay, E.V. Zvorygina, B.F. Lomov, V.Ya. Liaudis, S.L. Novoselova, G.P. Petku, I.Yu.Pashilite, A.V. Mukhortova, etc.) [6].

Based on the above, the Concept for the Development of Preschool Education of the Republic of Kazakhstan for 2023 – 2029 in direction 1. Creating equal starting opportunities states: "As part of the implementation of the Model for the Development of Preschool Education and Training in

Kazakhstan, a transformation of the system is being carried out, providing for a change in content. An integrated approach is provided to support the child's cognitive, physical, social and emotional development, aimed at acquiring the basic life skills necessary for his education in primary school and socialization in society. The equipment of preschool organizations with educational publications and additional educational resources will improve, incl. in electronic format. Preschool organizations use teaching methods and technologies, innovative forms, methods, and techniques for organizing the educational process in accordance with the individual developmental characteristics and potential capabilities of students. A barrier-free developmental environment is created, transformable play and thematic areas focused on supporting the child's individuality and subjectivity, the development of vital physical, social, emotional, communication, and cognitive skills" [1].

The development of these skills in children of senior preschool age is possible through STEAM technology. STEAM (S - science, T - technology, E - engineering, A - art and M - mathematics) - natural sciences, technology, engineering, creativity, mathematics. STEAM technologies are comprehensive learning that includes simultaneous exploration of the basic principles of the exact sciences. According to STEAM technology, children learn to see the interconnection of current events, begin to better understand the principles of logic, and in the process of creating their own models discover something new and original. An integrated approach contributes to the development of their curiosity, initiative, and involvement in the educational process [8].

Initially, the concept of STEAM included the acronym STEM, which was proposed by scientists at the US National Science Foundation in 2001. This is an independent agency of the US government, basic research and education in almost all fields of science with the exception of medicine. Then this abbreviation began to be supplemented with the letter A, denoting Art (art). The STEAM approach has become a response to new challenges, when the aesthetic component has become an integral part of technical progress.

According to the OECD (Organization for Economic Co-operation and Development), there is a general need in Europe to improve children's performance in basic mathematics, science and literacy skills. STEAM researchers suggest that integrating the arts with STEM "brings new energy and language" and can stimulate students' curiosity, experimentation, and discovery of the unknown through creative and innovative solutions [9]. Taylor explains that STEAM "is not just another curriculum fad, but an important response to the urgent need to prepare the next generation with higher-order abilities to positively and productively address the global challenges of the 21st century" [10]. Countries such as Canada and Australia see the benefits of STEAM education, recognizing that "design and creativity in the arts are a critical foundation for being a successful mathematician, scientist, and engineer" [11]. The United States and Korea strive to increase the interest, engagement, motivation, and value of the younger generation through STEAM education [12]. Goal: To prepare the younger generation to become world leaders in science and technology by encouraging interest and deeper understanding through the integration of the arts, "experiential and inquiry-based approaches" to develop creativity, innovation, critical thinking. thinking and problem solving skills. According to Dobson and Burke (2013), "a balance of critical thinking, analytical skills and creativity is the key to innovation. STEM, arts and humanities can be integrated to engage younger generations to receive a balanced education – an education that will create more opportunities and employment options in the future." Harris and de Bruin argue that as educators, we want to meet a child's individual needs by developing their self-confidence, self-esteem, and creating a safe learning environment that allows them to make mistakes and achieve success, which is a core component of STEAM education [13, 14].

Results and discussion. *The purpose* of our research is to develop IT skills in children of senior preschool age through STEAM technology.

Based on the goal, the following tasks have been identified:

to study the essence of STEAM technology in the educational process of a preschool organization;

develop a plan for the implementation of STEAM technology in the educational process of a preschool organization in the development of IT skills of children of senior preschool age.

In order to solve the first problem, we have determined the essence of STEAM technology in the educational process of a preschool organization. STEAM technologies are aimed at stimulating the development of intelligence, cognitive abilities, counting skills and simple measurements, spatial imagination in children of senior preschool age. In addition, STEAM technologies contribute to the development of communication skills in older preschoolers, the ability to interact, and in general helps the formation of an active personality.

