

Developing Cognitive Flexibility in Preschool Children Based on Constructive Tasks

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Abstract: This article discusses the directions and methods of developing cognitive flexibility in preschool children based on constructive tasks. Constructive tasks are one of the main directions of developing cognitive flexibility, aimed at developing children's skills of independent thinking, different approaches to problem situations, finding new solutions, and adapting their activities to changed conditions.

Keywords: Cognitive flexibility, constructive tasks, independent thinking, cognitive ability, facilitative support, cognitive schema.

Introduction: Cognitive flexibility in preschool children is manifested, first of all, by the ability to change the way they think. For example, when a child makes an object from a constructor, if the initial plan does not work out, he can use other parts or build the object in a different way. In this case, the child reassesses the current situation and switches to a new solution. Also, the child can adapt to changes in the rules during the game, group objects according to their new features, imagine the use of one object in several tasks, or offer different response options for a particular situation. One of the important aspects of the development of older preschool children is the formation and development of their cognitive abilities, cognitive flexibility. Cognitive flexibility is the main activity of children, which is important for the intellectual development of the child, clarifying his knowledge of the world around him. Cognitive abilities in older preschool children can be developed in various ways, and development through creative activity is considered more effective. "Abilities do not consist only of knowledge, skills and abilities, although they emerge and develop on their basis, but when determining children's abilities, one should be very careful and

tactful, not assuming that they know something poorly, or that they lack abilities. Such mistakes are sometimes made even with future great scientists who, for some reason, did not study well at school." [1] The role of the educator, but also of parents, in developing the abilities of preschool children is invaluable. "From cognitive abilities, one can clearly observe the development of intelligence, perception, memory, thinking, thinking activity, and children's worldview. Cognitive abilities are the development of a person, that is, the ability to acquire new knowledge from an early age and apply it in practice. At any age, a person learns new things. He receives the necessary knowledge in various fields and areas, receives and processes information from the world around him"[2]. Cognitive ability is the level of logical thinking, problem solving, and creative approaches appropriate to a child's age. When children are taught to think creatively and logically in preparation for school, cognitive ability is developed, which leads to the development of imagination, perception, memory, and reasoning. As these aspects are improved, the child becomes more interested in the world around him, the social environment, and events as he grows up. Cognitive flexibility is the ability of a

child to change his way of thinking when the situation changes, to find multiple solutions to a problem, to switch between different rules, and to draw new conclusions based on his own experience.

LITERATURE REVIEW

It is known that 70% of cognitive abilities are formed in preschool age (especially in children aged 5-6), therefore, supporting the child during this period determines the future potential. In Karshiyeva's textbook "Cognitive Psychology", the following are included in cognitive abilities. Cognitive processes - perception, thinking, attention and memory.[3] These processes need to be developed in older preschool children, but the fact that the educator does not fully understand these concepts causes the slow development of this ability in children. The educator must constantly be able to work on himself, understand new terms, their fundamental essence, and be armed with new didactic materials. Combining creative activities with center-based classes gives effective results in the development of cognitive abilities. D. Babayeva emphasized the role of innovative multimedia technologies in the development of cognitive abilities: "The use of computer game programs in preschool educational organizations creates an opportunity for the formation and strengthening of a number of positive qualities in students: it allows them to demonstrate their abilities and talents, creates a basis for independent action, forms communication skills, teaches how to interact with people, forms self-control, develops figurative imagination and figurative thinking in students, develops speech, creative thinking and cognitive abilities"[4]. MG Davletshin[5] commented on J. Piaget's theory in his books, stating that education can only somewhat accelerate or slow down the maturation process, but cannot affect the process of mental maturation. He emphasized that education should be subject to the laws of development, that is, it is impossible to teach a child to think logically before logical thinking has developed. Logical thinking shapes a child's worldview, interactivity, ingenuity, intelligence, creativity, communication, cognition, intellectuality, and social activity.

Vygotsky argued that cognitive development is a social process, and that children learn ways of thinking and behaving that they can imitate by relying on adults and more advanced peers.[6] The position that "learning

leads to development"[7] is widely held. Criticizing the child-centered focus of Vygotsky's theory, he argues that it is important to consider how the child's culture and social environment influence their development. Social environment attitudes and values and beliefs influence children's cognitive development.

According to research conducted by Russian psychologist A.A. Lyubinskaya[8], children's perception of familiar objects begins in early childhood, only during this period they are based on some integral feature of the object. By adulthood, they develop the ability to distinguish objects.

AV Zaporozhes was a Soviet psychologist and a major contributor to the field of cognitive development. The scientist is known for his scientific research into the psychology of preschool children. Zaporozhes's[9] theory of cognitive development places particular emphasis on the development of children's creative activities and games. Cognitive abilities (thinking, attention, memory) are developed through the processes of working with children, especially through creative games. Creative games allow children not only to express their personal feelings, but also to acquire new knowledge, as well as to develop social and logical skills.[10]

METHODOLOGY

The most effective methods for developing cognitive flexibility in preschool children based on constructive tasks are those that encourage the child to seek different solutions to a problem, change thinking strategies, experiment, and make independent decisions.

Problem-solving method - the child is given a task to solve a specific problem. For example, "The car is not passing over the bridge. How can it be changed?" The child reconsiders the old solution and looks for a new strategy.

