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Formation of critical thinking among ukrainian students in the context of european integration

Formación del pensamiento crítico entre estudiantes ucranianos en el contexto de la integración europea

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Abstract

The aim of the article is to study and analyze the peculiarities of formation of critical thinking among Ukrainian students in the context of European integration. It has been proven that one of the main problems in developing critical thinking skills is creating appropriate pedagogical conditions. It is noted that educators should adhere to the principles of critical saturation of educational information and critical correctness. The analysis of the state of the problem of developing critical thinking skills among university students allows us to state that despite the existence of a significant number of scientific publications on the topic, there are several unresolved issues regarding the development of critical thinking skills, including its signs, criteria, indicators, and levels of development, diagnostic tools, a qualitative adaptation of Western

technologies to the domestic education system, and the development of optimal and effective technologies for developing critical thinking skills.

Keywords: critical thinking, higher education, European integration, technologies adaptation, educational re-orientation.

Resumen

El objetivo del artículo es estudiar y analizar las peculiaridades de la formación del pensamiento crítico entre los estudiantes ucranianos en el contexto de la integración europea. Se ha comprobado que uno de los principales problemas para desarrollar habilidades de pensamiento crítico es crear las condiciones pedagógicas adecuadas. Se observa que los educadores deben adherirse a los principios de saturación crítica de información educativa y corrección crítica. El análisis del estado del problema del desarrollo de habilidades de pensamiento crítico entre los estudiantes universitarios permite afirmar que a pesar de la existencia de un número importante de publicaciones científicas sobre el tema, existen varias cuestiones no resueltas respecto al desarrollo de habilidades de pensamiento crítico, entre ellas su signos, criterios, indicadores y niveles de desarrollo, herramientas de diagnóstico, una adaptación cualitativa de las tecnologías occidentales al sistema educativo nacional y el desarrollo de tecnologías óptimas y efectivas para desarrollar habilidades de pensamiento crítico.

Palabras clave: pensamiento crítico, educación superior, integración europea, adaptación de tecnologías, reorientación educativa.

1. Introduction

In the context of implementing Euro-integration educational processes, there is a re-orientation of education, which requires teachers to have not only theoretical knowledge but also the ability to critically evaluate and variably apply the content, forms, and methods of teaching, taking into account the interests and abilities of the students.

Therefore, one of the most essential tasks of higher education institutions is to develop critical thinking and the ability of future professionals to adapt to different conditions quickly and find ways to solve professional and social tasks in any non-standard situations. Information technologies have significant potential in developing students' critical thinking, the use of which in the educational process requires the readiness of teachers and students for severe transformations that meet the modern requirements of a rapidly changing information society.

The emergence and development of an information society require a wide application of information technologies in education, which is determined by many factors, such as:

- implementing information technologies in modern education significantly accelerated the transfer of knowledge and accumulated technological and social experience of humanity from generation to generation and from one person to another;
- by improving the quality of teaching and education, information technologies enable a person to adapt more successfully and quickly to the environment and social changes;
- the active and effective implementation of information technologies in education is essential in creating a new education system that meets information society's requirements and modernizes the traditional education system.

Information technologies are a set of methods and technical means for collecting, organizing, storing, processing, transmitting, and presenting information, which expand people's knowledge and develop their abilities to manage technical and social processes. They are object-oriented systems that represent on the screen a model of an information environment of a specific subject orientation in the form of a set of objects under study and connections between them.

The functional capabilities of this environment enable various transformations of the researched objects using a rich toolkit of technological operations, including experimentation to test hypotheses, investigation of patterns, development of algorithms, prediction of results, meaningful interpretation of data, etc., all of which contribute to the formation of students' critical thinking skills.

An important feature of information technologies is the use of visualization and computer graphics tools, which not only enhance the level of understanding of information by opening up fundamentally new learning opportunities but also serve as a powerful tool for cognition and an effective means of enhancing the intellectual abilities of future specialists. They enable the placement of information on the screen in a convenient way for analysis, working with multiple objects simultaneously, visually observing changes in conditions or parameters, changing the size of objects, highlighting the most critical components, etc. Furthermore, the learning process is not controlled by the program proposing a particular presentation or arrangement of objects but rather by the students, who, according to their own understanding of internal connections and patterns being studied, carry out these actions and thereby become active participants in the learning process, as the program requires active management from them.

Information technologies effectively develop students' self-control, self-evaluation, checking solutions, comparing them with task conditions, and more. They can immediately see the computer's reaction to their actions and correct errors without waiting for the teacher's feedback. Such immediate feedback stimulates mental activity, encourages an independent search for errors in one's own actions, and corrects ways to solve a particular task. At the same time, information technology enables each student to recognize the need for self-control and self-evaluation of their actions. The program itself cannot provide a correct solution to the task. It only helps the user by automating the routine tasks of entering, processing, and presenting information, offering many special tools. It is up to the student to choose the option they consider necessary.

