

PROBLEM ROZWOJU MYŚLENIA KRYTYCZNEGO: HISTORIA I TERAŻNIEJSZOŚĆ

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Adnotacja. W artykule przeanalizowano poglądy naukowe zagranicznych i ukraińskich nauczycieli na temat rozwoju myślenia krytycznego. Wyjaśniono główne cechy myślenia krytycznego, podkreślono elementy myślenia krytycznego, określono jego cechy, zaproponowano strukturę krytycznego myślenia, przedstawiono podstawowe umiejętności, które mogą scharakteryzować stopień rozwoju myślenia krytycznego. Podsumowując różne podejścia do interpretacji istoty myślenia krytycznego, autor rozpatrytuje myślenie krytyczne w kontekście pedagogicznym za zdolność tych, którzy się uczą analizować informacje o szkoleniu, stosować wyniki zarówno w standardowych jak i niestandardowych sytuacjach i zadaniach. Autor artykułu podkreśla, że myślenie krytyczne jest przede wszystkim myśleniem indywidualnym, ponieważ obejmuje zdolność studenta do samodzielnego wyciągania wniosków na podstawie analizy informacji, szukania argumentów w tekście, oceny ich wiarygodności i wartości, podczas gdy myślenie krytyczne ma charakter społeczny, ponieważ każda opinia jest weryfikowana i uzasadniana tylko wtedy, gdy jest udostępniona innym uczniom.

Słowa kluczowe: myślenie, myślenie krytyczne, technologia rozwoju myślenia krytycznego, cechy myślenia krytycznego, elementy myślenia krytycznego.

PROBLEM OF DEVELOPMENT OF CRITICAL THINKING: HISTORY AND PRESENT

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Annotation. The article analyzes the scientific views of foreign and Ukrainian teachers on the problem of developing critical thinking. The main characteristics of critical thinking are highlighted, elements of critical thinking are defined, its signs are identified, the structure of critical thinking is proposed, basic skills are presented that can characterize the degree of critical thinking development. Summarizing the various approaches to the interpretation of the essence of critical thinking, the author of the article considers critical thinking in the pedagogical context as the ability of learners to analyze educational information, to apply the results in both standard and non-standard situations and tasks. The author of the article notes that critical thinking is primarily individual thinking, because it implies the student's ability to independently draw conclusions based on the analysis of information, look for arguments in the text, evaluate their reliability and value, and at the same time critical thinking has a social character, since thought is verified and justified only when it is shared with other students.

Keywords: thinking, critical thinking, technology for developing critical thinking, signs of critical thinking, components of critical thinking.

ПРОБЛЕМА РОЗВИТКУ КРИТИЧНОГО МИСЛЕННЯ: ІСТОРІЯ ТА СЬОГОДЕННЯ

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Анотація. У статті проаналізовано наукові погляди зарубіжних та українських педагогів на проблему розвитку критичного мислення. Висвітлено основні характеристики критичного мислення, виділено елементи критичного мислення, визначено його ознаки, запропоновано структуру критичного мислення, представлено основні вміння, які можуть охарактеризувати ступінь розвитку критичного мислення. Узагальнюючи різні підходи щодо трактування сутності критичного мислення, автор статті розглядає критичне мислення в педагогічному контексті як здатність тих, хто навчається, аналізувати навчальну інформацію, застосовувати отримані результати як в стандартних, так і в нестандартних ситуаціях і завданнях. Автор статті наголошує, що критичне мислення є передусім мисленням індивідуальним, оскільки передбачає здатність учня самостійно робити висновки на основі аналізу інформації, шукати в тексті аргументи, оцінювати їх достовірність і цінність, та водночас критичне мислення має соціальний характер, так як кожна думка перевіряється і обґрунтовується лише тоді, коли нею діляться з іншими учнями.

Ключові слова: мислення, критичне мислення, технологія розвитку критичного мислення, ознаки критичного мислення, компоненти критичного мислення.

Introduction. The urgency of developing critical thinking is still obvious, since social changes and the latest achievements of modern science and practice place high demands on applicants for education. The development of critical thinking and the ability to make decisions is considered the basis of learning in the 21st century.