The method of variant construction - it is proposed to create different objects from the same materials. For example, building a house, tower, bridge and tunnel from the same cubes, develops flexibility of thinking, divergent thinking and finding alternative solutions.

The method of changing rules - the child groups construction materials first by color, then by shape, then by size, or changes the construction rule, developing the transition from one thinking rule to

another, attention control, and adaptation to new conditions.

The trial and error learning method - the child tests the device, identifies flaws and rebuilds it, developing skills in updating the strategy, analyzing the result, and solving the problem independently.

Collaborative construction method - children create a project together, exchange ideas and try out different proposals, developing the ability to accept different points of view, compare solutions and revise their own views.

The method of leading questions - the teacher does not give ready-made answers, but helps the child think independently, for example: "What other way is there?", "What if the material decreases?", "How can you strengthen your device?", develops metacognitive thinking, control of one's own activities, and conscious modification of solutions.

Constructive tasks are practical activities aimed at children creating a specific object, model, device or composition using various materials. In construction tasks, children look for different solutions by creating a house, bridge, tower or other object from cubes, constructors and geometric shapes. Problematic constructive tasks, for example, build a strong bridge with a small amount of material or create a path for a toy car to pass. The child tries, analyzes his mistakes and changes the solution. Creative constructive tasks, making new objects from paper, cardboard, natural materials and recycled items, stimulate children's imagination and unusual thinking.

The main advantage of constructive activity is that the child does not just repeat a ready-made model, but makes independent decisions, checks the result and, if necessary, changes his approach.

RESULTS AND THEIR ANALYSIS

Cognitive flexibility in preschool children is manifested in the following skills:

- making different objects and shapes from the same materials;
- looking for alternative ways to complete the task;
- trying another solution when a device or design fails;
- change the classification criteria based on shape, color, size, and function;

- explain their own opinions and take into account the suggestions of their peers;
- Restructure the plan based on new conditions.

Cognitive flexibility is closely linked to cognitive processes such as attention control, working memory, creative thinking, and problem solving.

Mechanisms for developing cognitive flexibility

The purposeful organization of constructive tasks is carried out through the following mechanisms:

1. Creating a challenging situation. The child is given a task that is difficult to complete in the usual way, but is age-appropriate.
2. Seeking alternative solutions. The child tries different ways to achieve the same result.
3. Change the plan. If the initial solution doesn't work, the child chooses a new method.
4. Analysis of the result. The child determines what worked well and what needs to be changed.
5. Experimentation and reflection. The child explains his solution and compares it with the methods of other children.

The task of the educator is not to give a ready-made answer, but to guide the child through questions that encourage independent thinking. By giving practical constructive tasks, the child develops the ability to make independent decisions. Activities that can be developed in children based on the following tasks: 1. "Let's build a strong bridge", 5–7 years old

Task: build a bridge between two supports that a toy car can pass through.

Condition: the bridge must be built from a specified number of cubes.

Develops: planning, problem solving, reconsidering an unsuccessful solution. 2. "Different images from one shape", 4–6 years old

Task: create a house, animal, vehicle, or other image from the same geometric shapes.

Condition: each new image must be different from the previous one.

Develops: divergent thinking, imagination, and the ability to use the same material in different ways. 3. "Change the Rule", 5–7 years old

Task: Group shapes first by color, then by shape, then

by size.

Condition: the teacher changes the classification criteria at each stage.

Develops: cognitive switching, attention management, and adaptation to new rules.

Stages of organizing a training session

Stage	Pedagogical activity	Child activity
1. Motivation	Creates a problematic situation	Understands the task and shows interest
2. Planning	Asks guiding questions	Selects materials and methods
3. Construction	Creates conditions for independent activity	Builds, makes, and experiments
4. Change	Introduces an additional condition or new problem	Revises the original plan
5. Analysis	Encourages discussion of the result	Explains his/her solution and draws a conclusion

For example, a teacher might ask, “A bigger car now has to pass over the bridge you built. How would you change it?” This question encourages the child to adapt the existing structure to the new conditions.

Development assessment criteria

The following criteria can be used to monitor cognitive flexibility:

- Alternative solutions: How many different ways does the child propose for the same task?
- Changing strategy: trying a new method after failure?
- Adaptation to the rules: can it change its activities in accordance with the new directive?
- Independence: Will they find solutions on their own or will they need a lot of help?
- Reflection: Can they explain their choices and evaluate the outcome?

The following scale can be used to practically evaluate the results of observation. This is a recommended pedagogical observation tool and is not a standardized psychological test. When assessing, it is important to pay attention not only to the final product, but also to the child's process of finding a solution, his attempts and independent decisions.

To develop cognitive flexibility based on constructive tasks: select tasks appropriate to the child's age and individual capabilities, use open-ended tasks with several correct solutions, change materials and

methods of implementation from time to time, allow children to conduct independent experiments, perceive mistakes as an opportunity to learn, not as punishment, organize collaborative construction activities in pairs and small groups, listen to children's ideas and encourage them to explain their solutions.

CONCLUSION

Developing cognitive flexibility in preschoolers through constructive tasks supports their ability to change their thinking patterns, find alternative solutions to problem situations, adapt to new rules, and make independent decisions. In this case, constructive activity should not be limited to the process of making a simple object, but should include planning, testing, identifying errors, and improving the solution. It is necessary to teach a preschooler not only what to make, but also how to think, how to change their approach when a problem arises, and how to improve their solution.

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