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## CRITICAL THINKING: ESSENCE, STRUCTURE AND CONCEPT MEANING

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**Abstract.** Today the idea of forming and developing critical thinking is attracting more and more attention from foreign and domestic scientists. This is primarily due to the lack of independence, social orientation, motivation and effectiveness of thinking of the younger generation. There is a tendency to increase the flow of information that should be processed daily by each person, but there is a question not only of perception and memorization of this information, but also critical thinking, highlighting important characteristics, achieving the truth of knowledge. The development of critical thinking becomes the main task of education, starting from preschool years, it is an important component of intellectual development of the growing personality. The article examines the phenomenon of critical thinking, presents an analysis of the situation of foreign and domestic researchers. The interpretation of the concept of «critical thinking» in view of various milestones in the development of psychological and pedagogical sciences, namely the views of researchers of the past and modern scientists. The urgency of the problem of formation and development of this concept, starting from preschool age is revealed by the authors. The difference between logical and creative thinking from critical thinking is also shown. The purpose, essence, content and structure of critical thinking are highlighted and the role of a teacher in the process of forming critical thinking in preschool children is determined. Emphasis is placed on the need for systematic, planned work on the development of critical thinking of preschool children, which takes place under the guidance of a teacher who has a high level of psychological and pedagogical consciousness, able to critically analyze pedagogical reality and show such abilities as flexibility, perseverance, willingness to plan reflection skills. The principles of critical thinking are formulated, which include independence, purposefulness, awareness, validity, controllability, as well as self-analysis and self-organization are important. Indicators of critical thinking are considered, which were divided into groups: affective, microcognitive and macrocognitive. According to the processed

information, the components and functions of critical thinking are identified. The authors stress the importance of the ability to think critically as one of the most important characteristics of personality development. The concept of definition of «critical thinking» in accordance with the characteristics of the thinking process is specified.

**Key words:** thinking; self-development; self-improvement; logical thinking; creative thinking; critical thinking; intellectual development; structure, qualities and functions of critical thinking.

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## КРИТИЧНЕ МИСЛЕННЯ: СУТНІСТЬ, СТРУКТУРА ТА ЗМІСТ ПОНЯТТЯ

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**Анотація.** В наш час ідея формування та розвитку критичного мислення привертає все більшої уваги з боку зарубіжних та вітчизняних вчених. З'ясовано, що це пов'язано, насамперед, з відсутністю самостійності, соціальної спрямованості, вмотивованості та результативності мислення підростаючого покоління. Спостерігається тенденція збільшення потоку інформації, яку слід щоденно опрацьовувати кожній людині, але постає питання не лише сприйняття і запам'ятовування цієї інформації, а й критичного осмислення, виділення важливих характеристик, досягнення істинності знань. Розвиток критичного мислення стає головним завданням освіти, розпочинаючи з дошкільних років, це важлива складова інтелектуального розвитку підростаючої особистості. У статті розглядається феномен критичного мислення, представлений аналіз положень зарубіжних і вітчизняних дослідників. Висвітлено тлумачення поняття «критичне мислення» з огляду на різні віхи розвитку психолого-педагогічних наук, а саме погляди дослідників минулого та сучасних науковців. Розкрито актуальність проблеми формування та розвитку даного поняття, починаючи з дошкільного віку. Показано відмінність логічного і творчого мислення від критичного. Виділено мету, сутність, зміст і структуру критичного мислення та визначено роль педагога у процесі формування критичного мислення у дітей дошкільного віку. Наголошено на необхідності систематичної, спланованої роботи

з розвитку критичного мислення дітей дошкільного віку, що відбувається під керівництвом педагога, який володіє високим рівнем психолого-педагогічної свідомості, здатний до критичного аналізу педагогічної дійсності та проявляти такі здібності як гнучкість, наполегливість, готовність до планування, володіти вміннями рефлексії. Сформульовано принципи критичного мислення, до яких можна віднести самостійність, цілеспрямованість, усвідомленість, обґрунтованість, контрольованість, а також важливими є самоаналіз та самоорганізованість. Розглянуті показники критичного мислення, які було розподілено на групи: афективні, мікрокогнітивні та макрокогнітивні. Відповідно до опрацьованої інформації виділені компоненти та функції критичного мислення. Схарактеризовано ознаки, притаманні критично мислячій людині. Наголошено на важливості вміння критично мислити як однієї з найважливіших характеристик розвитку особистості. Уточнено поняття дефініції «критичне мислення» відповідно до характеристик процесу мислення.

