



## THE ISSUE OF DIRECTING STUDENTS TOWARDS LOGICAL THINKING IN EDUCATION

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### ABSTRACT

*The article discusses the importance, methods, and history of guiding students towards logical thinking in the educational process. It explores the relationship between logical thinking and other forms of thinking, examining their differences and common aspects. The article points out that among various types of thinking, independent thinking has been studied more extensively, and research in this area provides insights that can be applied to directing students towards logical thinking. Like all types of thinking, logical thinking relies on information obtained from the external world or internal experience, involving cognitive processes such as perception, concentration, memory retention, and information processing. It is goal-oriented, aimed at problem-solving and achieving specific objectives. Logical thinking can be learned, developed, and improved through education. The article considers the application of logical thinking in literary education, particularly in determining the true essence of texts and justifying conclusions.*

**Introduction.** Thinking is a complex cognitive process that enables us to understand the world around us, analyze information, solve problems, and make decisions. There are numerous types of thinking, each with its own unique characteristics and applications in specific situations. Thinking is a product of mental activity. It is an inherent concept, common to all humans. In philosophical, pedagogical, and psychological literature, more than 20 types of thinking are identified. Each field, based on its research object, tends to prioritize certain types as fundamental. Logical thinking, as one of the primary types, plays a crucial role in ensuring the rationality, consistency, and validity of our thoughts and actions. It is characterized by coherent and reasoned argumentation based on the principles of logic and deduction. Logical thinking involves the application of rules and laws that allow for drawing conclusions from given premises. It aims to identify cause-effect relationships and derive well-founded conclusions. Understanding the interrelationship between logical thinking and

other types of thinking is essential for the effective utilization of cognitive resources and achieving optimal results in various spheres of activity.

**Literature analysis and methods.** Among them, independent thinking is the most widely studied. Z.I. Nishonova, who examined it from a psychological perspective, explains that independent thinking is a person's ability to resist various influences of the external social environment through their thoughts and express their opinion, which is directly related to themselves and the existence of others. Q. Husanboyeva, who studied the methodology of teaching literature, provides a scientific view that "independent thinking is the mental activity of a person aimed at independently solving a problem in accordance with clearly defined goals and objectives, relying on their knowledge and life experience, using various ways, methods, and means at the level of their intellectual capabilities." B. Xodjayev gives a scientific definition: "Independent thinking is the ability of a person to see the problem, ways to solve it, and to find an independent answer to it. Independent thought does not depend on ready-made judgments or the opinions of others. It creatively approaches the cognition of reality and searches for new ways of studying it, leading to new hypotheses and theories," and considers individuality an important condition for independent thinking. In democratization, individuality is combined with responsibility to society. Individuality requires a person to be able to answer for their actions. In a free society, it is necessary to understand and strive for diversity in opinions and views. This is a complex task, and at the same time, this aspiration constitutes the essence of the democratic ideal. Freedom is the first step towards independent thinking. The presence and development of independent thought largely depends on the degree of freedom students have. It is considered necessary to achieve freedom for students at both individual and collective levels for the formation and development of independent thinking.

Before conducting a deep analysis of the interrelationships among types of thinking, it is necessary to briefly characterize the most common types of thinking.

Intuitive thinking is based on the process of unconscious information processing that leads to sudden understanding or finding a solution. It is characterized by speed, spontaneity, and lack of clear logical justification. Intuition often relies on past experiences and subconscious associations.

Creative thinking involves the generation of new and original ideas, approaches, and solutions. It is associated with imagination, fantasy, and the ability to view things from an unusual perspective. Creative thinking allows one to go beyond generally accepted norms and discover innovative solutions. Analytical thinking is characterized by the ability to break down complex information into components, analyze each of them separately, and determine the interrelationships between them. It involves the use of logic, statistics, and other tools for evaluating and interpreting data.

Abstract thinking is associated with the ability to work with abstract concepts, symbols, and ideas that are not tied to specific objects or situations. It allows one to understand complex concepts, create theories, and solve problems at a theoretical level.

Critical thinking is the process of actively and consciously evaluating information, evidence, and hypotheses. It includes the ability to identify biases, assess the reliability of sources, and draw well-founded conclusions. Critical thinking relies on logical reasoning but also takes into account context and possible limitations.

Regarding the connection between types of thinking and logical thinking, it can be said that logical thinking does not exist in isolation, but is closely intertwined with other types of thinking. In general, all types of thinking rely on information obtained from the external world or internal experience, and involve cognitive processes such as perception, concentration, memory retention, and information processing. They are aimed at achieving specific goals, such as solving problems, generating ideas, or understanding concepts. These thinking skills can be developed and improved through practice and learning.

Logical thinking plays an important role in the process of bringing creative ideas to life. It helps in systematizing thoughts, assessing the feasibility of ideas, and developing strategies for their implementation. Logic also aids in critically analyzing creative solutions, identifying their strengths and weaknesses.

Logic is the foundation of analytical thinking. Without applying logical principles and methods, it is impossible to analyze data and information.

Logical thinking enables one to identify patterns, establish cause-and-effect relationships, and draw well-founded conclusions based on available data.

When discussing logical and abstract thinking, it is worth noting that abstract concepts and theories require logical justification and consistent argumentation. Logical thinking allows for the creation of complex abstract models, drawing conclusions from these models, and verifying their correspondence to real life.

Logical thinking is a necessary, but not sufficient, condition for critical thinking. Critical analysis of information and evidence requires the application of logical principles such as consistency, sufficient justification, and rules of logical inference. However, critical thinking also demands consideration of context, potential biases, and other factors that may affect the reliability of information.

