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## MODERN TECHNOLOGIES FOR THE DEVELOPMENT OF CRITICAL THINKING AMONG HIGHER EDUCATION STUDENTS

**Abstract.** The article examines modern technologies for developing critical thinking among higher education students as a key factor in training highly qualified professionals in the context of globalization challenges, rapid sociocultural transformations, and the digitalization of society. It is emphasized that critical thinking functions not only as a component of the professional and personal competence of a modern student but also as a universal 21st-century skill that ensures the ability to deeply analyze and evaluate information, identify cause-and-effect relationships, formulate well-grounded conclusions, and make effective decisions in complex, problematic, and uncertain situations.

The study theoretically substantiates the expediency of integrating innovative pedagogical technologies into the higher education learning process, in particular problem-based learning, the debate method, case study, project-based activities, the "flipped classroom" model, as well as the use of interactive and digital educational platforms that foster the development of students' analytical, communicative, and reflective skills. Special attention is given to the role of the teacher as a facilitator of the educational environment, capable of creating conditions for open dialogue, partnership interaction, and the development of self-directed learning and reflection skills.

The importance of combining traditional teaching methods with the latest digital tools is highlighted, including online courses, educational games, augmented and virtual reality technologies, which significantly expand the possibilities of critical analysis and creative comprehension of educational material. The practical part of the research focuses on testing the effectiveness of implementing these technologies in the learning process of higher education institutions, which is confirmed by analyzing the results of experimental work with students majoring in primary education.

It is concluded that the systematic, purposeful, and comprehensive use of modern educational technologies creates favorable conditions for the formation of sustainable critical thinking skills among students, ensures their readiness for future professional activity, and contributes to the development of universal and professional competencies necessary for successful self-realization in a rapidly changing world.

**Keywords:** critical thinking, higher education students, innovative pedagogical technologies, problem-based learning, digital educational platforms, competence development.

## СУЧАСНІ ТЕХНОЛОГІЇ РОЗВИТКУ КРИТИЧНОГО МИСЛЕННЯ ЗДОБУВАЧІВ ЗАКЛАДІВ ВИЩОЇ ОСВІТИ

**Анотація.** У статті розглядаються сучасні технології розвитку критичного мислення здобувачів закладів вищої освіти як ключового чинника підготовки висококваліфікованих фахівців у контексті глобалізаційних викликів, швидких соціокультурних трансформацій і цифровізації суспільства. Наголошується, що критичне мислення виступає не лише складником професійної та особистісної компетентності сучасного студента, а й універсальною навичкою ХХІ століття, яка забезпечує здатність до глибокого аналізу й оцінювання інформації, виявлення причинно-наслідкових зв'язків, формулювання аргументованих висновків, ухвалення ефективних рішень у складних, проблемних і невизначених ситуаціях.

Теоретично обґрунтовується доцільність інтеграції інноваційних педагогічних технологій у навчальний процес вищої школи, зокрема проблемно-орієнтованого навчання, методу дебатів, кейс-методу, проектної діяльності, технології «перевернутого класу», а також застосування інтерактивних і цифрових освітніх платформ, які сприяють розвитку аналітичних, комунікативних та рефлексивних умінь студентів. Особливу увагу приділено ролі викладача як фасилітатора освітнього середовища, здатного створити умови для відкритого діалогу, партнерської взаємодії та розвитку навичок самостійного пізнання й рефлексії.

Наголошується на важливості поєднання традиційних методів викладання з новітніми цифровими інструментами, серед яких онлайн-курси, освітні ігри, технологій доповненої та віртуальної реальності, що значно розширяють можливості критичного аналізу та творчого осмислення навчального матеріалу.

Зроблено висновок, що системне, цілеспрямоване й комплексне використання сучасних освітніх технологій створює умови для формування в студентів стійких навичок критичного мислення, забезпечує їх готовність до майбутньої професійної діяльності та сприяє розвитку загальнолюдських і фахових компетентностей, необхідних для успішної самореалізації у швидкозмінному світі.

**Ключові слова:** критичне мислення, здобувачі вищої освіти, інноваційні педагогічні технології, проблемно-орієнтоване навчання, цифрові освітні платформи, розвиток компетентностей.

### INTRODUCTION

**The problem formulation.** In the modern world, characterized by the rapid pace of scientific and technological progress, globalization processes, and constant sociocultural transformations, there is an increasing demand for specialists who are not only equipped with specific knowledge but also capable of critically analyzing information, making well-founded decisions, and acting responsibly under conditions of uncertainty. Traditional approaches to learning in higher education institutions, which are mainly focused on the reproductive assimilation of knowledge, prove insufficient for the development of such a quality as critical thinking, which in the 21st century is considered a universal competence and an essential prerequisite for the competitiveness of graduates. The problem lies in finding and implementing effective educational technologies that ensure the development of critical thinking among higher education students, foster their ability for analytical reasoning, well-grounded communication, reflection, and creative problem-solving. At the same time, the practice of integrating innovative pedagogical technologies—such as problem-based learning, the debate method, the case study method, project-based activities, the "flipped classroom" model,



as well as digital tools that open new opportunities for intensifying the educational process and expanding students' cognitive potential—requires scientific substantiation and verification.

