

NEUROPEDAGOGICAL FOUNDATIONS FOR THE DEVELOPMENT OF CREATIVE SKILLS OF CHILDREN OF PRESCHOOL PREPARATORY GROUP

Shazhabayeva Zh.

Kazakh National Pedagogical University named after Abai, Almaty, Kazakhstan

Alimbekova A.

Kazakh National Pedagogical University named after Abai, Almaty, Kazakhstan

<https://doi.org/10.5281/zenodo.13930456>

Abstract

This article discusses neuropedagogy, a branch of education based on knowledge of the functioning of the human brain and nervous system, which allows us to substantiate optimal teaching methods. The opinions of scientists considering the concept of neuropedagogy, as well as the history of its development and integration into the educational process, are supported by the latest data from neuroscience. This helps to choose the most effective educational strategies, taking into account the individual characteristics of children. The article highlights that neuropedagogy provides an opportunity to choose an effective path for the harmonious development of each child. In addition to defining the concept of neuropedagogy, its possibilities for the successful development of a child are described. It also reveals how neurogames contribute to the development of children's thinking and imagination, which helps to evaluate, analyze and make decisions. Modern technologies provide more opportunities to improve the quality and effectiveness of the educational process, as well as to develop creative skills and activity in each child. Based on neuropedagogy, the development of children's creative skills includes the formation of the most important mental and practical actions, such as observation, comparison, thinking, independent solving of new problems, the development of imaginative thinking, imagination and perception. The article presents an experimental study of methods that promote the development of creative skills in preschool children in accordance with theoretically based criteria.

Keywords: pupils of the pre-school preparatory group, creative skills, neuropedagogy.

Introduction.

In modern society, the development of children's creative abilities is becoming one of the main tasks of education. Creative activity contributes to the formation of flexibility of thinking, aimed at the development of cognitive processes and the emotional sphere of the child. Neuropedagogy, combining the achievements of neurobiology with pedagogical methods, provides new opportunities for the effective development of creative abilities of preschool children.

The President of our country In his address to the people of Kazakhstan on the topic of "Unity of the people and systemic reforms are a solid foundation for the country's prosperity," K.K. Tokayev said: "In general, the sphere of education and science in our country faces enormous challenges. This means, in addition to meeting the demands of the times, always being one step ahead and being able to offer new news" [1]. Here it is clear that the country intends to use the opportunities for the development of the younger generation, worldview, cognitive experience, and improvement of creative skills, taking into account modern innovations.

Neuropedagogy is a complex educational system of education and training based on the achievements of neurobiology. It also studies neuropedagogical systems, their properties and processes. Neuropedagogy consists of neuropedagogy, neuropedagogical diagnostics, neuropedagogy of education, neuropedagogical correction and adaptation, neuropedagogical organization (educational process). Neurophysiological methods of neuropedagogy are important for improving learning and increasing creativity in order to stimulate a stable brain. Neuropedagogy is based on sensory pedagogy, affects

the child's senses, vision, smell, hearing, tactility, his emotional state, increases creativity, regulates behavior in the educational process.

The modern education system requires new ways to develop creative abilities of preschool children. In this context, neuropedagogy as an integration of neuroscience and pedagogical methods is an innovative approach that allows us to confirm the target characteristics of children and create optimal conditions for their learning and development. Creative skills play a decisive role in the formation of flexible thinking, problem solving and adaptation to new situations. Therefore, it is important to study the neuropedagogical foundations for the development of creative abilities of preschool children.

The purpose of this article is to study and substantiate the neuropedagogical foundations that contribute to the development of creative abilities in preschool children.

The aim of the article is the following research tasks:

1. Theoretical aspects of neuropedagogy and their children study of the influence on the development of creative abilities.
2. Promotes the development of creative abilities in preschool children. identification of educational methods and methods of neuropedagogy.
3. Creative abilities in preschool children. conducting an experimental study of the effectiveness of neuropedagogical methods in development.
4. On the implementation of neuropedagogical approaches in the educational process

development of practical proposals for teachers.