Therefore, the effectiveness of using information technology as a means of developing critical thinking skills in future professionals is determined by the use of human intelligence rather than the program. The actions related to planning, organizing, structuring information, analyzing, evaluating, and making optimal decisions remain with the user, who must possess theoretical knowledge of the studied subject and relevant skills to execute them. It, in turn, allows for more productive use and development of students' intellectual abilities, stimulating and activating mental activity and forming critical thinking skills.

This article **investigates** the peculiarities of critical thinking formation among Ukrainian students in the context of European integration.

2. Theoretical background

The theoretical background of the study includes the statements made by the following scholars: Ogrodzka-Mazur, E., & Saukh, P. (2020), Sergii V. Savchenko, Sviltana O. Shekhavtsova, Vladimir I. Zaselskiy (2020), Sydorenko, V. V., Popova, A. B., Rehesha, N. L., Sinenko, O. O., Trynko, O. I. (2021), Emanuel, T.L.F. (2013), Vasilyuk, A., & Day, M. (2019), Kievišas, J., & Otych, O. M. (2019), Kremen, V. H. et al., (2020); Kremen, V. H. (2021), Kushnir, V. (2001), Lugovyi, V. I., Saukh, P. Yu., & Talanova, Z. V. (2021); Lugovyi, V. I., Sliusarenko, O. M., & Talanova, Z. V. (2021); Lugovyi, V., & Petroye, O. (2021); Lugovyi, V., & Talanova, Z. (2020).; Lukianenko, D. H., & Antoniuk, L. L. (2019),

Ponomarenko, V. S., Klebanova, T. S., & Guryanova, L. S. (2021), I.V. Stavyska National Technical University (2012), Terno, S. O. (2009), Tiaglo, O. V., (2008), Khachumyan, T. (2005).

The analysis of the scientific literature confirms the idea that the natural possibilities of developing each individual's thinking are implemented in the process of his interaction with the outside world, his knowledge of objects and phenomena, and the assimilation of the mental achievements of mankind. In the process of learning, students develop cognitive interests, mental actions and operations, and the ability to think. According to the scientific works reviewed, the purpose of modern education is not only to provide knowledge but also to teach independent thinking in order to develop the necessary competencies. In terms of the problem under consideration, the following issues are relevant:

- verbal-logical thinking as one of the types of thinking characterized by using concepts and logical structures; it functions on the basis of linguistic means and represents the latest stage of historical and ontogenetic development of thinking; various types of generalizations of Lugovyi, V., & Petroye, O. (2021); Lugovyi, V., & Talanova, Z. (2020).; Lukianenko, D. H., & Antoniuk, L. L. (2019), Ponomarenko, V. S., Klebanova, T. S., & Guryanova, L. S. (2021), I.V. Stavyska National Technical University. (2012), Terno, S. O. (2009), Tiaglo, O. V., (2008), Khachumyan, T. (2005) are formed and function in its structure;
- creative thinking, which is characterized by creating a subjectively new product and new formations in the course of cognitive activity related to motivation, goals, evaluations and meanings; it differs from the processes of applying existing knowledge and certain skills characteristic of reproductive thinking;
- visual and figurative thinking, which is connected with representing situations and changes in them; it is used to reproduce the fullest possible variety of actual characteristics of an object; its important feature is the establishment of unusual.
- "incredible" combinations of objects and their properties; it is one of the stages of ontogenetic thinking development [ibid.].

From the philosophical point of view (Ogrodzka-Mazur, E., & Saukh, P. (2020), Sergii V. Savchenko, Svitlana O. Shekhavtsova, Vladimir I. Zaselskiy (2020), Sydorenko, V. V., Popova, A. B., Rehesha, N. L., Sinenko, O. O., Trynko, O. I. (2021), thinking is an active process of reflecting the objective world in concepts, judgments, theories, etc., related to the solution of certain tasks, the highest product of a specially of organized matter – the brain.

It should be noted that in the analyzed scientific works, thinking is connected with social development; it arises in the process of people's productive activity and provides an indirect reflection of reality; it has a social nature; it exists only in connection with labor and, what is more important, speech activity, which is characteristic of human society.

Thinking is carried out in close connection with speech, and its results are recorded in language. It is characterized by such processes as: abstraction of essential features from non-essential ones and from the objects themselves, analysis and synthesis of imaginary and mental objects, setting certain tasks and searching for ways of solving them, generalization, classification, hypothesizing, ideas, etc.

