

TRIZ AS A MEAN OF DEVELOPMENT OF MATHEMATICAL SKILLS IN PRESCHOOL CHILDREN

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ABSTRACT

This article is devoted to the use of TRIZ technology techniques in teaching and upbringing preschool children. TRIZ technology allows us to teach and train a creative child. The purpose of using this technology in kindergarten is, on the one hand, the development of such qualities of thinking as flexibility, mobility, consistency; on the other hand, search activity, the desire for innovation; the development of speech and creative imagination. The article notes that TRIZ significantly contributes to the formation of mathematical imagination, allows children to develop their thinking, mathematical abilities by solving creative problems. Today, TRIZ pedagogy is already widely used in practice in the education system of developed countries of the world.

KEYWORDS: *Preschool Education, Preschool Age, Personality, TRIZ Pedagogy, Theory Of Inventive Problem Solving, Level Of Preparation For School, Creativity, Creativity, Mathematical Education.*

INTRODUCTION

The main condition for promoting the political and economic role of Uzbekistan and improving the welfare of its inhabitants is to ensure the growth of the country's competitiveness. The main competitive advantage of a highly developed country is associated with the possibility of developing its human potential, which is largely determined by the state of the educational system in which the country is located a source of sustainable economic growth. The initial stage of the formation of human potential is preschool education, since it is known that the highest level of development, the manifestation of individuality occurs exactly at the preschool age. Here the foundation of the individual is laid, the main social relations, the basis of the worldview, habits are intensively formed, cognitive abilities, emotional-will sphere are developed, diverse views are formed.

Object Of The Research And Used Methodologies

As an object of the study there was determined the role of TRIZ (theory of inventive problem solving) technology in the process of forming elementary mathematical representations of preschool age children. Methodology of observation, material analysis and generalization, collective and individual interviews, questionnaires (oral) were used to cover the topic of the study.

Obtained Results And Their Analysis

The solution to the problem of attracting children to preschool education is of great social importance, since the success of the child's life depends on its level. The relevance of the problem of research at the socio-pedagogical level is determined by the social order of the formation of a person ready for study and development in changing economic and social conditions. Providing

“equality of primary opportunities” for children at the entrance to school is this – for children from the age of five to the age of seven, it is determined not only by the preparation for school (the formation of certain skills), but also by the general development of the child in the first seven years of life. Preschool training groups for the school are organized and educational work is carried out.

The following work is devoted to the research in the field of preschool education of preschool age children by the following authors, such as Sh.A.Amonashvili, L.I.Bozovich, L.A.Venger, A.L.Venger, E.A.Panko, N.I.Gutkina, V.V.Davydova, J.L.Kolominsky, G.G.Kravsova, E.E.Kravsova, V.T.Kudryavtseva, B.C.Mukhina, V.V.Ulyenkova, D.B.Yelkonin. Scientists note that the degree of readiness of the child to school is largely due to the social maturity of the child, which is manifested in the desire to occupy a new place in society, to carry out activities that are socially significant [1]. When starting school, the child should be prepared not only to master knowledge, but also to radically rebuild the whole way of life. Mathematical modeling technologies, the use of ready-made models, the problems of creating a model independently N.U.Bikboeva and others [2], G.E.Djanpeisova [3], M.Jumaev [1] have mentioned this in their works. A.N.Mirzakarimova in her article emphasizes the effectiveness of TRIZ technology, while translating the abbreviation TRIZ into Uzbek as a theory for determining the ability of creativity [4].

The purpose of using TRIZ technology in the development of mathematical abilities of preschool children is to develop thinking qualities, on the one hand, such as flexibility, mobility, consistency, dialectics, on the other hand, search activity, desires and creative imagination.

A great role is played by the formation of elementary mathematical concepts in the mental education and development of a preschool child. The problem of teaching mathematics to children in modern life is of great importance. This is primarily explained by the rapid development of scientific and technical, information and communication technologies and their penetration into various fields of knowledge. The pre-school age period is peculiar, because it is directly related to the formation of the child. Therefore, to reveal the creative potential of each child, one should not miss this period. Children’s consciousness is not limited to traditional concepts of “deep way of life” and how things should be. This allows them to invent, to be spontaneous and unpredictable, to notice something that we adults have not paid attention to for a long time.

Effective development of the child’s mental and creative abilities is a characteristic feature of the modern methodology of mathematical development. It is not suitable for teaching a preschool child to calculate, measure and solve arithmetic problems. It is also the development of non-standard thinking, the ability to discover features, relationships, connections in the world around us, to “design” them with objects, characters and words.

When we say the mathematical development of preschool children, it is understood that the qualitative changes in the cognitive activity of the child, which occur as a result of mathematical development and logical operations associated with them. The development of interest in mathematics in preschool children is one of the important tasks of educators. TRIZ contributes to the formation of mathematical concepts, allows children to develop their thinking and mathematical abilities in the form of games. The game is a starting point for further modification, development and creation of many interesting options.