According to the study's assumptions, the use of neuropsychological methods in the educational program of a preschool group contributes to the significant development of children's creative abilities compared to traditional teaching methods.

The object of the study is preschool children.

The subject of the study is the influence of neuropsychological methods on the development of creative abilities of children (students) in a preschool group.

Importance of research work:

1. Theoretical significance: study of creativity of preschool children.

contributed to the theory of neuropsychology, substantiating its effectiveness in developing skills. The results of the study may be useful for further scientific research in the field of pedagogy and neurobiology.

2. Practical significance: research of children's creativity for teachers.

The recommendations and methods developed as a result of the study can be included in educational programs for preschool children, allowing for the effective development of their abilities. This, in turn, contributes to the harmonious development of the child's personality, increasing his cognitive and emotional abilities.

3. Social significance: creativity of preschool children.

Skill development helps to develop a personality capable of innovative thinking, problem solving and adapting to future changes. This has a positive effect on the social development of society as a whole and helps

prepare the younger generation for the challenges of the modern world.

Materials and methods.

Identifying creative abilities in children is an important process that helps to understand their special abilities and potential. In the practical part of the research work, the main focus was on determining the level of creative abilities of preschool children. Accordingly, the scientific and practical work included the stages of identification, formation and control.

Almaty as a research base №148A kindergarten was selected. A total of 100 schoolchildren took part in the study. 50 of them were assigned to the experimental group, and the remaining 50 to the control group.

At the definitional stage of the experimental work, the initial (beginning) level of creative abilities of children in the preschool group was determined. During the investigation, the following methods were used: O.M.Dyachenko "Completing Figures", N.N.Pavlov and L.G.Rudenko's "Express Diagnostics in Kindergarten", R.S. Nemov "Diagnostics of Attention", P.Torrance's "Finish the Drawing" diagnostic methods (Fig. 1).

During the formation period, a lesson plan was drawn up and implemented for the students of the experimental group based on neuropsychological exercises aimed at developing creative abilities.

To determine the effectiveness of classes based on neuropsychological exercises in the control period, the diagnostic methods used during the identification period were repeated, and the effectiveness of neuropsychological exercises was determined. The diagnostic results at the identification and control stages were compared.

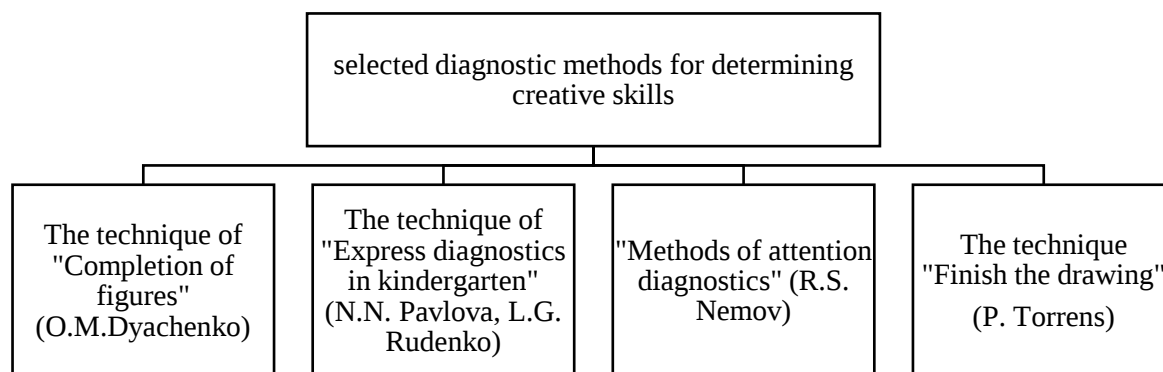


Figure 1. Diagnostic methods selected for the purpose of determining creative abilities.

Literature review.