**Ключові слова:** мислення; саморозвиток; самовдосконалення; логічне мислення; творче мислення; критичне мислення; інтелектуальний розвиток; структура, якості та функції критичного мислення.

**Introduction and the current state of the issue.** At the present stage of development, humanity is called to accept many challenges and tasks the solution of which anyway depends on the level of development of thinking, ability to self-improvement, self-development: «Self-development is a continuous process that leads to certain goals through conscious and purposeful change of his personality where the most adequate form is self-improvement – conscious management of the process of personal development, self-realization in the world, achieving the fullness of existence» [26, p. 106]. A large amount of new information cannot be quickly and effectively adapted and comprehended which leads to uncritical perception of the surrounding reality, the attitude to their own «Self».

Nowadays a person's intellectual development is determined by a person's readiness to select the necessary knowledge through critical analysis, comprehension of information and ability to make independent decisions. Criticism as an essential property of thinking, as an important aspect of activity is especially important in mental education of children. The study of critical thinking among preschool children is an important task of psychological and pedagogical science. Arising at the very beginning of the socialization process of the child's personality, critical thinking becomes the personal formation which largely determines the future prospects of its intellectual abilities. Understanding criticality as a significant individual psychological characteristic that determines not only the productivity of mental activity, but also the social adequacy of the individual and makes it extremely important to form the basis of critical thinking, starting from the preschool age. The formation of critical thinking is a complex process, the result of which is a creative, active personality, able to effectively solve problems posed by the dynamics of social, cultural and political development.

The term «critical thinking» is known from the works of such famous psychologists as J. Bruner, L. Vygotskyi, J. Piaget. However, the analysis of research has shown that there is no single definition of «critical thinking». H. Lindsay interprets critical thinking as the ability of an individual to notice the inconsistency of behavior or expression of another person to conventional opinion or norms of behavior, their own ideas about them; be aware of the truth or falsity of assumptions, theories, illogical statements, the ability to respond to them; the ability to distinguish false from true, correct, as well as to

analyze, prove, refute, evaluate tasks and objects, to be a model of behavior or expression [12]. D. Halpern defines critical thinking as directed thinking, characterized by logic, purposefulness and balance, the use of cognitive strategies and skills that increase the chance of obtaining the desired result [25, p. 9]. R. Paul believes that the concept of critical thinking can be defined in different ways that do not contradict each other. He offers the following working version: «Critical thinking is thinking about thinking, when a person thinks in order to improve their thinking» [31, p. 34-36]. Modern researcher S. Terno speaks of critical thinking as «about the ability to use certain techniques of information processing that allow to obtain the desired result» [20, p. 5].

P. Blonskyi, A. Bairamov, A. Pipkin, L. Rybak, V. Sinielnikov, S. Wexler, and others paid their attention to the question of the need to teach critical thinking. In psychology, there are qualities that, on the one hand, affect the productivity of mental activity in general, on the other hand, are developed directly in the process of thinking and gradually becoming a stable property of the individual. Among such individual psychological characteristics of thinking, criticality occupies a prominent place. Analyzing the research of previous years, we can conclude that critical thinking is an important condition for the activity and adequacy of human knowledge of the world around and existence in it. The study of criticality in a broader personal aspect allowed scientists to consider it as an integral component of self-awareness, which allows a person to control not only individual actions but also behavior in general (H. Bizenkov, M. Yerokhina, B. Zeiharnyk, I. Kozhukhovska, V. Koneva, T. Kopylova, I. Kudryavtsev, S. Rubinstein, and others).

Critical thinking is understood as a manifestation of interest, the formation of a personal point of view on a particular issue, the ability to logically prove it, as well as the use of research methods. In recent years, modern scientists have focused on the development of productive, critical thinking of children (N. Havrish and O. Pometun) through an innovative program «Preschoolers – education for sustainable development»; N. Havrish and O. Hartmanshlyakh through the educational program «Sure start» for children of the senior preschool age and educational and methodical providing to this program for educators, parents and children; K. Krutii through a partial program on STREAM-education of preschoolers.

**Aim and tasks** are to analyze the essence and the concept meaning of «critical thinking», clarify the definition of «critical thinking»; reveal the structure of the concept (principles, components, indicators) of critical thinking.

**Research methods.** During the theoretical study of the problem, the authors used such research methods as analysis and synthesis in order to identify the essence of the studied phenomenon; method of terminological analysis related to determining the categorical status of critical thinking in the system of psychological and pedagogical definitions; abstraction, idealization, formalization and generalization in order to systematize and formulate conclusions, identify areas for further study of the problem.