STEAM technologies include the following modules:

- Didactic system of F. Froebel;
- Experiments with living and inanimate nature;
- LEGO construction;
- Mathematical development;
- Robotics;
- Animation studio "I create the world".

The characteristics of these modules are presented in Figure 1.

	Module name	a brief description of	Expected Result
	Didactic system of F. Froebel	The purpose of this educational module is to form a natural science picture of the world and develop spatial thinking in preschool children based on the didactic system of F. Froebel. This system, due to its versatility, can act as fundamental for the propaedeutics of STEAM education in a preschool organization, since it systematizes knowledge from all of the following areas: "science" - "science", "technology" - "technique", "engineering" - "engineering", "art" - "art", "mathematics" - "mathematics". The structural and educational module consists of two content blocks. These are "Sets for the development of spatial thinking No. 1" (according to F. Froebel's system), which correspond to the original source, and "Sets for the development of spatial thinking No. 2" (according to F. Froebel's system) - modifications of source materials in the form of soft floor modules that move the child from the limited table area to the play space of the room [7]. A basic set for the development of spatial thinking is *"Froebel's 6 gifts":* Gift 1 – wool ball; Gift 2 – wooden ball, cube, cylinder in one set; Gift 3 – a cube consisting of 8 cubes of the same size; Gift 4 – a cube consisting of 8 rectangular tiles; Gift 5 – a cube consisting of 27 cubes; Gift 6 is a cube consisting of 27 cubes, most of which are divided into tiles, triangles and other shapes [8].	-experimenting with objects of the surrounding world; -mastering mathematical reality through actions with geometric bodies and figures; -mastering spatial relationships; - design from various angles and projections.
	Experiments with living and inanimate nature	The module "Experiments with living and inanimate nature" involves observing animals, plants, natural phenomena, and recording the results in the form of a "Weather Calendar", "Nature Calendar", "Observation Diary". As part of this module, children develop ideas about who scientists are, what a scientific laboratory and a scientific experiment are, as well as familiarity with basic devices	-formation of ideas about the world around us in experimental activities; - awareness of the unity of all living things in the process of visual and sensory perception; -formation of environmental consciousness.

		for studying nature: a magnifying glass, a microscope, etc. Experimentation is an activity that meets the age-related characteristics of the thinking of preschoolers: visual-figurative and visual-effective. Their experimentation is similar to play, as well as to the manipulation of objects, which are the main ways of understanding the world around us in preschool age. Experimentation gives children real ideas about the various aspects of objects and phenomena, their relationships with other objects, phenomena and the environment in which they are located [7].	
	LEGO construction	LEGO (Leg Godt - "play well") is one of the well-known and widespread pedagogical systems today, using three-dimensional models of the real world and a subject-game environment for the learning and development of a child. Design is not only a practical creative activity, but also a universal mental ability, manifested in other types of activity (visual, playful, speech) aimed at creating new wholes (drawing, plot, text, etc.). *Stages of work:* Stage 1: organizing extensive independent children's experimentation with new material; Stage 2: children solve problem problems of two types: for the development of imagination and for the formation of generalized methods of construction, which involves the use of the ability to experiment with new materials and in new conditions; Stage 3: organization of construction according to the children's own ideas; Stage 4: Revitalization of the design (robot) based on programming. *Compliance with the principles of modern education:* LEGO bases its work with constructors on the method of cognitive and artistic search, which corresponds to the algorithm for organizing project activities. LEGO seamlessly combines play, construction and programming. LEGO, being a means of individual intellectual and creative development, is nevertheless a powerful means of communication, as it involves not only discussion and comparison of individually created models, but also their joint improvement and transformation for subsequent play or in accordance with given conditions. To do this, it is necessary to negotiate, take into account the opinions of partners in the game and take it into account, think through the plot in a predictive version and in real time, create additional "gadgets" for its implementation [7].	-ability for practical and mental experimentation, generalization, verbal planning and verbal commentary on the process and result of one's own activities; - fluency in the native language (vocabulary, grammatical structure of speech, phonetic system, elementary ideas about semantic structure); -the ability to create new images, fantasize, and use analogies.
	Mathematical development	Children's acquaintance with the main areas of mathematical reality - size and shape, spatial and temporal orientations, quantity and counting - occurs gradually, therefore the tasks of mathematical development at different age stages are different. The content of each task has its own specifics and requires a thoughtful selection of the most appropriate methods and techniques for its implementation and components of the developing subject-spatial environment. The content of the module is complex; it combines games and manuals for arithmetic, geometric, logical and symbolic propaedeutics (orientation).	- complex 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 counting.