Since the term "neuropsychology" appeared in different parts of the world at the same time, it is difficult to name the scientist who first introduced this term. However, the emergence of the term "neuroeducation" is associated with the name of the American scientist O'Dell. His first major work on neurobiology "Neuroscience: Brain-Based Learning Strategies" was published in 1981 [2]. Currently, there is no difference in the interpretation of the terms

neuroscience and neuropsychology, they are used as uniform synonyms. In addition, many works have been published based on the proposed and implemented terms "pedagogical neuropsychology", "neuroscience and learning", "pedagogical neurobiology". In the works of S. Mason, neurodidactics is defined as a field of pedagogy that studies the mechanisms of brain activity associated with neuroeducation and teaching school subjects [3]. The term "neuropsychology" (neuropsychologie) is often encountered in French-

speaking countries, and it has also been established that the term "neuroeducation" is more frequently used in the world scientific literature.

In the last decade, neuropsychological research has become a relevant topic of research in many countries of the world. In the second half of the 20th century, interdisciplinary research began in the field of neurobiology, psychology and pedagogy. Initially, they were conducted by psychologists and doctors of medicine, and then by neurophysiologists and neuropsychologists of various fields over a long period of research in existing scientific disciplines. The achievements of these two related fields were combined into an integrative direction - neuropsychology. The formation and development of neuropsychology was supported by the scientist-psychologist L.S. Vygotsky's work [4] in the field of educational psychology, as well as the founder of neuropsychology A.R. Luria [5] "Fundamentals of Neuropsychology", foreign J. Brewer [6], R. Kane and G. Kane, S. McClintic, K. R. Kane's Clinic [7], L. Erlauer [8] and others. It is based on scientific research by scientists related to the cognitive aspects of human development.

The use of neuropsychology in education and upbringing became the basis for the research of Russian scientists who followed the works of A. R. Luria, such as T. V. Akhutina, J. V. Glozman, E. M. Semernitskaya, A. V. Tsvetkov [9]. The term "school neuropsychology", which designated it as an important direction in the practice of psychological support for preschool and school-age children, was coined in connection with the name of J. Hind [10].

Starting Since the 90s of the last century, neuropsychology has become the starting point for the identification of a new scientific direction, the main tasks of which were drawn up by T.P. Khrizman, which was associated with the need to take into account the age dynamics of the maturity of the child's brain structures when organizing the educational process at school and the individual characteristics of the child's brain activity.

Neuropsychology (neuropsychopedagogy) is a science about the theory and technologies of education, based on the data of modern neurosciences. It is composed of the words "neuron", "pedagogy", "psyche". The brain and body of a child develop especially quickly in infancy and early childhood, so they are very sensitive to external influences. Therefore, I.P. Klemantovich and V.G. Stepanov, for the further harmonious development of the child it is very important not only to acquire certain skills, but also to know harmful and useful actions [11].

According to K.A. Mornov, neuropsychology includes pedagogy, psychology, neurobiology, cybernetics and is a personality-oriented approach to education and training. That is, it includes the child's inner world, emotions, feelings, psychological reaction, individual characteristics of the brain, psychophysiology of the child, which is a necessary basis for the pedagogical activity of the teacher, includes an integrated approach to his education and development. The main goal of neuropsychology is to

create a system of training and education that optimally takes into account the individual neuropsychological characteristics of children, based on the study of the brain foundations of human mental activity associated with the reception, storage, processing and reproduction of information. and experience in order to integrate a child-oriented approach in education in order to help the child in self-development [12]. The theoretical foundations of neuropsychology are based on the history, philosophy and epistemology of these various disciplines.

Currently, interest in neuropsychology in developed countries is growing every day. It is necessary to introduce neuropsychology into educational and upbringing activities:

- increase children's mental energy;
- development of interhemispheric connections;
- attention, memory, thinking, etc. development of higher mental functions;
- development of a high level of intelligence;
- improve learning outcomes;
- due to factors such as the emergence of a new generation of teachers.

Today we consider neuropsychology as a complex educational system of education and training based on the achievements of neurobiology. It studies neuropsychological systems, their properties and processes. The science of neuropsychology includes neurodidactics, neuropsychological diagnostics, neuropsychological education, neuropsychological correction and adaptation, neuropsychological organization (educational process).