**Results.** The theoretical foundations of the study includes the works of L. Vygotskyi, P. Halperin, A. Leontiev, S. Rubinstein, I. Lerner, V. Palamarchuk, V. Sukhomlinskyi. Thinking as a creative activity is reflected in the works of L. Vygotskyi, P. Halperin, V. Davydov, D. Elkoninat, etc. Theoretical principles of critical thinking are highlighted in the works of K. Bakhanova, O. Pometun, S. Terno, O. Tiaglo, O. Udoda and others. The works of foreign scholars like M. Lipman, D. Bruner, J. Guilford, A. Crawford, K. Meredith, S. Matthews, D. Russell, C. Temple, D. Halpern, J. Chaff and domestic researchers such



as N. Berezanska, V. Bondar, T. Voropai, I. Kozhukhovska, A. Lipkina, V. Palamarchuk, O. Pometun, L. Terletska, S. Terno, O. Tiaglo, A. Fedorova, T. Yakovenko and others are devoted to the development of critical thinking. Such educators as P. Blonskyi, A. Bairamov, A. Pipkin, L. Rybak, V. Sinelnikov, S. Wexler and others paid attention to the question of the need to teach critical thinking.

Understanding criticality as a significant individual psychological characteristic which determines not only the productivity of mental activity, but also the social adequacy of the individual, makes the problem of formation and development of critical thinking extremely important.

According to O. Leontiev, thinking is always an active process that begins with the «presentation» of the object cognition of consciousness [11, p. 210]. This indicates that thinking begins with a problem situation and is an analytical-synthetic activity.

According to scientists, and S. Terno in particular, critical thinking as a psychological-pedagogical category has its own characteristics, which include:

*Independence.* Critical thinking is individual. A man is the bearer of his own thoughts, beliefs, and so on.

*Formulation of the problem.* A person begins to think critically from the time the problem is posed because it is the solution of the problem that motivates a person to think critically.

*Decision making.* It is the result of critical thinking that allows to solve the problem.

*Clear argumentation.* A critical thinker is aware that the problem has several solutions, so the choice must be supported by strong arguments that would prove that this is the best solution.

*Sociality.* A person must prove his position in communication with others because that is how he has the opportunity to assert his position or correct it [22, p. 146].

A critical thinker effectively applies the skills of critical analysis in various situations of everyday life. Critical thinking skills are vital. Critical thinking is a form of higher-level thinking that includes decision-making, problem solving, and creative thinking. People who have critical thinking skills but who do not use them effectively cannot be considered critical thinkers.

Thus, critical thinking is a person's ability to consistently reason, reasonably prove or disprove, to establish regular connections between objects and phenomena of the world, based on the consistency of thinking, the integrity of the image and the accuracy of verbal expression.

The development of critical thinking should not take place spontaneously, but systematically under the guidance of a teacher. Therefore, the main task of the teacher is to be an assistant, to stimulate children to search for information, to learn and comprehend the new, to produce their own ideas. In this case, the teacher must have a high level of psychological and pedagogical consciousness, the ability to critically analyze pedagogical phenomena and events, have a high level of intellectual mobility, strive for self-development and self-improvement [32].

In order for children to be able to use their critical thinking, the teacher must develop in them a number of important qualities among which D. Halpern identifies:

*Flexibility.* To become a generator of one's own thoughts and ideas, firstly, the pupil must learn to accept other people's ideas. Flexibility makes it possible to wait with the judgment until the pupil has all the necessary information.

*Readiness to plan.* As a rule, thoughts arise chaotically, it is very important to organize them, to build a sequence of their presentation. The orderliness of thoughts is a sign of human confidence.

*Persistence.* Often faced with a difficult task, we postpone its solution until later. By developing perseverance in activating the mind, the pupil is sure to achieve much better results in learning.

*Willingness to correct one's mistakes.* A person capable of critical thinking will not justify their wrong decisions. Such person will draw the right conclusions and use the mistake in their further training.

*Awareness.* This quality is extremely important. It involves the ability of a person to observe himself in the process of mental activity, to monitor the course of reasoning.

*Search for compromise solutions.* It is important that the decisions made are perceived by other people, otherwise they will remain at the level of statements [25, p. 275].

Critical thinking involves evaluation which is a constructive expression of both positive and negative attitudes. By thinking critically, we are able to evaluate not only the result of thinking (the correctness of solving problems), but also the mental process itself (reasoning, the result of which is inference).

