ETHODS OF DEVELOPING LOGICAL THINKING IN CLASS 5-7 STUDENTS IN LESSONS OUTSIDE THE CLASSROOM

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A B S T R A C T	K E Y W O R D S
The article talks about effective methods of developing logical thinking in 5-7 grade students in extracurricular activities.	intuition, perception, imagination, gifted youth, human mental activity, extracurricular activities, circles, development of logical thinking, opinion, reasoning, idea, hypothesis, speech, analysis, synthesis, comparison, abstraction, judgment, conclusion, thought, word, logic, person oriented

INTRODUCTION

It is during this period that one of the important issues is the development of their logical thinking during lessons and extracurricular activities. It is known that thinking is the highest form of human mental activity; is the process of reflection of objective reality in the mind. Thinking is considered a tool for knowing the environment, social phenomena, reality, as well as the main condition for the implementation of human activity. It is a higher cognitive process that reflects reality more fully and clearly than intuition, perception, and imagination. Thinking is a special function of the human brain. Its neurophysiological basis is the interaction of the first and second signal systems. In the process of thinking, thoughts, opinions, ideas, and assumptions arise in a person, and they are expressed in the mind of a person in the form of concepts, judgments, conclusions, and are closely related to language and speech [1,78]. Thinking activity is manifested in the form of speech. In the process of speech communication, the range of emotional observation of a person does not expand, and the acquired experience is given to other people.

Man is distinguished from other creatures by his thinking, speech and conscious behavior. He determines the reality of the things and events that he reflects, perceives, and imagines in the activity of thinking, determines whether the formed judgments, concepts, conclusions are true or not. It summarizes and indirectly reflects reality through human thinking, realizes the most important connections, relationships, and characteristics between things and events. Therefore, a person has the ability to foresee the emergence, development and consequences of social events and events based on certain laws, regulations and rules.

Thinking is the object of research in many fields of science (philosophy, logic, sociology, pedagogy, physiology, cybernetics, biology)[2,83].

In psychology, thinking is divided into several types according to the degree of generalization of reality, the nature of a problem-solving tool, the novelty of situations for a person, and the level of activity of a person (visual action, visual image, practical, theoretical, voluntary, involuntary, abstract, creative, etc.). Communication and relationships between people in social life, educational process and production are also manifested with the help of thinking.

In the team, qualities of thinking such as critical view, self-criticism, assessment, verification, control, and group reasoning emerge. The perception of a person by a person, creative works, discoveries, inventions, proposals are the product of thinking. It is important to know the reality of the external world through the processes of intuition, perception and imagination, but these are still not enough for a deep reflection of the studied things and events. Because there is no possibility of direct observation of their mutual relations, qualitative and quantitative changes, complex internal connections, properties of interaction or determination with the help of sensory images. As this is the case, it is necessary to move from the stage of emotional cognition to the mental stage, that is, thinking, due to the limited possibility of dividing the subject's interaction with the object to be known into parts through direct reflection. With the help of thinking, in-depth knowledge of the environment, mutual internal relations between things, events and phenomena, determination of connections is manifested in the form of problems. As long as a problem does not arise in front of a person, then the thinking process cannot be formed.

Thus, when a person is unable to reflect the complex aspects of reality with the help of the emotional stage in his cognitive activity, he turns to thinking. In the cognitive activity of a person, intuition, perception, images of imagination and thinking continuously enrich each other. Accordingly, there are emotional and logical stages of the cognitive process.

Thinking differs from intuition and perception and has several characteristics.

1) is a generalized reflection of reality.

2) the second important feature is the direct display of links. Thanks to this feature, we will be able to explain the connections between various phenomena and events in nature and society.

3) reflects complex relationships between things and events. Human thinking is expressed through one or more words and concepts. Therefore, when a person is thinking, it seems as if he is expressing his opinion, and when he is speaking, he seems to be thinking. This process is carried out as follows.

1. Analysis and synthesis. 2. Comparison.3. Abstraction. 4. Generalization.5. Concretization. 6. Classification.

7. Systematization.

We will touch on each of them. It is necessary to use certain thinking operations in the development of logical thinking skills in students. These are: analysis, synthesis, comparison, abstraction, judgment, conclusion, etc.

Analysis is a process of thinking, with the help of which we mentally or practically divide things and events, analyze some of their parts and characteristics, study them in parts.