Today, the problem of developing critical thinking is actively considered by psychologists, educators, and methodologists. It is important to turn to the origins of the idea of developing critical thinking, to carry out a more in-depth analysis of this phenomenon, to trace the evolution of the idea of developing critical thinking in education.

The purpose of the article is to reveal the essence of the concept of «critical thinking» as a pedagogical category through the prism of historical analysis.

Main part. The issue of developing critical thinking is not new for Ukrainian and foreign education because about the need to develop elements of critical thinking among students was asserted in ancient times by well-known teachers and practising teachers. Thus, in the Middle Ages, scholastic-dogmatic methods of teaching prevailed, since education was influenced by the Christian church, therefore the formal-logical thinking prevailed. The dogmatic way of thinking was criticized by progressive educators who opposed scholastic school education. In particular, M. Montaigne called on teachers to teach children to think, creatively comprehend what they read, to build learning on the independent adoption the material: «Let the tutor compels the student to sift through the sieve everything that he gives him, and the student, if he can, makes a choice on their own» (Volinka, 1991, p. 114). M. Montaigne recommended teachers to evaluate students not by what knowledge they have, but by what they can do with the help of this knowledge.

J. Comenius in the work of «The Great Didactic» writes: «The method of teaching all subjects shows that schools strive to teach children to look with other people's eyes, to think with someone else's mind. Schools are not taught to open up sources and to bring out various streams from there» (Kamenskij, 1983, p. 37). J. Comenius argued that it is necessary to teach so that children gain knowledge not only from books and verbal reasoning but also from observations, things that surround them, through the study of causal relationships.

J. Locke continued these ideas in the pedagogical work «Some Thoughts Concerning Education» arguing that the student should not passively reproduce the studied material, but to draw conclusions, generalizations independently, and the teacher should, first of all, develop the logical thinking of the pupils (Volinka, 1991, p. 114).

During the Renaissance, teachers developed pupils' abilities through active learning, independent knowledge of the world around them, tried to form an interest in knowledge, to create in an educational institution an environment where learning would become easy and enjoyable, to promote self-knowledge of pupils, to develop creative thinking. J. Pestalozzi created a peculiar system of developing pupils' skills of independence and creativity. At the center of his concept is a pupil who develops harmoniously in the process of learning, he considered the tandem of the teacher and pupil inseparable (Pestalocci, 1981).

Famous Ukrainian educators wrote about the development of independent, creative thinking. H. Skovoroda in his writings drew attention to cognitive activity as an effective means of self-knowledge and self-improvement, the development of a conscious initiative, creative thinking, which must form pupils' desire to study independently (Skovoroda, 1992). A. Dukhnovich, author of the first textbooks in Zakarpattia, affirmed the principle of natural conformity in the school educational process, taking into account the age and individual characteristics of the pupils. The educator promoted such forms of organization of the lesson that develop children's attention, observation, and ability to learn independently. K. Ushinsky wrote about the independence of thinking, believed that other people's thoughts were harmful, a person adopts them faster than he understands. The strong foundation of any effective learning is the development of the student's creative cognitive activity, provided that it will be: diverse in types, based on own observations and analysis of facts, based on previous experience, introducing a new element (Ušins'kij, 1949).

About the development of independent thinking of schoolchildren spoke I. Franko (1960), who defended learning that contributes to the formation of a free man, with a sense of personal dignity and with the right to choose, condemned the educational process, which makes the student take and praise only those thoughts «which came into his head, but does not allow you to treat them critically, does not allow to ask: So it should be? Where is it from?» (p. 186). I. Franko sharply criticized the education system, which was built as if on purpose «in order to kill every living, healthy thought in the minds of young people, turn it to objects of the dead and empty, and distract them from life and honest work, demoralize them as a slave in front of the strong and the rich, and destroy any spark of criticism and own initiative» (p. 191).

B. Hrinchenko was convinced that the main goal of the school should be a well-organized educational system, which stimulates the development of pupils' mental strength, and does not provide ready information. Independent thinking, according to the teacher, will help schoolchildren in working with new information.