J. Saunier, H.H. Traugott, T.P. Chrisman, K. Hannaford, B. Scientists like Samples believe that "if a teacher teaches only the left hemisphere, then only the left hemisphere receives information, and if he teaches the right hemisphere, then the entire brain is trained and receives information."

Research related to the science of neuropsychology was conducted within the framework of cognitive characteristics, cognitive style in education. Among them are Ya.A. Tunkun (2009), Better L. Better Lu (2000), Yu. Lighttill (2004), A.A. Tolsteneva (2008) and others, there are scientific works of foreign scientists.

There are not many studies in the field of neuropsychology in our country. All this is due to the fact that the topic of neuropsychological research has not yet become widespread in Kazakhstan. However, the prerequisites for development can be seen in the use of types of neuropsychological exercises in preschool educational institutions of the country. In addition, in scientifically analyzed works it is clear that the problems of introducing neuropsychology in secondary educational institutions are being raised. However, the idea of introducing neuropsychology in higher education has not yet been fully developed.

In 2018, the seminar "Efficient Technologies for Developing a New Textbook Model" held by the Republican Scientific and Practical Center "Uchebnik" in Astana revealed the need to use neuropsychological technologies in the process of developing a modern textbook. At that time, many researchers suggested

taking into account the following rules of neuropedagogy:

- the brain develops under the influence of creative freedom in certain conditions, while pressure and coercion, as well as the danger caused, inhibit brain activity;
- the brain has a certain memory system, flexibility of thought processes, etc. in terms of the volume and speed of receiving and processing critical information) has its own characteristics.

Based on the research of A.S.Mambetalina, when organizing knowledge testing during individual and frontal surveys, it was established that the teacher uses 83% of methods that develop the left hemisphere of the brain. The formation and development of cognitive universal educational activity is achieved by the following methods:

- analysis of details of objects and processes, obtained results;
- determine the differences and common features of objects and processes, features of the external and internal structure of an object;
- work according to the algorithm;
- classification (classification) and creation of categories, etc.

It is also known that in lessons teachers use only 16% of the methodological techniques that develop the capabilities of the student's right hemisphere. Only when information and actions are registered in the visual-spatial memory system does a person understand and remember it well.

It is very convenient not only to classify it, but also to find and reproduce it at the right moment. Mechanical memorization of information given by the teacher is completely different in its productivity from visual memory in terms of the types of students' activities, which allows them to come to a certain conclusion as a result of their search and thinking activity. A differentiated approach to educational activities is an important neuropedagogical factor in the effective organization of a lesson [13].

Results and discussion. Description of selected diagnostic methods for determining the level of creative abilities of preschool children:

1. The method "Completing figures" (O.M. Dyachenko). Method - the level of development of imagination,

is aimed at determining the ability to create original images. Accordingly, carried out in a playful manner, it shows the level of creative thinking of children. When carrying out the method, the child's creative initiative is demonstrated, and organizational, planning and guiding abilities are also determined [14].

Task: complete the pictures on the theme "The Mystery of Fruits and Vegetables".

Purpose: develops interhemispheric communication.

Procedure: Using pencils of different colors, the left or right hand continues, completes and colors the rest of the figures.

2. "Express diagnostics in kindergarten" (N. N. Pavlova, L. G. Rudenko) - at preschool age, a child begins to develop visual thinking. Children will be able not only to visually solve a problem, but also to transform an object. Figurative thinking is the ability to think, understand and perceive information in the form of images, symbols or associations, not only verbally or abstractly. Children with developed figurative thinking easily imagine objects in the form of pictures, diagrams, models or metaphors [15].

Task: Transform these figures.

Objective: develops the child's visual-logical level of thinking, features of cognitive development, interhemispheric connections, and level of intellectual thinking.

Implementation: creating new pictures by transforming figures given in different forms.

3. "Methodology of Attention Diagnostics" (R. S. Nemov) This set of methods is intended to study children's attention, assess its properties such as efficiency, stability, transience and volume. Each of the characteristics can also be considered as a separate assessment of individual and general attention. In the process of diagnosing the above-mentioned features of attention, important methods for diagnosing children's figurative-logical and visual thinking were proposed [16].