Reflection is an integral part of critical thinking which requires the subject of thinking to be self-aware of the purpose of cognition. It allows us to analyze the extent to which we have managed to achieve our goals, to summarize the knowledge gained, to determine areas for further action. Reflection is the appeal of human knowledge to his inner world, own «Self».

Critical thinking has such traits as controllability, awareness, purposefulness, in contrast to automatic thinking when mental activity does not pursue a specific goal (dreams, etc.).

«Thinking operations are interdependent, they have the properties of reversibility and additionality» [19, p. 288]. The main operations of thinking include analysis, synthesis, comparison, generalization, abstraction, concretization. It should be remembered that each of the paired mental operations makes sense only in relation to the other: analysis with synthesis, comparison with generalization, abstraction with concretization. These operations are necessary for the development of critical thinking because their application can help to achieve the goals, comprehensively develop the personality which in the future will be able to solve difficult life situations.

Based on the analysis of theoretical research in the psychological and pedagogical literature, we will try to synthesize the basic views on the definition of «critical thinking». Table 1 presents the main definitions of this phenomenon.

Summarizing the main scientific approaches to defining the definition of «critical thinking», we conclude that the latter can be characterized as a reflective evaluative activity of the subject of knowledge which is characterized by controllability, independence, validity, logic and purposefulness, focus on critical information based on the data of logical and creative thinking.

To reveal the structure of critical thinking, based on psychological and pedagogical literature, we should define its purpose, principles, indicators and functions.

The main and indisputable goal of the development of the basics of critical thinking is the development of thinking skills. These include the ability to analyze, the ability to process information and the ability to make decisions.

Table 1.

**Basic definitions of «critical thinking»**

№ n/o	the author of the definition	the concept of the definition
1.	Dictionary of sociological and political science terms [1]	«The ability of the individual to overcome a certain tendency to unambiguous and dogmatic perception of the world, the ability to analyze a problem from different angles, to use information from different sources, aspects, separating the objective fact from the subjective opinion about it, the logical condition from any prejudice, assumption, superstition. This is a person's ability to adequately determine the causes and preconditions of existing problems in one's life, the willingness to make efforts to overcome them in practice (and not just rhetorically)».
2.	H. Lindsei [12]	«The ability of an individual to notice the inconsistency of behavior or expression of another person to conventional opinion or norms of behavior, their own ideas about them».
3.	D. Halpern [25]	«Directed thinking which is characterized by balance, logic and purposefulness, its specificity is the use of such cognitive skills and strategies that increase the likelihood of obtaining the desired result».
4.	R. Paul [31]	«Thoughtful thinking when a person thinks to improve their thinking».
5.	A. Fedorov [24]	«One of the types of man's intellectual activity which is characterized by a high level of perception, understanding, objectivity of the approach to the surrounding information field».
6.	S. Terno [20]	«The ability to use certain techniques of information processing that allow to get the desired result».

Based on the analysis of the works of C. Terno [21], we can identify the basic principles of critical thinking:

- independence – the ability to solve problems independently, individually without assistance;
- purposefulness – the desire to find new hypotheses, alternative explanations, evaluation of their own activities in order to further plan their actions to solve a specific problem;
- awareness – awareness of the purpose and degree of necessity of their own mental operations;
- validity – the ability to rely on evidence, proof of their own inference;
- controllability – that is to focus on the main topic and the process of thinking in order to correlate it with the ultimate goals;
- self-analysis – the ability of a person to comprehend and realize and be aware of their own beliefs and actions, critically analyze the content and methods of self-knowledge;
- self-organization – the ability to expand their horizons, self-concentration in order to quickly and efficiently solve problems.

L. Edler and R. Paul in their work «How to Prepare Students for a Rapidly Changing World» on the basis of scientific research identify indicators of critical thinking which are divided into three groups [30] (Table 2).

Table 2.