The result of the thinking process is always a certain opinion. Emanuel, T.L.F. (2013), Vasilyuk, A., & Day, M. (2019), Kievišas, J., & Otych, O. M. (2019), Kremen, V. H. et al., (2020); Kremen, V. H. (2021), Kushnir, V. (2001), Lugovyi, V. I., Saukh, P. Yu., & Talanova, Z. V. (2021); Lugovyi, V. I., Sliusarenko, O. M., & Talanova, Z. V. (2021); Lugovyi, V., & Petroye, O. (2021); Lugovyi, V., & Talanova, Z. (2020).

As a result of the analysis of numerous publications on the issue of critical thinking development, it has been established that although authors use different definitions of the concept, they all have a common

essential component. Critical thinking involves evaluative cognitive activity, i.e., verifying the content of acquired information. Differences in the provided definitions relate to the criteria for evaluating the acquired information. Some scientists consider the criterion to be the subject of cognition, accepted samples, and standards, while others propose to evaluate based on the results of the activity. In the framework of this study, we adhere to the following working definition: critical thinking is evaluative-reflexive cognition of the surrounding reality, which allows a person to formulate their own views, form concepts, and beliefs based on the available and known knowledge (facts) of the subject of cognition.

3. Methods

The conducted research employed several general scientific methods to achieve its objectives. These methods included the comparative method, analytical method, historical method, experimental method, and literature review method. The comparative method allowed for an analysis of the impact of critical thinking on the pedagogical sphere by comparing different approaches and practices. Through the analytical method, complex educational phenomena related to critical thinking were deconstructed and examined in detail. Researchers explored various aspects of critical thinking to gain a comprehensive understanding. The historical method facilitated an investigation into the historical development and evolution of critical thinking in the pedagogical sphere. By studying its origins and progression over time, researchers could contextualize current practices and identify underlying factors influencing its implementation.

The experimental method was employed to conduct controlled experiments or studies that aimed to measure the impact of critical thinking on teaching and learning in high schools. Through this method, researchers could gather empirical evidence and establish causal relationships between critical thinking interventions and educational outcomes. The literature review method involved a comprehensive analysis of existing academic literature, research studies, and publications pertaining to critical thinking in education. By synthesizing and critically evaluating previous works, researchers identified trends, knowledge gaps, and areas requiring further investigation. This method provided a solid foundation of existing knowledge and informed the direction of the study. By employing these general scientific methods, the article successfully achieved its aim of exploring the relationship between critical thinking and the pedagogical sphere, generating new insights, and contributing to the existing body of knowledge in the field of education.

4. Results

Developing critical thinking has always been and remains one of the main goals of higher education. However, in the context of modern society's digitalization, the education system's technological base and the learning process's significant changes (where students got autonomy and opportunities for obtaining information of varying quality from various sources, often conflicting and not entirely reliable one, which complicates the objective reasoning and conclusions) arise the new aspects of the problem, which necessitate appropriate research of the process of forming students' critical thinking.

The problem of developing students' critical thinking is relevant worldwide. The task of modern universities is to create such learning conditions that would help students and graduates of higher education institutions possess critical thinking at an advanced level and be able to find solutions to the most important tasks. Critical thinking allows for the most effective application of innovative technologies, considering students' individual characteristics and the social conditions of their development. Training highly qualified specialists capable of developing and implementing new methods and technologies for developing students' critical thinking is necessary to solve this task effectively.

The development of students' critical thinking is particularly crucial in the context of higher professional education. Many university students often need help to perform tasks that require intellectual effort and critical thinking skills. Since most students only perceive new information in a ready-made form and refrain from actively participating. Thus, students remain passive, and their cognitive activity is limited to simply reproducing the information they receive.

As a result, it is necessary to radically change the form of conducting classes from traditional to non-standard in the educational policy of our country. It is not enough to introduce a separate course on critical thinking or explain how it works but to implement modern methods of developing critical thinking in specific practical classes to make teaching critical thinking effectively.

A personality with developed critical thinking has the following characteristics:

- the ability to form their own opinion: individual position is based on critical assessment of the situation and circumstances, formed based on data analysis and comparison, not taken "on faith" but initially doubted and verified;
- the ability to choose to seek original, new ways of solving problems, the most effective development strategies: to identify problems, search and find alternative ways to solve them;
- the ability to analyze and make a self-analysis – to critically evaluate not only others but also oneself: the ability to engage in constructive internal and interpersonal dialogue, to listen to one's self, to analyze the course of one's life, to evaluate the results of one's actions, to identify and correct one's own mistakes.

