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DEVELOPMENT OF CRITICAL THINKING IN THE PROCESS OF TEACHING ECONOMIC DISCIPLINES TO FUTURE TECHNOLOGY TEACHERS

Abstract

In the contemporary educational process, the development of critical thinking is one of the key objectives in the professional training of future specialists, particularly future technology teachers. Rapid economic and technological changes require prospective educators to navigate complex situations, analyze economic processes, and make well-founded decisions.

The development of critical thinking is especially important for future technology teachers, who must not only possess knowledge of economics but also be able to apply it effectively in pedagogical practice. This approach contributes to the preparation of professionals capable of solving diverse educational and professional tasks while considering both economic and social factors.

This article examines the role of critical thinking in teaching economic disciplines to future technology teachers. Critical thinking enables students not only to acquire theoretical knowledge but also to apply it in real-world contexts by analyzing economic situations and predicting their possible outcomes. The development of economic competence plays a significant role in fostering the ability to make independent and informed decisions, which is an essential component of future teachers' professional competence.

The study emphasizes the necessity of applying interactive teaching methods, including problem-based learning, case-study methods, debates, and modern digital technologies that facilitate the creation of interactive learning environments. These approaches contribute to the development of analytical skills, the ability to synthesize information, and the formation of argumentation and evidence-based decision-making skills. Furthermore, they provide students with opportunities to work with authentic economic situations, making the educational process more practice-oriented and relevant to contemporary professional realities.

The article also highlights the importance of integrating economic knowledge with other academic disciplines, as such an interdisciplinary approach enables students to develop a comprehensive understanding of economic processes while enhancing critical thinking at the interdisciplinary level.

Overall, the study demonstrates that the development of critical thinking in the process of teaching economic disciplines constitutes an essential foundation for improving the professional training of future technology teachers. It enables them not only to understand economic processes but also to apply the acquired

knowledge effectively in their future pedagogical practice, preparing learners to make informed decisions in a rapidly changing economic environment.

Keywords: critical thinking; economic disciplines; future technology teachers; economic competence.

Problem Statement. In today's world, where economic and technological changes occur rapidly, the development of critical thinking has become an essential component of the professional training of future educators. The challenges of globalization and rapid digital transformation require future technology teachers to navigate complex economic and social contexts and make informed decisions based on data analysis. They are expected not only to possess knowledge of economics but also to apply this knowledge effectively in pedagogical practice. Therefore, critical thinking constitutes an important element of their professional competence.

Critical thinking enables students to evaluate economic phenomena, make evidence-based decisions, and anticipate the consequences of various economic situations. It allows future technology teachers not only to analyze problems but also to consider alternative solutions and select the most effective course of action. A systematic approach to teaching economic disciplines contributes to the development of students' ability to make independent decisions, forecast possible outcomes, and critically evaluate the implications of their decisions for future professional activities.

Under conditions of continuous change in education, there is a growing need to develop innovative approaches to teaching economic disciplines that foster critical thinking. The professional preparation of future technology teachers should extend beyond the acquisition of theoretical knowledge to include its practical application in authentic educational and economic contexts. Such an approach stimulates the development of critical thinking, enhances analytical and problem-

solving skills, and prepares future educators for effective professional activity in a rapidly changing socio-economic environment.

Analysis of Recent Research and Publications. Research devoted to the development of critical thinking in the educational process emphasizes the importance of integrating this component into educational curricula, particularly in the professional training of future teachers. According to Kurok [2], critical thinking serves as the foundation for the development of economic competence, as it enables students to evaluate various economic situations and make informed decisions.

The development of critical thinking represents an essential stage in professional education, allowing future specialists not only to understand economic processes but also to influence them through effective decision-making in real-life contexts.

A significant contribution to this field has also been made by researchers such as Melnychenko [4], who emphasizes the importance of interactive teaching methods that promote students' critical thinking, and Arabadzhieva [1], who investigated the role of innovative educational technologies in fostering critical thinking among future teachers. Her research highlights the use of digital technologies that facilitate the creation of interactive learning environments and promote the effective development of students' analytical abilities.

The successful development of critical thinking requires not only the acquisition of theoretical knowledge but also the creation of conditions for its practical application. The use of various instructional approaches, including problem-based learning, role-playing activities, and case-study methods, contributes significantly to the development of critical thinking and prepares students to solve complex economic problems in professional practice.