**Analysis of recent research and publications.** The Problem of Developing Critical Thinking among Higher Education Students occupies a significant place in contemporary pedagogical and psychological research. The theoretical foundations of critical thinking as an important cognitive skill were laid in the works of J. Dewey, who regarded it as a form of reflective thinking aimed at analyzing and verifying judgments. Further development of the concept was advanced in the studies of R. Ennis, D. Halpern, R. Paul, and M. Lipman, who focused on defining the structure of critical thinking, its key skills, and methods of developing it among students. In Ukrainian scholarship, a considerable contribution to the study of this issue was made by O. Pometun, L. Pyrozhchenko, and I. Zymnia, who emphasized the importance of interactive teaching methods and technologies in fostering students' analytical and reflective abilities.

Modern research (N. Bibik, O. Savchenko, L. Lukianova, T. Yatsenko) emphasizes the integration of innovative technologies into the educational process, particularly the use of problem-based learning, the case method, debates, project activities, and digital educational platforms that promote the development of critical thinking and increase students' motivation to learn. At the same time, a number of scholars (O. Spirin, V. Kukharenko, N. Morze) explore the potential of digitalization in education, highlighting the importance of combining traditional methods with innovative online tools, which significantly expand students' opportunities for independent learning and creative thinking.

However, despite the considerable scientific achievements, the issue of a comprehensive approach to integrating various pedagogical technologies and digital tools into a unified educational space of higher education institutions requires further study. The aspect of practically verifying the effectiveness of these technologies in different specialties and learning conditions, as well as defining the optimal role of the teacher as a facilitator in the process of developing students' critical thinking, also remains open. These aspects determine the relevance and scientific novelty of the presented study.

**THE PURPOSE OF THE RESEARCH** is to provide a theoretical justification and practical verification of the effectiveness of modern pedagogical technologies for developing critical thinking among higher education students through the analysis of scientific approaches, the generalization of innovative experience, the implementation of a pedagogical experiment, and the formulation of methodological recommendations for their successful integration into the educational process.

## RESEARCH METHODS

The research employed a set of methods, including theoretical analysis and synthesis of scientific sources, of modern pedagogical technologies for developing critical thinking among higher education students.

## RESULTS OF THE RESEARCH

The formation of critical thinking among higher education students is of particular importance in the teaching of such disciplines as "Effective Strategies for Implementing Innovations in the Educational Process of the New Ukrainian School," "Modern Educational Technologies in the New Ukrainian School," "Didactics," "Theory of Education" and others. It is precisely in the process of mastering these courses that the need arises for a systematic approach, which involves an organic combination of profound theoretical knowledge and practical activity. This contributes to the development of students' ability to analyze information, justify their own position, and make well-founded decisions.

In the course of the research, a set of pedagogical technologies was identified as the most effective for achieving the stated goal. These include problem-based learning, the case method, the debate method, project-based activities, the "flipped classroom" model, the use of digital educational platforms, and virtual environments. The application of these technologies opens up wide opportunities for the development of analytical skills, the formation of critical and creative components of thinking, and the enhancement of higher education students' independence (Yatsenko, T., 2021).

**Example:** Students are asked to analyze a case study: "Implementation of a new digital platform for teachers in the New Ukrainian School (NUS) in primary grades: benefits, risks, and potential challenges".

### Tasks for students:

1. Identify the key benefits of implementing the platform for the educational process.
2. Identify potential difficulties and risks associated with its use.
3. Justify their own position regarding the feasibility of implementing the platform, using arguments from scientific sources and practical experience.
4. Propose alternative strategies for implementing technologies in NUS to achieve optimal results.

### Methods to stimulate critical thinking:

- **Debates:** Students are divided into two groups, "for" and "against," and discuss the effectiveness of the platform.
- **Project-based activity:** Development of a step-by-step plan for implementing the platform, taking possible challenges into account.
- **Reflection:** Each student evaluates their own decisions and arguments in writing, analyzing the strengths and weaknesses of their position.

**Outcome:** Students learn to analyze information, identify cause-and-effect relationships, formulate well-founded conclusions, and make effective decisions in uncertain situations, which forms the basis of critical thinking.



At the same time, the effectiveness of implementing educational innovations largely depends on the personality of the teacher. When an educator, with genuine love for students, applies modern methodologies, they cease to be merely learning tools and become a source of spiritual and intellectual growth. Such a teacher becomes a kind of "sun" for students, which, through rays of knowledge, wisdom, and warmth, helps them to unlock their inner potential.