Task "Numbers and colors".

Objective: to know numbers and recognize colors, develop the ability to observe, strengthen self-confidence, develop emotionality, imaginative thinking and logic.

How to: Quickly find numbered colors and match numbers.

4. "Completing the picture" (P. Torrance) - the participants of the experiment are presented with a set of figures and asked to assemble them so that a meaningful picture emerges from each of them. The experimenter-teacher can also observe creativity by asking the child to describe the finished picture [17].

During the identification period, the initial level of creative abilities of children in the experimental and control groups was determined on the basis of the four diagnostic methods described above (Table 1).

Table 1. Primary diagnostics of creative abilities of children in the experimental and control groups during the identification period

No	Methodology	Control group			Experimental group		
		Up	Average	Down	Up	Average	Down
1	Methodology "Completing figures" (O.M. Dyachenko).	49%	31%	20%	45%	39%	16%
2	"Express diagnostics in kindergarten" (N.N. Pavlova, L.G. Rudenko)	42%	32%	26%	40%	44%	16%
3	"Methods of Attention Diagnostics" (R.S. Nemov)	54%	17%	29%	56%	18%	26%
4	"Finish the picture" (P. Torrance)	45%	24%	31%	49%	20%	31%
<i>Creative skills as a result of all methods</i>		47.5%	26%	26.5%	47.5%	32.5%	20%

During the period of formation of the research work for children of the preschool group of the experimental group, daily neuropsychological classes were held for one month (Table 2). The exercises changed every week depending on the skill of the teachers.

Table 2. Neuropsychological classes conducted in the formative period

No	Neuropsychological exercises	Description/Meaning	Necessary tools and materials
1	Finger painting	Encourage children to finger paint and let them create any scene they can imagine. This activity develops sensory perception and fine motor skills; drawing helps calm the brain and free thinking.	Colored paints and paper for drawing.
2	Musical game	Children should be encouraged to play instruments voluntarily (individually/in groups). This improvisational exercise develops ear and musical acuity.	Drums, bells, xylophone, etc. musical instruments
3	Theatrical performance	Children must make up stories from their thoughts and tell them to other children in the group, using puppets in the performance. Develops speech and imagination.	Toys and dolls for performances
4	Constructors and building blocks	Children should be asked to construct a building, offering them construction sets of different shapes. Such exercises develop spatial thinking and imagination.	Constructors of various shapes
5	Games with natural materials	It is necessary to recommend making applications and compositions based on natural materials. With the help of this exercise, you can develop children's creative thinking.	Stone, tree branch, leaf, soil, etc. natural materials
6	Creative tasks	Ask children: "If you were a wizard...", "What game would you invent?", "If you were a teacher..." and so on. Promotes the development of imagination and creative thinking by asking questions.	Selection of necessary materials based on children's answers.
7	Organizing a handicraft master class	It is necessary to organize classes on modeling from plasticine, making crafts from paper, sewing simple toys. Develops fine motor skills and creative thinking.	Plasticine, paper, etc. materials for handicrafts
8	Exercises based on neuropsychological tools	Performing exercises aimed at training the right and left hemispheres of the brain with tools such as a neurolabyrinth, neuroboard, water joker, cube.	Neurolabyrinth, neuroboard, water bike, cube, etc.

"Finish the picture" (P. Torrance), "Methods of diagnostic attention" (R.S. Nemov), "Express diagnostics in kindergarten" (N.N. Pavlova, L.G. Rudenko), conducted during the control period for the experimental and control groups. "Figures" (O.M. Dyachenko) diagnostic methods were repeated.

According to the results of diagnostic methods, the creative abilities of children in the experimental group increased by +20.5%. At the same time, there are no reliable changes in the results of children in the control group (+2.5%) (Table 3).

