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PEDAGOGICAL AND PSYCHOLOGICAL POSSIBILITIES OF INTEGRATION OF STEAM EDUCATION IN PRESCHOOL EDUCATIONAL ORGANIZATIONS

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Annotatsiya: Mazkur maqolada maktabgacha ta'lim tashkilotlarida STEAM ta'limini integratsiya qilishning pedegogik va psixologik imkoniyatlari tahlil qilingan. STEAM yondashuvning bolalarni intellektual, ijodiy, kommunikativ hamda tadqiqodchilik qobiliyatlarini rivojlantirishdagi ahamiyati yoritilgan. Shuningdek, maktabgacha yoshdagi bolalarda mustaqil fikrlash, muammoli vaziyatlarni hal qilish, jamoada ishlash ko'nikmalarini shakllantirishda STEAM ta'limining o'rni ilmiy- nazariy jihatdan asoslangan. Ta'lim jarayoniga STEAM texnologiyalarini integratsiya qilishning psixologik omillari hamda pedagogik shart- sharoitlari ko'rib chiqilgan.

Kalit so'zlar: STEAM ta'limi, integratsiya, maktabgacha ta'lim, pedagogik imkoniyatlar, psixologik rivojlanish, ijodkorlik, innovatsion ta'lim, tadqiqotchilik faoliyati.

Аннотация: В данной статье анализируются педагогические и психологические возможности интеграции STEAM-образования в дошкольных образовательных организациях. Раскрывается значение STEAM-подхода в развитии интеллектуальных, творческих, коммуникативных и исследовательских способностей детей. Научно обоснована роль STEAM-образования в формировании самостоятельного мышления, навыков решения проблем и командной работы у детей дошкольного возраста. Рассматриваются психологические факторы и педагогические условия внедрения STEAM-технологий в образовательный процесс.

Ключевые слова: STEAM-образование, интеграция, дошкольное образование, педагогические возможности, психологическое развитие, творчество, инновационное образование, исследовательская деятельность.

Abstract: This article analyzes the pedagogical and psychological opportunities of integrating STEAM education into preschool educational organizations. The importance of the STEAM approach in developing children's intellectual, creative, communicative, and research skills is highlighted. The role of STEAM education in fostering independent thinking, problem-solving abilities, and teamwork skills among preschool children is scientifically substantiated. Psychological factors and pedagogical conditions for integrating STEAM technologies into the educational process are also discussed.

Keywords: STEAM education, integration, preschool education, pedagogical opportunities, psychological development, creativity, innovative education, research activity.

ENTRANCE

Today, modernization of the education system and the introduction of innovative approaches are one of the priorities of state policy. In particular, the comprehensive development of children in the preschool education system, the development of their creative and intellectual potential, is considered

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an important task. STEAM education, one of the modern educational concepts, serves to achieve these goals.

The term STEAM stands for the integration of Science, Technology, Engineering, Art, and Mathematics. This approach allows children to learn as a whole, rather than as separate disciplines.

Preschool is one of the most important periods of young human development, during which a child's thinking, speech, emotional-intellectual development, and creativity are formed. Therefore, the introduction of STEAM education from an early age creates a solid foundation for children's future educational success.

LITERATURE ANALYSIS AND METHODOLOGY

In recent years, scientific research on STEAM education has confirmed the effective use of this approach in the preschool education system. Foreign researchers evaluate STEAM education as an integrative model that develops children's creativity, critical thinking, problem-solving and collaborative skills. In particular, the STEAM model developed by G.Yakman highlights effective mechanisms for ensuring interdisciplinary integration and linking theoretical knowledge with practical activities.

The importance of the STEAM approach is also emphasized in scientific views in the field of child psychology. According to L.S.Vygotsky's theory of the zone of proximal development, a child successfully masters more complex activities in the process of cooperation with adults and peers. STEAM classes, since they are organized precisely on the basis of cooperation, communication and experience, serve to actively develop children's cognitive processes.

J.Piaget's theory of cognitive development states that preschool children acquire knowledge through practical actions and direct experiences. In this context, STEAM education is appropriate for the age and psychological characteristics of children, encouraging them to observe, experiment, compare, and draw conclusions.

Scientific work of Uzbek scientists on the modernization of preschool education also shows the need to introduce innovative pedagogical technologies into the educational process. Regulatory documents and state requirements for improving the preschool education system provide for the creation of an educational environment aimed at the formation of 21st century competencies in children. The STEAM approach is one of the effective pedagogical tools that serve precisely these goals.