Critical thinking can and should be taught. Therefore, it is necessary to understand the nature of critical thinking development, i.e., the stages a person goes through to improve one's thinking.

In order to think critically, every individual must go through several levels of development of critical thinking. The quality of intellectual thought can be achieved through the passage of specific levels of development.

Problems associated with thinking lead to difficulties in solving life tasks. A person without critical thinking skills cannot evaluate the quality of their thinking and, therefore, cannot improve it. It is only possible to improve the quality of thinking with awareness. The lack of self-control in the process of thinking, superstitions, and mistakes depress the quality of thinking.

The peculiarity of the second level of the emergence of critical thinking is that the individual begins to realize the decisive role of thinking in their life. The individual enters the initial process of reflection, tries to control their thinking, and becomes aware of the mistakes that arise from erroneous uncritical thinking. There appears to be primary conscious thinking as a concept, conclusions, assumptions, and viewpoints, as well as the following standards for evaluating thinking, such as:

- clarity;
- accuracy;
- relevance;
- logic, and so on.

In the stage of beginning critical thinking, an individual accepts the challenge to address various problems. The individual becomes aware of problems in their thinking and attempts to understand and improve their thinking. Based on the initial understanding of their thoughts, improvement occurs, but there still needs to be more ideas about the depth of the problem. The main problem at this level is the need for more

systematic thinking. Therefore, the main task at this level is a conscious search for methods of developing thinking and using a system to achieve a goal.

At the level of practical critical thinking, an individual is distinguished by the ability to understand the narrowness of their thinking and attempts to solve problems globally and systematically. The individual feels the need to practice improving their thinking regularly and, through systematic analysis, approaches improving their thinking activity. However, there still needs to be more ideas about more profound levels of thinking. The main task at this level is to develop the necessity of systematic thinking practice.

A characteristic feature of advanced critical thinking is a self-analysis of all aspects of an individual's life and self-control over their egocentrism. The individual clearly sees the relationship between thoughts, feelings, and desires, understands that critical thinking affects the quality of life, and thinks accurately, clearly, and logically.

Advanced critical thinking promotes understanding of an individual's strengths and weaknesses, identification of egocentricity, and effective use of a range of strategies for its control. At the stage of mastering critical thinking, an individual takes responsibility for their thinking, doing so consciously and constantly improving strategies of cognitive activity. Next, the person develops their thinking to the level of awareness. At this stage, the individual has rich self-assessment experience, is inclined towards fair thinking, and has a high level of control over their egocentric nature, understanding the complex interrelationship between thoughts, emotions, and behavior.

A person with improving critical thinking skills possesses a high degree of intellectual humility, honesty, perseverance, courage, empathy, autonomy, responsibility, and fairness. In addition, there is a high level of integration of fundamental values, beliefs, desires, emotions, and actions.

Critical thinking is a complex and multidimensional phenomenon. Understanding its nature and development contributes to effectively acquiring knowledge and skills and thinking correctly, analyzing, arguing, and making correct decisions. Levels of thinking are like a puzzle with pieces that can be combined in various ways. To assemble this puzzle, one must know how the pieces (thinking) work together to ensure they work correctly.

At the current stage of university education, the quality of thinking must be the highest priority, affecting the quality of life. Therefore, the joint work of the teacher and the student in the quest to improve the quality of mental activity leads to the highest goal - a continuous process of learning and self-improvement.

We offer classes to develop students' critical thinking.

Structure of the lesson

Critical thinking techniques are interesting because they can be used every day and in any class. The structure of such a lesson is quite simple:

1. Challenge.

It's the introductory part of the lesson. It is necessary to update the background knowledge: encourage students to tell you what they have already learned about the topic and what they can learn. This way you create the ground for learning new knowledge.

What teaching methods can be used? Brainstorming, association bush, cluster, idea basket, prediction tree, Venn diagram, etc.

2. Comprehension.

It's the basic part of the lesson. The teacher introduces the new information to the students, and it is important to help them organize the knowledge they have gained. Encourage students to ask questions, try to apply the new knowledge in practice, share their expectations and results, and draw conclusions.

What teaching methods can be used? Concept mapping, jigsaw, teaching by learning, T-table, text mapping, discussion, INSERT, etc.

3. Reflection.

The last part of the lesson is actually a summary. This is the most significant stage, during which the main ideas of the lesson are systematized, summarized and interpreted. An important aspect is the exchange of opinions between students and the expression of personal attitudes towards what they have learned.

What teaching methods can be used? Logbook, senkan, fishbone, opinion scale, PRESS, conceptual table, etc.