Table 3. Primary diagnostics of creative abilities of children in the experimental and control groups during the observation period

No	Methodology	Control group			Experimental group		
		Up	Average	Down	Up	Average	Down
1	Methodology "Completing figures" (O.M. Dyachenko).	52%	25%	23%	68%	25%	7%
2	"Express diagnostics in kindergarten" (N.N. Pavlova, L.G. Rudenko)	45%	30%	25%	61%	34%	5%
3	"Methods of Attention Diagnostics" (R.S. Nemov)	55%	19%	26%	75%	11%	14%
4	"Finish the picture" (P. Torrance)	48%	22%	30%	71%	18%	11%
<i>Creative skills as a result of all methods</i>		50%	24%	26%	68%	22%	10%

During the control period, the initial and final levels of the experimental and control groups were compared (Fig. 2).

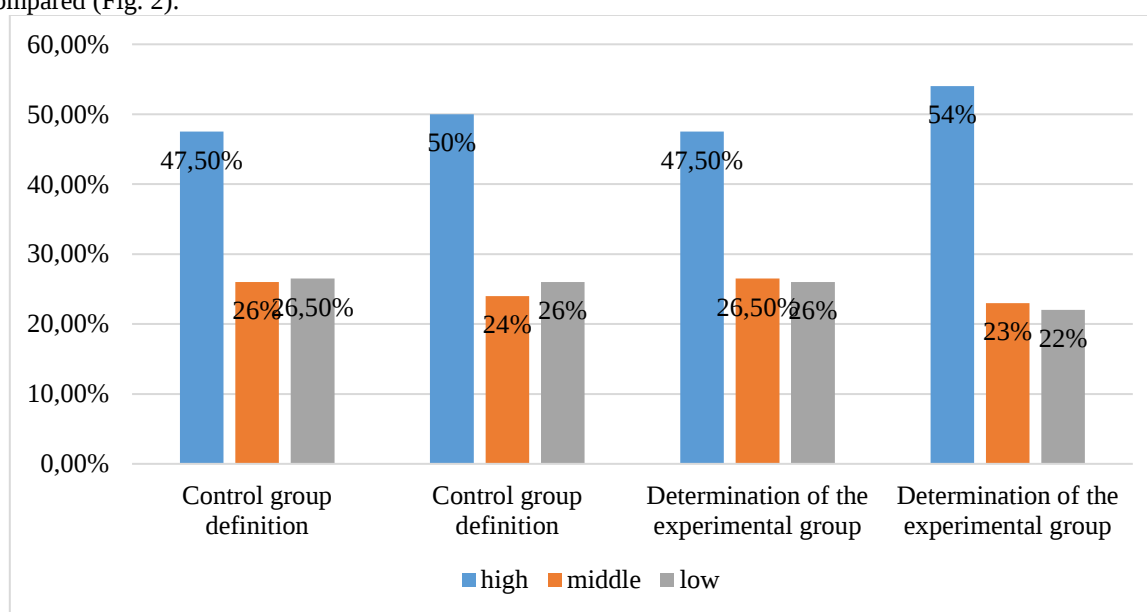


Figure 2. Comparative review of the results of experimental work at the stages of detection and control and growth dynamics

During the opening experiment, the criteria for the development of creative abilities of preschool children were determined, diagnostic material was selected and 5 years No. 153 p. Preschool group of kindergarten. The children were diagnosed with the level of development of creative abilities. Based on the results obtained during the clarifying experiment, as well as the generalization of psychological, pedagogical and scientific and methodological literature, a system of neuropsychological classes aimed at developing children's creative abilities was created. Diagnostics in the control period. The results of diagnostics of the development of creative abilities of preschoolers in the experimental group showed reliable positive dynamics compared to the control group. This allowed us to conclude that the preschool group is effective in developing children's creative abilities through neuropsychological exercises.

During the control period of the experimental work, an increase in the direction of development of children's creative abilities was observed. Pedagogical

observations were carried out during the performance of tasks that determine the development of the child's creative abilities.

The assessment was carried out according to the selected criteria:

1) Children's attitude to the tasks. Most children (68%) showed a positive attitude and readiness to perform these tasks. The remaining children (32%) showed a neutral attitude to the tasks. This shows the children's positive attitude to creative tasks.

2) During the task, none of the children objected to the task. This shows the children's readiness for creative work.