Therefore, the development of critical thinking in the process of teaching economic disciplines to future technology teachers is an essential component of

their professional preparation for pedagogical activity. It enables them to develop the ability to analyze economic phenomena, make informed decisions, and anticipate the consequences of their actions. Given the ongoing transformations in both the economy and education, it is important to continue developing educational approaches that foster these competencies through the implementation of innovative technologies and interactive teaching methods.

The aim of the article is to investigate the development of critical thinking in the process of teaching economic disciplines to future technology teachers and to identify effective methods and approaches that contribute to the formation of their economic competence.

Presentation of the main material of the study. Critical thinking is a multifaceted cognitive process that encompasses the ability to conduct in-depth analysis, make objective evaluations, integrate and synthesize information, and effectively justify one's opinions and decisions. This process facilitates a comprehensive understanding of various phenomena and situations, enabling individuals to draw well-founded conclusions, identify weaknesses in arguments, assess the potential consequences of decisions, and anticipate future developments. In the context of the rapidly evolving modern world, critical thinking has become an indispensable component of the educational process, as it enables individuals to adapt to continuous change and make effective decisions under conditions of uncertainty [4].

Within the context of teaching economic disciplines, critical thinking occupies a particularly important role because it not only promotes a deeper understanding of theoretical knowledge but also enables students to transfer that knowledge into practice by applying it in real-world situations. This approach contributes to the development of students' ability to analyze economic processes, investigate their impact on the socio-economic environment, and predict the potential consequences of future decisions. The ability to conduct objective

analyses of economic phenomena allows future teachers not only to master facts and theories but also to critically evaluate the effectiveness of different economic approaches and select the most appropriate strategies for their practical application [6].

This is particularly important for future technology teachers, whose professional activities require the integration of knowledge from various fields, including economics, to address pedagogical and practical challenges. Critical thinking enables them not only to make informed decisions based on data analysis but also to anticipate and evaluate the potential consequences of those decisions, which is essential for fostering economic literacy among pupils and students. Moreover, it develops their ability to justify conclusions, make evidence-based decisions in the context of continuously changing socio-economic conditions, and effectively process complex and dynamic information.

Therefore, critical thinking not only helps future technology teachers comprehend and integrate economic knowledge but also serves as an essential tool for developing their economic competence, enabling them to make informed decisions, effectively predict outcomes, and adapt to rapidly changing environments.

The development of critical thinking is a complex and multidimensional process that requires the use of interactive teaching methods capable of stimulating students' cognitive activity and ensuring their active engagement in learning and reflective thinking. Traditional teaching approaches, which are primarily based on passive knowledge acquisition, do not fully meet the demands of contemporary education because they fail to encourage students to analyze information critically, reflect on alternative perspectives, and justify their own decisions. Consequently, the effective development of critical thinking requires the implementation of instructional methods that not only facilitate the acquisition

of theoretical knowledge but also foster independent thinking, analytical reasoning, and evidence-based decision-making skills.

Case-study methods represent another important instructional approach that enables students to work with real or simulated situations requiring analysis, decision-making, and evaluation of the consequences of their decisions. The use of case studies allows students not only to apply theoretical knowledge in practice but also to develop critical thinking skills by analyzing situations, identifying alternative solutions, and selecting the most effective course of action. This approach promotes the ability to synthesize information from multiple sources, generate innovative solutions, and evaluate their feasibility and effectiveness [5].

The integration of modern educational technologies into the learning process makes it possible to create interactive learning environments that encourage active student participation. These technologies may include online courses, simulation software, virtual learning games, and interactive digital platforms designed for collaborative discussion and problem-solving. Through these technological tools, students can work with large datasets, model various economic scenarios, and evaluate the effectiveness of different decisions in real time. Such technologies not only enhance students' analytical abilities but also enable them to develop their own projects, formulate and justify their ideas, and present evidence-based solutions in an interactive environment [1].

Overall, the application of interactive teaching methods is a crucial factor in the development of students' critical thinking. These approaches facilitate deeper knowledge acquisition, strengthen analytical abilities, and foster the development of argumentation and evidence-based decision-making skills. They transform students into active participants in the educational process, enabling them to critically evaluate information and make informed decisions, which constitute the foundation of their future professional competence.