V. Sukhomlynsky (1977) paid a lot of attention to the development of independent creative thinking. In his writings, he advised to educate pupils in the desire to learn the world around them, performing complex mental operations: analysis, synthesis, comparison, a generalization; to learn to observe, to explore, to make their own conclusions.

As we can see, domestic and foreign scientists note the inseparable relationship between learning and thinking. In different historical periods, the approaches to learning were also not the same: to replace the dogmatic way of thinking, when pupils took over the experience of others without proper understanding, information – without in-depth analysis, it came independent, creative one. Modern scholars and practising teachers criticize the educational process, focused on the preparation of obedient, passive performers, pupils who are incapable of active creative activity, they advised paying attention to the development of logical, independent and critical thinking. Therefore, in recent decades, in the European and domestic educational system, special attention has been paid to the development of critical thinking, since it allows a person to solve actual problems. A person who can think critically is able to consciously perceive the surrounding reality, doubt, analyze, defend his opinion, is able to self-realize and assert himself.

In pedagogical literature, critical thinking is considered as a higher-order thinking based on information, during the processing of which an opinion rating, hypotheses, and ways of proving them take place.

In their writings, domestic scholars often rely on the ideas of foreign teachers: J. Dewey, D. Cluster, A. Crawford, K. Meredith, S. Matthew, R. Paul, K. Popper, J. Stila, C. Templand, and others. Thus, the founder of the Institute of Critical Thinking at the Montclair State University, Professor at Columbia University M. Lipman considered critical thinking as an urgent need for life in the modern world, because this ability allows you to solve properly a wide range of practical problems in any professional activity: architect, lawyer, doctor etc., in human relationships, in scientific activities, in everyday life.

According to M. Lipman, critical thinking is thinking characterized by constant self-improvement of the individual; a process when pupils move from simple value judgments and elementary argumentation to mastering the corresponding way of thinking – the ability to perform a meaningful analysis; This type of thinking is necessary for solving extraordinary practical problems when we faced with difficult choices that require thinking and evaluation. With the help of critical thinking, it is best to teach pupils to correctly argue their thoughts, to identify mistakes in their or alien argumentation, to determine the validity or unlawfulness of evaluations, ideas and solutions.

«We must stimulate the students to think independently, not only to study what others have come to, as well as to formulate their own good judgments and sentences», asserted M. Lipman (Lipman, 2006, p. 17-18). Therefore, according to the scientist, it is necessary to know the defining characteristics, signs, features of critical thinking in comparison with other types of thinking, and also to find out the results and the fundamental conditions of its formation and development. The researcher (Lipman, 2006) emphasized that critical thinking contributes to high-quality judgment, because: a) it is based on criteria; b) is such that it itself is adjusted; c) is sensitive to the context (p. 18).

M. Lipman identifies six main elements of critical thinking:

1) possession of certain techniques that collectively create an effective information processing methodology that has been tested in practice;

2) responsibility, which provides that a person, turning to others, is aware of the obligation to provide listeners or readers with arguments and examples in accordance with accepted standards or to question them with the help of convincing reasoning;

3) the formulation of independent judgments as a product of thinking;

4) reliance on criteria, which are provisions, takes into account a critical-minded person, evaluating ideas in the process of analyzing or criticizing them (for example, standards, laws, secondary legislation, rules, regulations, guidelines, instructions, behavior guidelines, requirements, terms, restrictions, conventions, norms, agreements on unification, principles, predictions, definitions, ideals, goals, intentions, test results, experimental data, methods, procedures, etc.);

5) the possibility of self-correction of their own judgments in order to correct or improve them;

6) attention and sensitivity to the context which should not contradict the use of common criteria.

D. Cluster (2001) emphasizes that critical thinking is informative thinking, which begins with the formulation of a question, strives for convincing argumentation and has a social character. (p. 37). J. Dewey argues that, due to critical thinking, routine learning becomes a purposeful activity, in which pupils are involved in intellectual work and solve of real-life problems.