This study combined pedagogical and psychological approaches. The research methodology was based on systematic, competency-based and activity-oriented approaches. The methods of scientific literature analysis, comparative analysis, pedagogical observation, theoretical generalization and synthesis of scientific sources were used during the study. These methods allowed for a comprehensive analysis of the pedagogical and psychological possibilities of integrating STEAM education into the activities of preschool educational organizations, an assessment of existing experiences and the development of scientific conclusions.

RESULTS

During the research, the pedagogical and psychological possibilities of integrating STEAM education into the activities of preschool educational organizations were theoretically analyzed and summarized based on scientific sources. The results showed that the STEAM approach is one of the effective pedagogical technologies for ensuring the comprehensive development of children.

The analysis revealed that in classes organized on the basis of STEAM elements, children become active participants in the educational process. They actively participate in the processes of observation, experimentation, comparison, analysis and drawing conclusions. This contributes to the

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development of children's logical and critical thinking, independent decision-making and creative approach to problem situations.

From a psychological point of view, STEAM activities have been found to increase children's interest in knowledge, increase their intrinsic motivation, and strengthen their self-confidence. Working in groups during classes has a positive effect on the formation of a culture of communication, cooperation, mutual assistance, and a sense of responsibility in children. At the same time, the use of art elements helps to develop children's aesthetic taste, imagination, and creative potential.

The results of the study showed that for the effective implementation of the STEAM approach, it is necessary to increase the methodological competence of teachers, create a developmental learning environment, and give a wide place to project and experimental activities. It was also found that involving parents in the educational process and strengthening the material and technical base of the educational organization are important factors that further increase the effectiveness of STEAM education.

Overall, the research findings confirm that integrating STEAM education in preschool settings is an effective means of developing 21st century competencies in children, including critical thinking, creativity, collaboration, and communication skills. This approach not only improves the quality of education, but also creates a solid pedagogical and psychological foundation for preparing children for the next stages of education.

DISCUSSIONS

The theoretical analysis and the results obtained confirm that the integration of STEAM education into the activities of preschool educational organizations is one of the relevant directions of modern education. While in the traditional educational process, children are more focused on mastering ready-made knowledge, the STEAM approach encourages them to independently search for knowledge, observe, experiment, and find creative solutions to problems. As a result, the child becomes an active participant in the educational process.

Analysis shows that the introduction of STEAM technologies into preschool education practice serves to develop not only knowledge and skills in children, but also 21st century competencies, including critical thinking, creativity, collaboration, and effective communication skills. In particular, project-based and experiential activities arouse interest in children and increase their engagement in the educational process.

At the same time, it is necessary to overcome some problems in order to effectively organize STEAM education. In particular, it is important to systematically develop the professional competence of teachers in STEAM methodology, create modern didactic tools and a developing environment, as well as strengthen cooperation with parents. Only when these factors are provided can the pedagogical and psychological potential of the STEAM approach be fully utilized. Based on the research results, it can be said that when STEAM education is organized taking into account the age and individual characteristics of preschool children, their cognitive activity, independent thinking, research skills, and level of social adaptation are significantly developed. Therefore, the systematic integration of this approach into the educational process of preschool educational organizations is one of the important factors in improving the quality of education.

In addition, it is advisable to further study the effectiveness of STEAM education through practical experiments, experimental research, and diagnostic methods. This will serve to improve innovative approaches in the preschool education system and develop scientifically based methodological recommendations.

CONCLUSION

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In conclusion, integrating STEAM education in preschools is an effective pedagogical approach that ensures the intellectual, creative, social and psychological development of children. This approach connects science, technology, engineering, art and mathematics, helping children acquire knowledge through practical activities, develop independent thinking, problem solving and research skills.

The results of the study showed that STEAM education plays an important role in developing curiosity, creativity, logical thinking, communicative competence, and teamwork skills in preschool children. This approach also has a positive effect on strengthening children's self-confidence, supporting their initiative, and ensuring their active participation in the educational process.

For the effective implementation of STEAM education, it is necessary to create a modern, developing educational environment in preschool educational organizations, regularly improve the professional competencies of teachers, use innovative methods and technologies, and establish effective cooperation with parents. Only when these factors are provided will the pedagogical and psychological potential of the STEAM approach be fully manifested.

At the same time, one of the promising scientific directions in the future is to evaluate the effectiveness of STEAM education in preschool education practice based on experimental research, develop methodological recommendations suitable for age groups, and combine national values and folk games with the STEAM approach. This will serve to improve the quality of preschool education, comprehensively prepare children for the next stage of education, and educate a well-rounded personality who meets the requirements of modern society.

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