		Mastering mathematical reality is most effective if it occurs in the context of practical and gaming activities. In the mathematical module of STEAM technology there are *5 areas:* 1: Introduction to geometric concepts; 2: Introduction to quantities; 3: Introduction to numbers within 10 and 20; 4: Introduction to addition and subtraction. 5: Educational games. As the first game, you can choose "Fold the pattern" and the first tasks for it. Next you should enter "Unicube" and "Cubes for everyone Svetovid" [15].	
	Robotics	The Robotics module involves the presentation of complex processes in a simplified version. Children from an early age are surrounded by automated systems, and the further intensification of production in the country and throughout the world depends on their ability to navigate the components of scientific and technological progress. Robotics classes contribute to the development of logical, spatial, algorithmic and heuristic thinking, attention, memory, imagination, creativity, motor skills and communication skills. The Robotics module includes several construction kits for making robots with the ability to move. In accordance with age, the tasks solved by the child gradually become more complex, from simple assembly and mechanical movement of the model to programming control systems [7].	-development of logic and algorithmic thinking; -formation of programming fundamentals; -development of planning and modeling abilities; -data processing; -development of the ability to abstract and find patterns.
	Animation studio "I create the world."	The cartoon studio "I create the world" consists of specialized equipment, software and scientific and methodological support, which allows you to start using this equipment almost immediately. The program is adapted for use by older preschoolers and has an intuitive interface that is convenient and understandable to the child. *Stages of work in Cartoon Studio:* -Development of the plot and characters of the cartoon, choice of sound track; -Creating a storyboard for a future cartoon; -Creation of scenery and characters; -Shooting a cartoon; -Voice acting of the cartoon; -Cartoon editing; -Collective viewing of the finished cartoon [7].	- mastering ICT and digital technologies; -mastering media technologies; -organization of productive activities based on the synthesis of artistic and technical creativity.

Figure 1 - Characteristics of STEAM technology modules

Advantages of STEAM technology:
– Integrative approach and thematic training;
– Practice-oriented (application in real life);
– Development of critical and creative thinking;
– Development of communication and team building skills;
– Developing interest in technical creativity and stimulating early career guidance.

According to the second task, we have developed a plan for the implementation of STEAM technology in the educational process of a preschool organization in the development of IT skills in children of senior preschool age. The STEAM technology implementation plan includes 3 stages (shown in Figure 2):

Stage	Event plan	Expected Result
Stage 1 preparatory	-analysis of psychological and pedagogical literature on the problem under study; -collection and systematization of data on the development of IT skills of children of senior preschool age; -preparation for the creation of a subject-development environment for a preschool organization in accordance with STEAM technology.	-Psychological and pedagogical literature on the research problem was analyzed; -Collected and systematized data on the development of IT skills of children of senior preschool age; -A subject-specific developmental environment has been created aimed at developing children's initiative, creativity, and constructive skills through STEAM technology.
Stage 2 basic (practical)	Includes 3 directions: teacher-parents-children. *Working with parents:* -Meeting-conversation “STEAM technology as a universal tool for developing the intellectual abilities of a preschooler”; - Questioning parents “What do we know about STEAM technology?”; - The pedagogical workshop “STEAM-laboratory” includes the following sections: Gifts of F. Froebel, children's experimentation, LEGO construction; -Meeting of organizational and activity game “IT skills of the Beta generation”; - Master class “How to create a robot at home?”; - Life hack for parents “How to create an original cartoon?” in the cartoon studio “I create the world”. *Working with children of senior preschool age:* - Didactic system of F. Froebel (performing exercises “Wool balls”, “Basic bodies”, “Cube made of cubes”, “Cubes, columns, bricks”, exercises with the set “Sets for the development of spatial thinking - soft modules”); - Experiments with living and inanimate nature (includes the study of inanimate nature (water, air, stones, sand, clay, soil); the study of living nature (study of insects, plants); optical phenomena (experiments and experiments, for example, “The Amazing World of Glass”); - LEGO construction (exercises using the set “Wild Animals”, “City Residents”, “My First Story”, “Bricks”, “First Mechanisms”); - Mathematical development (completing tasks according to the manuals “Mathematics. Measurement” (a set of cards for the tablet); “Mathematical scales” demonstration (65.5 × 22 cm + 20 weight plates); Cards with tasks for “Mathematical scales” (40 cards, 70 blue and 80 orange chips); Lotto "Geometric Shapes"; "Rainbow Web" (square, circle, triangle); "Mathematics. Time, clock, calendar" (set of cards for the tablet); Abacus "Color, shape, counting" (50 and 100 parts); - Robotics (performing tasks according to the set instructions, Programmable robot “BEE-BOT”, “My robot time MRT 1-1. Hand”, “My robot time. Brain A”, “LEGO WeDo 2.0” (Lego education); - Multistudio “I create a world” (work in the Multistudio using equipment (screen, web-camera on a flexible basis, a set of backgrounds, decorations and magnets), software (disc with a computer program) and scientific and methodological support (step-by-step instructions on questions and answers, manual), 3D pen [7].	-Information support for parents of students on the use of STEM technology; -Parents become active participants in the educational process of the preschool organization. -Children become active participants in the educational process of a preschool organization; -IT skills develop, shows independence, initiative and interest in the proposed exercises and tasks.
Stage 3	Summing up the results of the work performed:	Analysis of the results of work