Interesting for our study are the characteristics of the critical thinking of D. Cluster, to which he relates the following:

1) independence: each formulates his ideas, values and beliefs independently of others. No one can think critically of the other; everyone does it exclusively for himself. However, critical thinking does not have to be completely original: one person may perceive the idea or belief of another person as his own. The main thing is that everyone at the same time decided what to think;

2) focus on thinking, evaluation, and not on knowledge, because information is the starting point, not the final point of critical thinking. Knowledge creates a base without which a person cannot think critically. To express a complex thought, it is necessary to process a considerable amount of facts, ideas, theories, concepts;

3) the persuasion of the argumentation: a critical-minded person finds his own solution to the problem and reinforces this decision with reasonable, feasible evidence. She also realizes that other solutions to the same problem are possible, and she tries to prove that her solution is optimal. A critical thinker with convincing arguments is able to resist even such authorities as the strength of tradition, the opinion of the majority — such a person cannot be manipulated;

4) sociality: every thought is checked and improved when it is shared with others. When people discuss, argue, exchange ideas with other people, they clarify and deepen their position (Kluster, 2001, p. 39-40).

The accumulation of knowledge, the level of theoretical training are important for mental development, but the amount of knowledge, acquired in the learning process, does not always indicate a positive change in mental development. Quite often, pupils mechanically memorize a certain set of facts, concepts, laws, not understanding, not realizing them, which leads to the formalism of knowledge and their reproduction on a pattern. For modern education, it's not so much the knowledge itself is important, but also the ability to operate it in solving theoretical and practical problems, the ability to use it in different conditions and acquire new knowledge. Therefore, psychologists and

educators note that «for the development of thinking are important both the accumulation of a fund of knowledge and a fund of well-developed and well-established mental techniques (intellectual operations)» (Kruteckij, 1986, p. 16), through which the acquisition of knowledge and operating them.

It is very important in the learning process «to take care not only to give pupils knowledge but also to form their respective skills», therefore, the methods and techniques of mental activity, the intellectual skills that a pupil uses during the acquisition of knowledge, is one of the objective indicators of the level and the quality of knowledge. At the same time, the intellectual development of the individual is not limited to a set of knowledge and mental skills; mental activity, in addition to intellectual processes, also includes cognitive interests, attitude to learning – what is called the motivational aspect and the necessary condition for mental activity.

S. Matthews believes that in the classroom with the use of critical thinking technology, teachers model the thinking process and support pupils when they talk about their thinking strategies; there is an atmosphere of search and openness; pupils have support, but such and only to the extent that they really need; the learning space is built in such a way as to make the cooperation and communication of pupils easy and natural (Krouford, 2006, p. 16).

According to scientists A. Crawford, V. Saul, S. Matthews, D. Macinster, pupils learn the material most fully and for the benefit of themselves by means of active methods, if they are oriented towards the achievement of specific goals and well organized. Such studies, according to researchers, are most successful, because pupils are encouraged to think independently and to do critical thinking. Pupils reflect on what they study, apply what they have learned in real life or for further study and are able to continue to learn independently. Researchers make an important conclusion for us that learning, the results of which can be used and the products of which are durable, it is an effective use of the teacher's time and the means of society than the education that leaves students passive, tires the teacher with monotony and the products are soon forgotten because are not used in practice and do not develop in any way (Krouford, 2006, p. 11)).

Recently, many works of Ukrainian scientists have appeared on the problem of the formation of critical thinking of pupils and students. In particular, O. Pometun, S. Terno, L. Terletska, A. Marchenko, T. Khachumyan, and others offer their own studies of the development of critical thinking. O. Pometun asserts that critical thinking is: a) thinking, which promotes to the formation of a person's ability to be aware of his position on a particular issue, the ability to find new ideas, to analyze events and critically evaluate them; b) non-standard thinking based on the ability to see and evaluate alternatives, priorities, determine the reliability and expediency of facts, phenomena, events; c) practical thinking, which, based on theoretical knowledge, makes it possible to make the necessary decisions; d) reflexive thinking is a way to correct and repair by a person for mistakes made in the process of his thinking, which is in continuous search; e) a multilevel and variable phenomenon, it reflects moral and ethical attitudes, socio-political features, evaluative experience, value orientations, human knowledge, ways of mental and practical actions; f) thinking which aimed at finding strategies to solve life and learning problems, identifying and evaluating alternatives and priorities, their feasibility, determining the reliability of facts, phenomena, events, development of it promoted skills and abilities, synthesis, comparison, a juxtaposition of facts, formulation of reasonable conclusions; g) thinking, which is based on the ability

of a person to distinguish the value of information, in other words, to separate the necessary information from the unnecessary. It is aimed at processing information using effective thinking techniques (analysis, synthesis, comparison, a combination of facts, etc.) and its assessment relative to the source, experience, observation, correct reasoning and collected data (Pometun, 2010, p. 47).