We use methods of critical thinking development in practice

Let's now see how you can use these teaching methods in practice.

Stage one: a challenge. Encourage students to brainstorm. Divide them into teams and give them the task of making assumptions about the role of the state in forming economic strategy and what it is responsible for. Students should write down all their thoughts, and then each team will present their opinions. The team with the most accurate statements wins.

Stage two: comprehension. Focus on the topic of the lesson. The teacher explains what role the state actually plays in a market economy, what is the basis for key decisions, and what factors can influence the state of affairs. Here you can use the "Find the mistake" technique, deliberately providing a false hypothesis. Divide students into groups to discuss this hypothesis and find answers to the following questions: "do you agree with this statement", "how can you support your opinion", "offer your own vision of economic processes". One student in each group should act as an analyst, whose task will be to identify opposing viewpoints and record key arguments. Give him a secret assignment: let the analyst observe how the group members come to particular conclusions.

Then the analysts of the separate groups should unite into one team and track the stages of developing students' ideas and arguments. Based on the outlined, a conclusion can be drawn: how exactly was the choice made in favor of one or the other viewpoint? This task is quite difficult, so the teacher should help students. After that, you can listen to the reports of the teams, which have to present their point of view, arguing for it. The winner is the team that not only has made the most correct conclusions, but also managed to provide comprehensive arguments. You should take into account the opinion of analysts.

Stage three: reflection. At this stage, you can offer students another exercise based on the INSERT method. For this purpose, after the end of the story, highlight the main points – tell the students to write them down and put the corresponding marks next to them:

- + (I knew it);
- (I did not know that);
- ? (This surprised me);
- ! (I would like to know more about this).

After that, the teacher asks students to identify what they learned in the class, what was most interesting, what they would like to hear more about, and to evaluate their knowledge on a 5-point scale.

As you can see, developing critical thinking is not only useful but also interesting. Moreover, students will definitely like this structure of the lesson.

5. Discussion

We agree with well-known American scientist Richard Paul put forward the following idea for the development of critical thinking:

- during the development of critical thinking, each individual goes through several specific and predictable levels.
- progression from one level to another depends on the individual's readiness for the conscious development of critical thinking.
- success in education is closely related to the quality of an individual's intellectual activity (Paul, 1990).
- during the development of critical thinking, there can be possible regressions in intellectual activity (Talanova et al., 2021).

True critical thinking should be demonstrated in all areas of an individual's life, as the quality of their life depends mainly on their ability to think critically, not only in academic areas but also in many practical areas of life.

There are six stages of critical thinking development, according to Richard Paul:

- stage 1: Unreflective thinking
- stage 2: Challenged thinking
- stage 3: Beginning thinkers
- stage 4: Practicing thinkers
- stage 5: Advanced thinkers
- stage 6: Master thinkers

A defining feature of the first or unreflective level of thinking is ignorance of the crucial role of thinking in a person's life (Paul, 1990).

Developing critical thinking skills in students is a crucial aspect of education, as it empowers them to think independently, evaluate information critically, and make informed decisions. However, creating the appropriate pedagogical conditions for fostering critical thinking poses challenges that need to be addressed. Teachers play a vital role in facilitating the development of critical thinking by providing opportunities for students to analyze, question, and reflect on the presented material. The principles of critical saturation and critical correctness should guide the delivery of educational information, encouraging students to evaluate and assess it objectively.

6. Conclusion

One of the main problems in developing critical thinking skills in students is creating the appropriate pedagogical conditions. Developing and fostering critical thinking skills in students requires developing their ability to confidently navigate the presented material (to the extent of not accepting educational information without reservation or blindly, to be able to assess the degree of its truthfulness and relate it to what is known, understood, and accepted). The student should be focused on a comprehensive analysis and understanding of external information, identifying hidden deep internal characteristics and reasons for

certain phenomena that cannot be readily perceived. Teachers should adhere to the principles of critical saturation of educational information and critical correctness. On the one hand, critical saturation of educational information involves the presence of formal and assertive sense-seeking fragments in reasonable quantities, which encourage students not to believe but to evaluate the proposed judgments critically.

On the other hand, critical statements by students require compliance with the requirement of argument truthfulness. Conforming educational information to the criteria listed above is only one of the necessary conditions for developing students' critical thinking skills. Thus, the analysis of the state of the problem of developing critical thinking skills in university students allows us to state that despite the existence of a considerable number of scientific publications on the subject, there are several unresolved issues regarding the development of critical thinking: signs of critical thinking, criteria, indicators and levels of its development, diagnostic tools, a qualitative adaptation of Western technologies to the national education system, development of optimal and effective technologies for forming the critical thinking skills of university students.

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