3) It was found that all children (100%) asked additional questions: for a better understanding of the task itself, more than half (60%) asked questions related to the expansion of the conditions of the task.

4) A third of the children (30%) were found to need additional training. This shows that children are beginning to show creativity in completing tasks.

V.A. Sukhomlinsky said: "The beginning of children's abilities and talents is at their fingertips. Figuratively speaking, thin curls from their fingers strive to feed the source of creativity. The more skillful the child's hands are, the smarter he will be" [18]. Therefore, all the above-mentioned activities, in addition to good development of children's finger motor skills, develop their creative abilities, perception, imagination and thinking, independence, etc., helping in the discovery and development of properties.

Conclusion. Creativity is a very rare, unique natural phenomenon that forms the basis of talent. Developing a child's creative abilities is essential for the comprehensive and correct development of the individual. Identifying creativity in children is an interesting and important process that helps to understand their special abilities and potential.

Although every child has creative abilities, they are not realized at the proper level and do not manifest themselves. However, it is possible to fully reveal a child as an individual through creative activity. A significant number of children, regardless of their skills and dexterity, face difficulties in creativity due to insufficient cognitive interests, lack of activity, initiative, persistence and the ability to achieve goals. It is important to create all possible conditions for the full realization of the child's creative development potential. To do this, it is necessary to know the content of creative abilities, correctly choose the ways and methods of influencing the sensitive development of creativity, the success of its formation.

Thanks to imagination, a picture is formed in the preschooler's mind based on the perception of an object. In the process of visualization, children depict objects of the surrounding reality, create a simple sculpture from plastic materials. The child not only sees what he has made, but also touches, takes and, if necessary, changes. During modeling, relying on knowledge of reality, the child imagines all sides of the object. Therefore, he does not need to resort to traditional images that are necessary in other types of activity. Thanks to this, children quickly master the methods of depiction and move on to independent activities without the help of an adult, which in turn leads to the rapid development of creative skills [19].

In addition to developing fine motor skills, neuropsychological exercises contribute to the development of creative abilities in preschool children:

- increases sensory sensitivity, i.e. promotes subtle perception of form, structure, color, weight, plasticity;
- develops imagination, spatial thinking, general dexterity and fine motor skills;
- promotes coordinated work of both hands;
- develops the ability to plan the execution of work, predict the result and achieve it, and, if necessary, make adjustments to the original plan;

As a result of the study conducted with this in mind, it was established that neuropsychological principles are effective in developing the creative abilities of preschool children.

References:

1. Toqayev Q.K. Halyq birligi zhane zhujeli reformalar – el orkendeuining berik negizi. Qazaqstan halqyna Zholdauy [The unity of the people and systematic reforms are a solid foundation for the country's prosperity. Address to the people of Kazakhstan]. – Astana, 2021 (In Kazakh)
2. O'Dell J. Neuroeducation: Brain compatible learning strategies. Doctoral dissertation, University of Kansas. Lawrence, 1981. (In English)
3. Masson S. Enseigner les sciences en s'appuyant sur la neurodidactique des sciences // Regards multiples sur l'enseignement des sciences. 2007. P. 308-321. (In English)
4. Vygotskij L.S. Voobrazhenie i tvorchestvo v detskom vozraste [Imagination and creativity in childhood]` (SPb.: SOJuZ, 1997, 96 p.) (In Russian)
5. Lurija A.R. Osnovy nejropsihologii: uchebnoe posobie [Fundamentals of neuropsychology: a textbook]. (M.: Akademija, 2008, p. 214) (In Russian)
6. Bruer J. Schools for thought: A science of learning in the classroom / J. Bruer. — Cambridge : MIT Press, 1993. — 325 p. (In English)
7. Caine R. Making connections. Teaching and the Human Brain / R. Caine, G. Caine. — California : Menlo Park, 1994. — 214 p. (In English)
8. Erlauer L. The brain-compatible classroom: Using what we know about learning to improve teaching / L. Erlauer. — Alexandria, VA : ASCD, 2003. — 177 p. (In English)
9. Churilo N.V. Nejropedagogika kak osnova jeffektivnogo obrazovatel'nogo processa [Neuropedagogy as the basis of an effective educational process.]. (Auditorium. Jelektronnyj nauchnyj zhurnal Kurskogo gosudarstvennogo universiteta. 2019. № 2 (22). p. 18-26.) (In Russian)
10. Ahutina T.V., Pylaeva N.M. Metodologija nejropsihologicheskogo sprovovzhenija detej s neravnomernost'ju razvitija psihicheskikh funkcij // A.R. Lurija i psihologija XXI veka: doklady II Mezhdunar. konf., posvjashh. 100-letiju so dnja rozhd. A.R. Lurija [Methodology of neuropsychological support for children with uneven development of mental functions // A.R. Luria and psychology of the XIX century: reports of the International Conference, dedicated. The 100th anniversary of the birth of A.R. Luria] (M.: Smysl, 2003. p. 181–189.) (In Russian)
11. Klemantovich I.P., Stepanov V.G. Nejropedagogika: Predmet issledovaniya [Neuropedagogy: The subject of research] (Fundamental'nye issledovaniya, 2015. №2(11), p. 2464-2468.) (In Russian)
12. Mornov K.A. Nejropedagogika: osnovnye polozheniya, cel' i zadachi [Neuropedagogy: the main provisions, purpose and objectives] (Trudy Bratskogo gosudarstvennogo universiteta. Seriya: Gumanitarnye i social'nye nauki, 2019. V. 1. p. 56-58.) (In Russian)
13. Mambetalina A.S., Ryskulova M.M., Zhumagalieva Z.N. Primenenie nejropedagogicheskogo podhoda v processe obuchenija v Kazahstane i v zarubezhnyh stranah [The application of the neuropsychological approach in the learning process in Ka-

zakhstan and in foreign countries]. (Pedagogika: istorija, perspektivy. 2019. V.2. N.5. p.99-107) (In Russian)

14. D'jachenko O.M. «Razvitie voobrazhenija doshkol'nika». Metodicheskoe posobie dlja vospitatelej i roditelej ["Developing the imagination of a preschooler." A methodological guide for educators and parents] (Moskva: Mozaika-Sintez, 2007. 159 p.) (In Russian)

15. Pavlova N.N., Rudenko L.G. Jekspress-diagnostics v detskom sadu: Komplekt materialov dlja pedagogov-psihologov detskih doshkol'nyh obrazovatel'nyh uchrezhdenij [Express diagnostics in kindergarten: a set of materials for teachers-psychologists of preschool educational institutions.]. (M.: Genezis, 2008, 80 p.) (In Russian)

16. Nemov R.S. Psihologija: Ucheb. dlja stud. vyssh. ped. ucheb. zavedenij: V 3 kn. Kn. 3: Psihodiagnostika. Vvedenie v nauchnoe psihologicheskoe issledovanie s jelementami matematicheskoy statistiki [Psychology: Studies for students. higher education. institutions: In 3 books. Book 3: Psychodiagnostics. An

introduction to scientific psychological research with elements of mathematical statistics.] (M.: Gumanit. izd. centr VLADOS, 2001, 640 p.) (In Russian)

17. Torrens P. Test kreativnogo myshlenija. Figurenyj subtest [A test of creative thinking. Figure subtest]. (M.: Assoc. prakt. psihologov, 1993, 24 p.) (In Russian)

18. Suhomlinskij V.A. Balara zhyrek zhyluy [Heart warmth for a child]. (Almaty: Mektep, 1976, 303 p.) (In Kazakh)

19. Glebova I.Ju. Metody i priemy razvitija tvorcheskogo voobrazhenija doshkol'nikov v processe lepki. Aktual'nye zadachi pedagogiki: materialy IV mezhdunar. nauch. konf. [Methods and techniques for the development of creative imagination of preschoolers in the modeling process // Actual tasks of pedagogy: materials of the IV international scientific Conference] (Chita: Izdatel'stvo Molodoj uchenyj, 2013, p. 31-34.) (In Russian)