O. Pometun emphasizes that the educational process focused on the formation of critical thinking of children must necessarily be organized as a study of a specific topic, which is carried out through the interactive pupils' communication. To be effective in this case, teachers should use cooperative learning as common tools with all the methods and techniques of working in small groups, projects, experimental exercises, simulations, sociological research, etc. (Pometun, 2010, p. 6).

According to the researcher, the teacher acts as an organizer of the learning process, a consultant, a facilitator, and does not «lock in» the training for herself. Relationships between pupils, their interaction and cooperation are key in the learning process. With such an organization of training, its results are achieved by the mutual efforts of the participants: the pupils and the teacher take mutual responsibility for them (Pometun, 2010, p. 9).

L. Terletska identified signs of critical thinking:

- depth (penetrating thinking) – the ability to penetrate the essence, to see the vague, where to others everything seems to be quite clear and understandable;
- sequence – the ability to comply with logical rules, not to contradict themselves, to substantiate the conclusions;
- independence – the ability to ask questions, find new approaches to their clarification;
- flexibility – the ability to change the way to solve a problem, to find new ways, to be free from a stencil;
- speed – the ability to quickly cope with cognitive tasks;
- strategic – consistent hypothesis, the definition of signs (scanning and focusing) in the process of performing tasks (Terlec'ka, 2004, p. 479).

The position of L. Terletska is confirmed by O. Marchenko, who notes that critical thinking is usually defined as the conscious control of the personality over the course of its own intellectual activity (Marčenko, 2007).

O. Marchenko believes that «the basis of critical thinking is the valuation mental activity of an individual to improve the process of thinking, finding and correcting mistakes in his own and partner activities, analyzing his own thoughts, actions, actions, behavior» (Marčenko, 2007, p. 27). According to her research, the majority of domestic and foreign scientists (in particular I. Avdeyeva, F. Frumin, V. Yevdokimov, T. Oleinik, A. Tylo, D. Halpern, T. Khachumyan, etc.) believe that in the pedagogical context, critical thinking is necessary to consider as the ability of students to analyze educational information, to apply the results in both standard and non-standard situations, questions, problems (Marčenko, 2007, p. 27). Critical thinking is defined by the author as an estimate, ascertaining and corrective mental activity aimed at ensuring its competence, the young person's ability to suitable constructive changes in all spheres of life, suitable self-esteem, a stable critical position in society (Marčenko, 2007, p. 31).

N. Vukina, N. Dementievska, I. Sushchenko (2007) note that «such thinking is called critical, helps us to distinguish what seems to be from the truth, facts from judgments» (p. 15). The evaluation component is also noted (in particular, whether we

have analyzed the information well, whether made the right conclusions from it, whether made the right decision, etc.), the direction of thinking to get the desired result, etc. (Vukina, 2007, p. 14).

V. Konarževska considers critical thinking as «a special kind of mental activity, the characteristic features of which is the development of strategies, making decision in solving tasks, problem situations based on receiving and processing information; the implementation of reflexive actions (analytical, controlling, evaluative) in relation to any object or phenomenon, including its own thinking process; a balanced analysis of various opinions and attitudes, the identification of own position, an objective evaluation of the results of both one's own and third-party activities» (Konarževs'ka, 2009, p. 15).

T. Vlasova describes critical thinking as «an active process of learning and achieving true knowledge» (Vlasova, 2005, p. 44). To the skills of critical thinking, she involves reflection of all the pros and cons, the ability to foresee the consequences of a decision, the consideration of a problem from different points of view, the consideration of different opinions as skills of critical thinking. «A critical thinker», the author argues, «does not accept dogmas and stereotypes. The basis of this thinking is working with information, understanding it, comparing various points of view, evaluation».