### Indicators of critical thinking

Groups of the critical thinking key indicators	The main indicators of critical thinking
Affective	independence of thinking; understanding of egocentric and sociocentric motives; impartiality of judgments; vision of the relationship of emotions and beliefs; refraining from hasty judgments; courage to think; honesty of thinking; persistence in solving intellectual problems; confidence in reasoning.
Microcognitive	comparison / opposition of abstract concepts of reality; accuracy and criticality of statements; analysis and evaluation of statements; analysis and evaluation of conclusions; ability to highlight information related to this issue; logic of explanations, conclusions, forecasts; assessment of the evidentiary nature of the statement; ability to see contradictions of reasoning; analysis of direct and indirect consequences of an event or phenomenon.
Macrocognitive	generalization without the desire for simplification; comparison of similar situations, application of knowledge to a new context; broadening horizons: consideration of the issue from different angles, expressing different arguments, hypotheses; clarity of the stated positions, conclusions, beliefs; clarity of presentation, thoughtful choice of words; development of evaluation criteria: clarity of basic values and norms; assessment of information reliability; depth of thinking: highlighting the most important issues; analysis of arguments, explanations, beliefs, hypotheses; development / evaluation of specific decisions; analysis and evaluation of human actions / behaviors; critical approach to reading: understanding the essence, critical assessment of what is read; critical listening (dialogue «without words»); establishing interdisciplinary links; the ability to conduct a «Socratic conversation» through dialogue; coming to understand and evaluate the partner's beliefs; reasoning in dialogue: comparison of different views, approaches, hypotheses; ability to think dialogically: assessment of views, approaches, hypotheses.

After analyzing these indicators, we came to the conclusion that not all of them can be strictly attributed to critical thinking, but they are relevant to the thinking process as a whole.

Complementing the point of view of S. Wexler [27], R. Paul [31] and taking into account the subject of our study, we have identified the following components of critical thinking:



*Personal component* – that is the formation of personality, their self-improvement and self-development, the formation of their own position based on the understanding of experience, ideas and ideas.

*Cognitive component* – that is to obtain knowledge in the form of activity, setting and shaping the goal and ways to achieve it. Mastering the methods of productive activity and effective acquisition of knowledge.

*Emotional-communicative component* – that is to move away from stereotypical thinking, includes curiosity, perseverance, endurance, the ability to cooperate, build constructive relationships with other people in order to achieve goals and solve problems.

*Motivational and regulatory component* – the desire for self-control, timely problem solving, mental self-improvement.

Having studied the structure of critical thinking based on the analysis of the works of N. Talyzina [19], S. Terno [21], I. Litvinova [13] etc., we can determine a number of its functions:

*Regulatory function* is to understand their own actions and direct them to solve problems in accordance with objective conditions.

*Evaluation function* is to assess their own and others' thoughts and actions.

The function of initiation is the ability to find among the conflicting data only those that are necessary to solve specific problems at the moment.

*Stimulating function.* Critical thinking stimulates the need for new knowledge and skills; stimulates the development of new hypotheses, the development of interest in independent research, ways to solve problems.

*The corrective function* is the selection of the necessary material, the search for information; timely correction of errors in order to achieve the desired result. The child, for example, also adjusts its activities with the help of a teacher: its conscious attitude to the results of work should be an incentive for future activities.

*Prognostic function* focused on future activities. A child who is able to predict the solution of the problem already has the ability to think critically.

*Modeling function* focused on abstraction and idealization and is to create a model of action and results.

**Conclusions.** As a result of the analysis of psychological and pedagogical literature we have revealed the essence and content of the concept of «critical thinking» as a special kind of thinking activity; it was found that the characteristic features of critical thinking are controllability, awareness and purposefulness; the full cycle of critical thinking includes four main and interdependent phases: analysis, understanding, evaluation and critique; the structure of critical thinking is represented by cognitive, analytical, personal and activity components; revealed the stages of critical thinking: problem statement, information retrieval, clear argumentation, decision making, reflection; affective, micro- and macrocognitive indicators of critical thinking are considered; on the basis of such properties as awareness and self-improvement its principles and components are formulated; clarified the concept of «critical thinking» as a reflective evaluative activity of the subject of knowledge, which is characterized by controllability, independence, validity, logic and purposefulness, focus on critical processing of information to obtain a reliable result, based on logical and creative thinking.

Thus, the above mentioned materials makes it possible to conclude that critical thinking is a set of certain qualities and skills inherent in the individual, on the one hand, and the process of evaluation, on the other. It occurs in close connection with logical and creative thinking and is impossible without reflection. Critical thinking is independent thinking, because it is necessary not only to develop their point of view, but also to defend it with the help of logical evidence, as well as to formulate alternative ways to solve this problem.

We think that in connection with the urgency of this problem it is necessary to develop pedagogical conditions for the formation of the foundations of critical thinking in older preschool children in various activities and their introduction into the educational process of preschool education because we realize that the development of critical thinking contribution to the mental development of the child, but also helps in solving the problem of comprehensive harmonious development and formation of personality. At the present stage, this explains the growing interest of scientists – psychologists and educators – in the development of critical thinking in children from the preschool age.

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