Synthesis is such a process of thinking that we mentally or practically combine some parts and fragments of things and events that were divided in the analysis and make them whole with the help of synthesis. Analysis and synthesis are two sides of a single process that are directly and firmly

connected with each other. If things and events are not analyzed, it cannot be synthesized, any analysis should be done on the basis of knowledge of objects and things as a whole.

Comparison is such a process of thinking that by means of this process it is determined whether things and events in the objective world are similar to each other or different from each other.

Abstraction is such a thinking process that with the help of this process, we distinguish the important features of things and events in the material world, and mentally separate from these features the secondary, unimportant features of things and events.

In psychology, Generalization means finding properties, signs, characteristics, symptoms in things and events and combining them on the basis of this generality.

Concretization refers to the application of general, abstract signs and characteristics to single, isolated objects, and the connection of abstract concepts to concrete objects. In science, it is accepted to call the reasoning based on a certain sign representing the nature of things and events as Classification.

Systematization is the end of classification. An example of systematization is the arrangement of books in the library. For example, in the library, literature on pedagogy is located on one side and psychology on the other, which makes human work easier. As a result, one knows what to look for. In life, we can see systematization at every step.

Many complex issues of contemporary science require a more in-depth study of logical processes in thought. Thinking differs from other mental processes in that it emphasizes the existence of a problem situation, solving it, and the characteristics of deciding which person to distract from emotional experience and draw certain practical or theoretical conclusions, to expand the boundaries of knowledge. Thinking is often considered as a product of historical development of social practice, a separate theoretical form of human activity. Thinking reflects reality not only as simple images, but also as various relations and laws obtained theoretically.

In this regard, A. V. Brushlinsky wrote: "the original nature of thinking is that it always discovers something new independently, always open... Thinking is considered as a process, not prepared and presented in advance, but a formative process [3, 41]. Visible-active thinking is characterized by an integral relationship with things and information received by human perception, acting on direct connections; directly related to manipulated objects; in fact, it consists in solving the tasks set before it, without practical actions that are impossible.

This form of thinking is primarily focused on performing practical tasks. Actions performed gradually according to its complexity are manifested in external demonstration conditions. In this, the creation of the internal environment of the movement takes place, the relations between the elements take the form of a schematic view, and it is considered the first practical activity in the process of the mental development of the student, in which children's thinking first develops.

Before preschool age (up to three years), thinking is mainly visual-motor. During this period, the child practically grasps objects with his hands, separates, divides and re-combines them, compares, matches, connects, analyzes and understands one or another perceived object. Children of preschool age (4-7) develop a visual-image way of thinking. Figurative thinking is a form of thinking based on modeling and solving problem situations in the imagination.

In children of preschool age, visual-figurative thinking is completely subject to perception, and they are not distracted and cannot abstract. L.S. Vygotsky, in one of his last lectures on the mental development of students, emphasized that the primary school age is the period of active development of thinking in students. Junior school age (7-10) has a great opportunity to develop all cognitive

processes, including thinking. In order to form and develop logical thinking, it is often necessary to create suitable conditions that help the student learn, abstract, compare, summarize, analyze and synthesize scientific methods for acquiring new knowledge [4,46].

The system of thinking operations of the student until the age of 11 prepares the ground for the formation of scientific concepts, intellectual development, that is, during formal operations, the student is freed from the feeling of being clearly attached to objects, and at the same time, he has the opportunity to think deeply. Students of 5-9th grade are characterized by high intellectual activity, they know how to think and research. The independence of students by age requires that the teacher offers them general methods of intellectual activity, helping students to perform tasks independently.

The study of indicators of cerebral hemisphere asymmetry at different levels of psychomotor activity in different age groups showed that the observed 10-15-year-old students begin to think not only with images, but also have the possibility of abstracting. In particular, it is necessary to use the modeling of educational tasks, using them in the lesson, collecting images related to the feeling of this or that particular educational task. Lateralization of psychomotor actions at this age compared to other ages is emphasized by the reconstruction of the relations of the cerebral hemispheres at this age.

From the point of view of philosophy, thinking is a higher form of active reflection of the objective existence, which consists of the purposeful means and generalization of objects and events in the subject of existing connections and relations in the creative creation of new ideas, the prediction of events and actions"[5,37]. J. Piaget in his research defined logical thinking as the result of grouping of processes or their results and secondary processes[2,105] L.S. Vygotsky thought about logical thinking as follows:

"The main logical forms realized by thought are analytical (analytical) and observational (synthesis) activities of perception, that is, it first divides the perceived world into separate elements, and then builds new derivatives from these elements that help to understand the surrounding world" [3,46]. In psychology it is defined as follows: "Thought - based on words and logic - concept, is one of the types of thinking that uses logical constructions. It operates on the basis of language tools and represents the last stage of the historical and ontogenetic development of thinking. Types of generalization are formed and applied in the structure of verbal-logical thinking" [6,115].