final (analytical)	-diagnostics of the level of development of IT skills of children of senior preschool age using STEAM technology; -results of a survey of parents conducted at the ascertaining and control stages of the study; -methodological recommendations have been developed for teachers on the introduction of STEAM technology into the educational process of a preschool organization; -Discussion of the results of the work performed.	on the implementation of STEAM technology in the organization of the educational process of a preschool organization.

Figure 2 - Plan for the implementation of STEAM technology in the educational process of a preschool organization

The expected results of the system of measures we have developed are the following:

1. Development of the design of a subject-development environment for a preschool organization using STEAM technology;

2. Development of IT skills of children of senior preschool age through STEAM technology;

3. Organization of the work of educational modules of STEM technology: "LEGO - construction", "Mathematical development", "Experimenting with living and inanimate nature";

4. Active participation of parents and children in organizing joint events in a preschool organization.

According to the developed plan for the implementation of STEAM technology in the educational process of a preschool organization in order to develop the IT skills of children of senior preschool age, criteria, indicators and levels of development of children's IT skills will be developed, experimental work will be organized and carried out. Based on the results of the ascertaining stage of the study, a system of activities will be organized to develop the IT skills of children of senior preschool age through STEAM technology.

Conclusion. The analysis of psychological and pedagogical literature shows the need to pay special attention to the development of IT skills in children of senior preschool age. The use of STEAM technology in the educational process of a preschool organization will provide an effective means of developing these skills. The implementation of STEAM technology involves not only organized by the teacher, but also independent activities of children, joint leisure activities with the teacher, and the participation of parents in the educational process. Each module is based on the principles of the activity approach and involves creating conditions for different types of activities of older preschoolers, for example,

Didactic system of F. Froebel: aimed at developing spatial thinking, based on cognitive and research activities, games and construction;

Experiments with living and inanimate nature: aimed at developing independence in the process of observation, performing experiments and experiments, based on systematic experimental activities;

Mathematical development: aimed at developing visual-effective, visual-figurative thinking, performing logical operations, based on play and cognitive-research activities;

LEGO construction: aimed at developing basic programming skills, based on the activity of construction;

Robotics: aimed at developing active cognitive and research activities and scientific and technical creativity;

Cartoon studio "I create the world": is aimed at developing creative abilities and IT skills in the process of artistic and creative activities using digital technologies for creating cartoons and, accordingly, is the final chord that synthesizes the results of mastering all educational modules.

Thus, we understand that at present the principle of transferring academic knowledge to younger generations using the traditional method is no longer so effective and, accordingly, there is a question of a qualitative revision. The formation of inquisitive and cognitive motivation, actions, and consciousness will be developed effectively, provided that the personality of the preschooler

acquires ideas about the relationship between nature and man, and masters the methods of practical interaction with the environment.

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