«Critical thinking as an individual feature of human mental activity», M. Sheremet says, «determines the attitude of a person to the surrounding life, the level of awareness of its value, causes and meaning of what is happening around» (Šeremet, 2003, p. 133). The author notes that critical thinking is a multilevel phenomenon since it reflects moral and ethical instructions, socio-political features, appraisal experience, value orientations, human knowledge, ways of mental and practical actions.

Close to the above, there are views on the nature of critical thinking A. Bandurka, N. Tikhonskiy, A. Tashila, C. Kupisevich, T. Khachumyan and others. The overwhelming majority of them note that critical thinking implies an assessment of the quality of the thinking process, the presence of specific thinking operations, namely evaluative, reflexive actions, self-assessment and adjustment skills that contribute to the improvement and effectiveness of the human intellectual activity.

Valuable for our study is the interpretation of the concept of critical thinking by S. Terno, as a conscious, independent, reflexive, purposeful, grounded, controlled and self-organized thinking. The scientist considers propensity to doubt, independence and flexibility (search for new information, new methods of knowledge and activity), search for evidence, and verification of the validity of the knowledge gained as important components (Terno, 2012, p. 29).

O. Tyaglo defines critical thinking like a modern kind of logical activity, which aims to systematically improve the process and the results of thinking on the basis of their critical analysis, understanding and evaluation. At his discretion, critical thinking can be represented as an algorithm, a sequence of well-coordinated intellectual actions, the skilful accomplishment of which will make it possible to achieve the goal. This algorithm includes four main phases: analysis, understanding, evaluation, and, actually, criticism. (Tâglo, 2008, p. 13).

Analyzing the studies of foreign and domestic scientists, Academician O. Tyaglo (2008) notes that from the experience of the educational system of the United States and other countries, two basic approaches to teaching critical thinking are known. The first involves the teaching of a separate academic discipline (school subject) «Critical

Thinking». Within its framework, one or another previously established thinking algorithm is studied and the ability to apply it is formed.

The second approach is the development of critical thinking through other disciplines and subjects. It does not require the allocation of an independent discipline since the training of such thinking is embedded in the study of any of the disciplines – a foreign language, mathematics, history, and the like. The components of the critical thinking algorithm, in this case, are often not absorbed from the outside but are found by the pupils, to stimulate and support the teacher. With this approach, the problem material appears not so much as a source of illustrations, but rather as «raw material», from which a pupil or student to a certain extent independently «extracts», the necessary knowledge and skills of cultural criticism. (p. 47)

Close to this approach is the position of M. Weinstein, who believes that critical thinking is not something additional to one of the aspects of the curriculum at school, but should be deeply integrated into the very essence of the entire educational system. Therefore, according to the researcher, it is better to introduce critical thinking into those school subjects that are studied according to the current curriculum.

T. Khachumyan proposes a structure of critical thinking of four interrelated components:

- 1) motivational – reveals the attitude of the individual to the process of cognition;
- 2) meaningful – assumes the presence of factual knowledge in a particular subject area and knowledge of the methodology of knowledge, methods of intellectual and practical activities;
- 3) intellectual-procedural, which is manifested in the conscious control of the individual over the course of their own thought processes;
- 4) emotional-volitional, which implies purposefulness, perseverance in mental activity. (*Hačumân, 2005, p. 38*)

T. Khachumyan considers critical thinking as a special kind of mental activity, the characteristic features of which are: «the development of strategies for making the right decisions in solving any tasks based on receiving, analyzing, processing information; implementation of reflexive actions (analytical, testing, controlling, evaluative), which are performed with respect to any object or phenomenon, including their own thinking process; a balanced analysis of various opinions and attitudes, the manifestation of their own position, an objective assessment of the process and the results of both their own and outside activities» (*Hačumân, 2005, p. 10*).

Despite various interpretations, in the opinion of A. Avershin and T. Yakovenko, the concept of «critical thinking», their general meaning comes down to the following: to think critically means to consciously evaluate, reason, think, that is, manifest a person's mental, emotional, cognitive activity, that should be aimed at solving a specific problem. (*Avershin, 2009, p. 134-145*).