Thus, the synergy of professional mastery, a systematic approach, and the teacher's love creates a unique educational environment in which innovative technologies gain vital force and become a factor in nurturing a mature, critically thinking personality. This allows for generalization and the transition to the formulation of the study's conclusions and proposals (Kopchuk-Kashetska, M., Klymyshyn, O., Semak, O., Yaroshenko, I., & Maslii, O., 2023).

The methodological basis of the research was grounded in the combination of competence-based, learner-centered, and activity-based approaches. The competence-based approach ensured a focus on developing key 21st-century skills, with critical thinking taking a leading place among them. The learner-centered approach contributed to creating conditions for the development of students' individual abilities, while the activity-based approach provided for the active engagement of students in the process of learning through practical tasks and the modeling of real professional situations.

During the experimental work, the following tools were applied:

- **Problem-based learning**, which involved working with open-ended problems that have no single solution and stimulated students to search for arguments and formulate their own conclusions.
- **Case method**, which allowed for modeling real professional situations, analyzing possible solutions, and developing decision-making skills.
- **Debate method**, which promoted the development of communication skills, the ability to defend one's own position with arguments, and the capacity to critically evaluate the opponent's arguments.
- **Project-based activities**, which ensured the integration of knowledge from various disciplines and the development of teamwork skills.
- **Flipped classroom technology**, which encouraged greater student independence in mastering material and freed up class time for practical work.
- **Digital educational platforms** (online courses, interactive tests, virtual laboratories, educational games), which increased access to information and created conditions for the individualization of learning.

The research results demonstrated that the systematic use of these technologies contributes to:

- improving students' analytical abilities;
- developing skills of well-grounded communication;
- fostering the ability to work in a team and make joint decisions;
- increasing motivation for learning and independent knowledge acquisition;
- forming reflective skills necessary for self-assessment of one's own activity (Savchenko, O., 2019).

The analysis of the experimental work confirmed that the most effective approach lies in combining traditional and innovative methods, particularly the integration of problem-based learning with digital platforms and virtual tools. This not only fosters the development of critical thinking but also forms in students the ability to respond flexibly to the challenges of the modern world, which is an important prerequisite for their professional self-realization.

## CONCLUSIONS AND PROSPECTS OF FURTHER RESEARCH

The conducted research provides grounds to assert that the development of critical thinking among higher education students is one of the leading goals of modern higher education, as it constitutes a key competence necessary for successful professional activity and adaptation in a rapidly changing society.

Summarizing the results of the study, the following conclusions can be drawn:

1. Critical thinking is a universal 21st-century skill that enables students to analyze, reflect, engage in reasoned dialogue, and make effective decisions in complex situations.
2. The most effective technologies for developing critical thinking in higher education students include problem-based learning, the case method, the debate method, project-based activities, the flipped classroom model, interactive digital tools, and virtual learning environments.
3. Practical verification showed that the integrated application of these technologies contributes to the improvement of students' analytical and communication skills, the development of teamwork, independence, and reflective abilities.
4. Combining traditional and innovative approaches creates a favorable educational environment in which the student is regarded not only as an object but also as an active subject of the learning process.

It is recommended to systematically implement innovative pedagogical technologies in higher education institutions, taking into account the specifics of educational programs and professional training. Continuous professional development of teachers regarding the use of modern digital platforms, interactive methods, and tools for developing critical thinking is advisable. The interdisciplinary nature of learning should be strengthened by integrating the development of critical thinking across all disciplines. It is also important to develop a system for diagnosing students' critical thinking levels to further improve the educational process.

Among all modern educational technologies, a special place belongs to those based not only on methodological techniques or innovative models but also on the genuine love of the teacher for their profession and students. Any technology loses its effectiveness if applied formally, without inner warmth and inspiration. The most effective pedagogical strategy is one based on personal dedication, spiritual generosity, and the deep love of the teacher.



When a teacher implements educational innovations with great love, they cease to be mere tools and become a true source of student development. In this process, the teacher becomes a kind of sun, whose rays of knowledge, wisdom, and love provide light, warmth, and inner strength. Such a combination of professionalism and sincerity creates an atmosphere of trust, inspiration, and a desire for learning.

Students perceive this love and warmth—not through words, but through sincere care—which awakens in them the desire to learn, grow, and overcome challenges. In this way, a genuine educational environment is formed, where knowledge becomes not only an intellectual achievement but also a source of spiritual wealth.

Thus, the effectiveness of any educational technology directly depends on the extent to which the teacher fills it with love, wisdom, and warmth. Only then does learning transform into a living process, in which students do not merely acquire information but experience the joy and meaning of learning.

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