Despite the interconnectedness of thinking types, there are significant differences between logical thinking and other forms of thinking. Logical thinking, aimed at establishing truth and substantiating conclusions, demands consistency and validity.

**Discussion.** Based on the commonalities in types of thinking, factors identified as influencing the formation of independent thinking can also be applied to logical thinking. These are:

1. Physiological factors
2. Psychological factors
3. Social factors
4. Pedagogical factors

Physiological factors include the reflex activity of the nervous system and age-related characteristics of higher nervous activity. Dominants are associated with many mental processes. These include sensation, perception, thinking, memory, imagination, and attention, which require the balanced functioning of brain regions that ensure activity. The dominant, which attracts and accumulates the flow of excitation (impulses) from peripheral nerves to the central nervous system - the main source of stimulation in the cerebral cortex's nerve centers - simultaneously reduces the activity of other nerve centers. This explains why human behavior exhibits actions directed towards a single goal.

In essence, it is innate, but as a result of life experiences, it is nurtured, tempered, and reshaped under the influence of purposeful actions and the totality of external influences. This is achieved due to the extreme flexibility and adaptability of the cerebral cortex.

Psychological factors.

It is also linked to the development of intellectual activity. Intellectual skills encompass the development of memory, perception, imagination, and attention. The formation of thinking is connected with emotionality. It is necessary to eliminate negative emotions in the student and replace them with positive ones.

Social factors. Physiology and psychology demonstrate that a child is not born with ready-made abilities, but with the potential for manifesting and developing certain abilities - aptitude. Aptitudes cannot develop on their own; they are in a "dormant state," and a favorable environment is needed for their awakening and development. The environment is understood as the sum of external events that affect a person.

Pedagogical factors. Pedagogical factors are the most crucial elements influencing the formation of logical thinking. Four of these can be particularly highlighted. The first is the provision of students with educational and methodological literature. Independent thinking cannot be achieved with just a school textbook. To foster independent thinking in students, it is necessary to recommend additional reading materials. The teacher's personality and pedagogical activity hold a special place. The enrichment of educational content with new ideas, the continuous improvement of teaching methods, and the increasing requirements for teachers' knowledge levels - all of these demand that teachers constantly update and reinforce their knowledge, improve their qualifications, and enhance their methodological skills. One of the main tasks of the teacher is to select forms, methods, and means of education that facilitate the development of logical thinking.

Logic has been taught in education systems since ancient times. Historical sources indicate that the method of debate, which was one of the means of developing logical thinking, was widely used in classes at Central Asian madrasahs. In the former USSR, a separate "Logic" textbook was also published for secondary schools. This textbook was published in Moscow in 1954. Although the "Logic" textbook by S.N. Vinogradov and A.F. Kuzmin was originally written for schoolchildren, its content has a deep theoretical and academic approach. The textbook aims to explain and develop the fundamentals of logic and cultivate students' logical thinking skills. It outlines the classical principles, rules, and important theories of logic. The textbook contains the following main sections:

- thinking and its types;
- logical categories: concept, judgment, and inference;
- logic of reasoning and its rules;
- methods and techniques of formal logic;
- simple and complex affirmation (syllogism and other methods).

These sections are presented in an academic style and are often supplemented with theoretical explanations. Although the book is written in scientific language, efforts were made to present it in a more accessible style for schoolchildren. However, due to the abundance of mathematical formulas and the complexity of theoretical explanations, the book may be somewhat challenging for those without basic knowledge. While the content of the book is intended to be suitable for high school students (grades 9-11), it requires readiness to

grasp fundamental and complex concepts. Additionally, students can master the topics by applying their previous knowledge and logical thinking skills. Each topic includes explanations, examples, and exercises, which guide students in logical reasoning. Theoretical explanations predominate over practical applications. For a school student, the extensive theoretical sections may present difficulties. To better understand the more challenging topics in the textbook, a teacher and additional lessons are necessary. This textbook is an important resource dedicated to introducing and developing logic in school education.

**Conclusion.** In its relatively developed form, thinking is an indirect and generalized reflection of reality, which occurs in the human brain during practical activity. This definition implies, firstly, that the "world of thoughts" does not emerge in the human brain spontaneously or exist independently, but requires the "world of things," the reality of the actual world, as its inevitable condition. It depends on and is determined by this reality. Secondly, this definition uniquely reveals the dependence of thinking on reality. Thinking is a reflection of reality, that is, the reflection of materiality in an ideological form, in the form of thoughts. If reality itself has a systemic nature, consisting of an infinite set of various systems, then thinking is a universal reflective system with its own interconnected and interacting elements. Thirdly, the definition indicates the method of reflection - it is carried out indirectly, based on existing knowledge, rather than directly through the senses. This reflection has a generalized character and simultaneously encompasses a multitude of different objects and phenomena. Finally, fourthly, the definition points to the immediate basis of thinking: this is not reality itself, but its change, its transformation by humans in the process of labor - social practice. The closest and most direct basis of thinking is not itself, but reality itself, its change and transformation performed by humans in the labor process - which forms social practice. Logical thinking is the primary type of thinking that plays a crucial role in ensuring the rationality, consistency, and validity of our thoughts and actions. It is inextricably linked with other types of thinking, such as intuition, creativity, analysis, abstraction, and critical thinking. Understanding the interrelationships and differences between these types of thinking is necessary for the effective use of cognitive resources and achieving the best results in various fields of activity. The development of logical thinking, as well as other types of thinking, is an essential prerequisite for shaping thought processes, problem-solving, and making informed decisions in a complex and rapidly changing world. Further research in this area may focus on studying the neurophysiological mechanisms underlying various types of thinking, as well as developing effective methods for teaching and enhancing cognitive skills.

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