I. Mitina considers critical thinking as a complex mental process, which begins with the attraction of information and ends with a decision; It is a process of considering ideas from many points of view according to their meaningful connections and comparison with other ideas. Critical thinking is not an object of study, but a learning outcome (Mitina, 2013, p. 25-26).

G. Sholom (2013) notes that the level of development of critical thinking depends on the degree of formation of each of its components. Therefore, in the learning process, it is necessary to use such methods, means, forms of learning, create conditions that

ensure the formation of all components of critical thinking, affecting all areas of activity of students. (p. 47).

The principles of critical thinking defined by D. Shakirova on an interdisciplinary basis deserve attention:

1. Information richness of educational and practical material for the use of arguments, evidence or refutations based on specific facts, sources, data.

2. Social dependence of the subject of reflection, because critical thinking is social thinking, therefore, the identification of problems tasks, topics for discussion should be carried out taking into account this special property of critical thinking.

3. Communicativeness in the process of understanding the problem and its discussion, since critical thinking as an individual and independent thinking turns out to be in disputes, discussions, consideration and public speaking, therefore, the communicative skills of the participants in understanding the problem to form this type of thinking play a crucial role in achieving success in communication.

4. The researcher explains the problem content of the material with the connection of problem and critical thinking in general properties, methods and ways of teaching.

5. Motivation and the need for knowledge, because an important stage in the development of critical thinking is a reflection, which is possible only when the student is motivated to learn, understand, comprehend, establish the truth or get a result.

6. Scientific, reliable and accessible information.

7. Continuity learning thinking (*Šakirova, 2006, c. 21-25*).

As we can see, some of these principles are general didactic, however, others, like the problematic content of the material, are specific to critical thinking, and therefore interesting for our research.

In confirmation of the principles of critical thinking determined by D. Shakirov on an interdisciplinary basis, the position of I. Bondaruk on the main skills that can be characterized by developed critical thinking:

– analyze information collected from different sources, evaluate its reliability, the adequacy of a specific problem situation, the inconsistency of data, arguments for proof, that is, use certain methods of information processing, allowing to obtain the desired result;

– evaluate your thoughts and extraneous influences on them, identify strengths and weaknesses in them, not take every conjecture with truth, but subject it to doubt and test, evaluate the positive and negative features of both the information received and the thought process itself, phenomena of reality;

– to balance consideration of various approaches to the problem in order to make informed decisions on it;

– to make logical conclusions, to formulate independent judgments and build a convincing argument;

– to carry out reflection, self-assessment and adjustment of cognitive actions and activities.

Conclusions. So, the analysis of scientific papers on the studied problem gives reason to argue that the problem of developing critical thinking is relevant for the past decades. Summarizing various approaches to interpreting the essence of critical thinking, we noticed that this is primarily individual thinking, since it implies the ability of the pupil to independently draw conclusions based on the analysis of information, look for arguments in the text, evaluate their reliability and value, and at the same time, critical thinking has social character, since every thought is verified and justified only

when it is shared with other pupils. We consider critical thinking as a directional thinking process, the goal of which is to solve a problem, and the essence is to perform certain operations - techniques: analysis, synthesis, evaluation of one's own thoughts and results of activity.

References:

1. Avershin, A. O. (2009). Formuvannâ kritičnogo mislennâ u studentiv inženerno-pedagogičnih VNZ. Zbirnik naukovih prac': problemi inženerno-pedagogičnoï osviti, 24-25, 134-145 (ukr).
2. Volinka, G. Ī. (Red). (1992). *Filosofîâ Starodavn'ogo svitu. Čitanka z istorii filosofii* (Kn. 1). Kiïv: Dovira (ukr).
3. Vukina, N. V., Dementiëvs'ka, N. P., Sušenko, Ī. M., Pometun, O. Ī. (Red). (2007). *Kritične mislennâ: âk c'omu navčati: [naukovo-metodičnij posibnik]*. Harkiv (ukr).
4. Kamenskij, Ā. A. (1983). *Bol'shâ didaktika*. Sankt-Peterburg (rus).
5. Kluster, D. (2001). Šo take kritične mislennâ? *Peremena*, 4, 36-40 (ukr).
6. Konarževs'ka, V. Ī. (2009). *Formuvannâ kritičnogo mislennâ majbutnih oficeriv u procesi profesijnoï pidgotovki* (Avtoref. dis. na zdobuttâ nauk. stupenâ kand. ped. nauk). Harkiv (ukr).
7. Kroufov, A., Saul, V., Met'ûz, S., Makinster, D., Pometun, O. (Red). (2006). *Tehnologiiï rozvitku kritičnogo mislennâ učniv*. Kiïv: Vid-vo «Pleâdi» (ukr).
8. Kruteckij, V. A. (1976). *Psihologiâ obučeniâ i vospitaniâ škol'nikov: Kniga dlâ učitelej i klassnyh rukovoditelej*. Moskva: Prosvěšenie (rus).
9. Lipman, M. (2006). Čim može buti kritične mislennâ? *Visnik program škil'nih obminiv*, 27, 17-23 (ukr).
10. Marčenko, O. G. (2007). *Formuvannâ kritičnogo mislennâ školâriv*. Harkiv: Vid. grupa «Osnova»: «Triada +» (ukr).
11. Mitina, Ī. V. (2013). Kritične mislennâ i s'ogodennâ. *Postmetodika*, 6 (115), 25-31 (ukr).
12. Pestalocci, I. (1981). *Izbrannye pedagogičeskie sočineniâ*. Moskva: Pedagogika (rus).
13. Pometun, O., Pilipčatina, L., Sušenko, Ī., Baranova, Ī. (2010). *Osnovi kritičnogo mislennâ. Ternopil': Navčal'na kniga – Bogdan* (ukr).
14. Skovoroda, G. S. (1992). *Doslidžennâ, rozvidki, materiâli: zb. nauk. prac'*. Kiïv: Naukova dumka (ukr).
15. Suhomlins'kij, V. O. (1977). *Pavlis'ka serednâ škola*. Kiïv: Radâns'ka škola (ukr).
16. Terlec'ka, L. (2004). Kritične mislennâ âk zasib rozvitku vmîn' učniv analizuvati j zastosovuvati informaciû, Materiâli Mižnarodnoï naukovo-praktičnoï konferencii «Rozvitok navičok kritičnogo mislennâ». Kiïv (ukr).
17. Terno, S. O. (2012). *Metodika rozvitku kritičnogo mislennâ školâriv u procesi navčannâ istorii: [posib. dlâ včitelâ]*. Vzâto z http://sites.znu.edu.ua/interactiv.edu.lab/Posibnyky/Terno_Methodology.pdf
18. Tâglo, O. V. (2008). *Kritične mislennâ: navč. posib*. Harkiv: Osnova (ukr).
19. Ušins'kij, K. D. (1949). *Vibrani pedagogični tvori*. Kiïv (ukr).
20. Franko, Ī. Ā. (1960). *Pedagogični statii i vislovluvannâ*. Kiïv: Radâns'ka škola (ukr).
21. Hačumân, T. Ī. (2005). *Formuvannâ kritičnogo mislennâ studentiv viših navčal'nih zakladiv zasobami informacijnih tehnologij* (Dis. kand. ped. nauk). Harkivs'kij nacional'nij ped. un-t im. G. S. Skovorodi, Harkiv (ukr).
22. Šakirova, D. M., Plotnikova, N. F. (2006). Integraciâ umenij kritičeski myslit' i rabotat' v komande pri obučenii studentov vuza. *Innovacii v obrazovanii*, 3, 120-132 (rus).
23. Šeremet, M. (2003). Āk formuvati kritične mislennâ na urokah istorii? *Osvita i upravlinnâ* (T. 6), 4, 133-136 (ukr).
24. Šolom, G. Ī. (2013). *Rozvitok kritičnogo mislennâ staršoklasnikov u procesi navčannâ informatiki* (avtoref. dis. na zdob. nauk. stup. kand. ped. nauk). Nac. ped. un-t im. M. P. Dragomanova, Kiïv (ukr).