Teaching mathematics to children of preschool age can not be imagined without the use of interesting materials. The role of this material is determined taking into account the age capabilities of the children and the comprehensive development and educational objectives. The main task is to activate mental activity, to interest children in mathematical material, to attract children to themselves, at the same time to develop consciousness, to expand and deepen

mathematical imagination, to strengthen the acquired knowledge and skills, to teach them to apply them in other activities, in a new environment.

Any mathematical task for the mind, no matter what age it is intended, raises a certain mental burden, which is often hidden by an interesting plot, a mental task is carried out through the game. Children are very active in perceiving tasks, jokes, puzzles. They persistently seek a direction of action that leads to the result. The ultimate goal that attracts the child is the final point. Children enjoy special pleasure from solving non-standard creative tasks. Mathematical culture forms the child's personal development potential, the development of qualities necessary for him/her in life: thinking, attention, memory, speech.

Thus, games created on the basis of TRIZ technology not only help to develop the thinking and imagination of preschool children, to conduct thinking experiences in them and to formulate the skills of working with various problems, but also an effective means of developing everything.

TRIZ (theory of inventive problem solving) is one of the most unique ways to develop the creative activity of preschool children.

The results of psychological and pedagogical research have made a certain contribution to the development of the idea of teaching children in the pre-school training group, but many topical issues have gone beyond the scope of this work, which underlies the urgency of solving TRIZ issues:

- Formation of inventive abilities of children on the implementation of individual and differential approaches in the study of the process of training of the child for school; application of TRIZ - educational theory, which focuses on the individual, developing preschool children in the organization of the developing educational space of the organization of preschool education;
- Clearly define the objectives of pre-school education and primary school education;
- Modeling of the developing educational space of the organization of preschool education;
- Create organizational and pedagogical conditions that ensure the child's readiness for school;
- From the point of view of the child's readiness for school and the need to create a unified system of criteria for understanding the content of "equal primary opportunities" for preschool children, a competency-based approach when the child starts school.

TRIZ technology, adapted to the preschool age, creates the opportunity to train children under the slogan "Creativity is in everything!". At preschool age, the process of cognition of the child is carried out emotionally and practically. Every preschool child is a discoverer, discovering joy and surprise in the world around him. The child seeks a strong activity and it is important not to let this desire fade, contributing to its further development. Therefore, we consider the use of TRIZ techniques and methods in the formation of mathematical imagination of children of senior preschool age as an important feature.

Taking into account this, classes can be organized according to the following rules:

1. Minimum information communication, maximum discussion.
2. An acceptable form of organization of discussion of problematic situations is a brain storm.
3. Systematic approach
4. Inclusion in the process of cognition of all existing mental operations and means of cognition in the child.
5. It is very important to engage in creative imagination.

The following assignments can be proposed on the basis of TRIZ technology in the lessons of the formation of elementary mathematical imagination in preschool preparation groups [5].

Assignment 1. Children stand in a circle and in turn answer the questions of the educator. If the educator throws a ball to someone, that child will answer. Questions: what season of the year is it now? What month is it now? How many months in the year are there? What day of the week is today? How many days a week are there? List of working days. List the days off. What day comes before Wednesday? What is the fourth day of the week called? And others. Children learn the days of months and weeks. In them, cleverness and meticulousness develop, the qualification for a quick answer to a question.

Assignment 2. The game “Make the forms”. This game can be played in intermediate, senior and school prep groups. Using the forms given in this (if desired, including additional elements to them) is assigned the task of making the form of subject-items. Who can offer more and more interesting options in the specified time under the condition of the game. For example, from a triangle it is possible to form a girdle, a Christmas tree, a puppy, a mountain, pie, a piece of cake, etc. And from the circle it is possible to make bread, the Sun, the full moon, watermelon, Christmas toys, balls, rings, clock and others. From the square it is possible to form a book, a table, a chair, a table, a house, a window, a mirror, a TV, a portfolio, a pillow, a car, etc.

Assignment 3. The task is to quickly answer the questions to check the children’s resourcefulness and vigilance. 1. How many ears do the two mice have? (four) 2. How many legs do two bears have? (eight) 3. At the end of January, apple trees blossomed. First 3 apple trees blossomed, then another apple tree blossomed. How many apple trees have blossomed in total? (no one did even bloom, because in January the apple tree does not bloom) 4. The dog has two left legs, two right legs, two front legs, two hind legs. How many legs does the dog have? (four) 5. How many ears do the two hedgehogs have? (four) 6. How many tails do four cats have? (four) 7. How many noses do three elephants have? (three) 8. How many nuts are in an empty container? (nothing).

These tasks form quickness, resourcefulness and logical thinking skills in children in the process of completing these tasks.

CONCLUSION

The use of TRIZ, ARIZ and DARIZ technologies in teaching elementary mathematics to preschool children is of great benefit. Children will give an expanded answer to the question, learn geometrical figures and their signs, distinguish and apply many, few and equal signs, will be able to perform logical tasks. Each child is directly engaged in educational activities, shows own initiative, independently solves examples and is able to communicate with peers. When training preschool children using TRIZ technology techniques is used, it is important to prepare educators not only for school, but also for life in a qualitative way. Today we need to educate our children in the spirit of creativity and creativity, able to adapt to a changing world, and not just to absorb their readiness.

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