Researcher-scientist N.A. Podgoretskaya refers to the skill of building one's actions in accordance with the laws of logic: "The skill of logical thinking: the skill of orientation to the signs of existing objects and events, obeying logical laws, building one's behavior in accordance with them, performing logical operations and realizing them includes the ability to describe, build hypotheses on this basis and draw conclusions about their consequences, etc. The ability to think logically includes a number of components: the ability to focus on the signs of existing objects and events" [6,116]. Also, logical (verbal-logical) thinking the following specific features are also described:

"The first criterion that distinguishes this type of thinking is the development of private logical thinking, which means becoming increasingly free from a large number of specific constituent elements in the real object world" [5,118]. In this regard, scientists N.N. Pospelov and I.N. Pospelov thought as follows: "The development of logical thinking in students is to give them knowledge on logical requirements and develop skills using these requirements in educational and practical activities" [5,117]. Some researchers approach the definition of logical thinking not only from the functional-operational point of view, but also in a broader sense.

They considered logical thinking to be a "productive process that includes heuristic, intuitive logical concepts". This, - writes A.D. Getmanova, - the science of pedagogy studies logical thinking by implementing cognitive processes in the process of education and upbringing of the growing generation [3, 51]. In the researches of many pedagogues and Methodist-scientists, it is emphasized that it is necessary to train students in logical ways of thinking. Some pedagogues understand the development of logical thinking as the acquisition of knowledge by students and the formation of skills and abilities in them, as well as their use in educational and practical activities [2, 149]).

In order to develop logical thinking, it is necessary to use methods and methods that are most suitable for the characteristics of students of this age group. Methodological substantiation of the diagnostic principles of the development of logical thinking in students of the 5th-9th grades in the course of extracurricular activities discussed in our study is based on the following:

1) to consider the development of logical thinking as a quality of a person reflecting a high-level integrated psychological system;

2) substantiating its connection with the dynamic theory of the development of logical thinking in the form of personality development quality (see Figure 1.1).
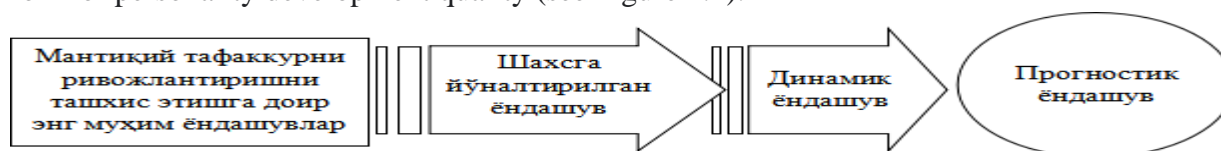

Figure 1.1. The most important approaches to diagnosing the development of logical thinking

Based on these principles, we identified the following most important approaches to diagnosing the development of students' logical thinking:

1) person-oriented approach. The investigation is aimed at studying the integrated system of interrelated qualities that serve for the development of a person in connection with the periods of young development, the interrelationship and interaction of intelligence and affect, the uniqueness of self-awareness, the levels of development of emotional-volitional and communicative spheres;

2) dynamic approach - a long-term study, using periodic observations to study the behavior of test subjects in different situations, studying the dynamics of its development, identifying psychological obstacles and means of overcoming them;

3) as a result of the examination, a prognostic approach based on researching not only the level of general and mental development of a person, the development of general and special abilities, the level of development of logical thinking, but also the prognostication of personal development aimed at determining his potential opportunities...

Based on the above, we cite the following as principles for identifying students with developed logical thinking in 5-9 graders:

- relying on psychodiagnostic methods that allow to achieve effective results in assessing the student's behavior in real life situations;

- having a comprehensive description of evaluating various aspects of the student's behavior and activity based on the use of various information sources and covering a wider range of his abilities;

- analysis of the student's behavior in the field of activity that is maximally compatible with the student's abilities and interests;

- use of training methods with a clear developmental effect, protecting the student from psychological obstacles;

- attracting experts and highly qualified specialists to assess the development of logical thinking in connection with the field of activity...

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