Research on the development of economic competence places particular emphasis on the integration of economic knowledge with other academic disciplines. In particular, Kurok and Kondratenko [2] argue that effective economics education should extend beyond the theoretical acquisition of knowledge to include the development of students' capacity for independent analysis of economic situations, which serves as the basis for the development of critical thinking. Matukova [3] emphasizes the importance of entrepreneurial competence as an integral component of the economic competence of future professionals in economics. Entrepreneurial competence includes the ability to analyze economic situations and make balanced, evidence-based decisions in a variety of professional contexts.

The key components of critical thinking development include analytical abilities, the capacity to synthesize information from diverse sources, and the ability to make informed, evidence-based decisions. These competencies form the foundation for successful professional activity, enabling future technology teachers to respond effectively to contemporary economic challenges and to apply economic knowledge in both educational and practical settings.

To effectively develop critical thinking among future technology teachers in the process of teaching economic disciplines, it is necessary to employ interactive and active teaching methods that actively engage students in analyzing, evaluating, and making decisions based on economic knowledge. The following instructional stages and methods can be implemented within the educational process.

1. Problem-Based Learning (PBL)

Problem-Based Learning (PBL) serves as one of the fundamental approaches to developing critical thinking because it requires students to solve problems that do not have predetermined solutions. Rather than simply transmitting ready-made knowledge, the instructor creates learning situations that require students to independently search for solutions, analyze available information, and justify their

conclusions. This approach enables future technology teachers not only to acquire theoretical knowledge but also to apply it in authentic situations related to technological processes and economic decision-making.

Implementation examples:

Example 1. Students are presented with a scenario in which a manufacturing enterprise experiences financial losses due to excessive material costs in its technological processes. Their task is to analyze the production costs of a single product, identify inefficient stages of the production process, and propose optimization strategies to reduce costs. Using both economic and technological knowledge, students evaluate alternative solutions and justify the most effective improvements.

Example 2. Students are given a business scenario involving the development of a new educational course for technology-oriented secondary school students. They are required to estimate the costs of equipment and materials for a school workshop, analyze expenditures associated with different technological processes, and determine the most economically efficient alternatives. Students justify their decisions based on learners' educational needs and the financial constraints of the educational institution.

2. Debates and Classroom Discussions

Debates and classroom discussions are effective instructional tools for fostering critical thinking because they encourage students to formulate evidence-based arguments, evaluate alternative viewpoints, and actively participate in collaborative decision-making. For future technology teachers, the opportunity to discuss issues related to the economic efficiency of technological processes is particularly valuable, as it develops their ability to assess different perspectives and identify optimal solutions for educational and practical contexts.

Participation in structured debates strengthens students' analytical reasoning, communication skills, and capacity to defend their positions using logical

arguments and empirical evidence. At the same time, it promotes openness to alternative viewpoints, constructive dialogue, and reflective thinking, all of which are essential components of critical thinking and future professional competence.

Implementation process:

Example 1. Students participate in a debate on the topic: *"What are the advantages and disadvantages of using 3D printing in manufacturing compared with traditional production methods?"* During the debate, students analyze the economic, technological, and social dimensions of the issue and develop recommendations for implementing innovative technologies in industrial practice.

Example 2. Students are divided into groups to discuss the following question: *"Should educational institutions invest in modern technologies for workshops and laboratories despite limited budgetary resources?"* They are required to evaluate the economic benefits and challenges associated with such investments and assess their potential impact on the quality and effectiveness of education.

3. Case-Study Method

The case-study method enables students to work with authentic or simulated situations involving the solution of specific economic and technological problems. This instructional approach promotes the development of analytical skills, decision-making abilities, and the capacity to evaluate the consequences of decisions, all of which are essential competencies for future technology teachers.

Implementation process:

Example 1. *Case: "Preparing for the Production of a New Product Line in a School Workshop."* Students analyze the technical and economic feasibility of launching production, determine the required materials, equipment, and labor resources, calculate projected costs, and estimate the potential educational and economic benefits of implementing the project within the school environment.

Example 2. *Case: "Integrating a New Material Processing Technology into the Educational Production Environment."* Students evaluate the costs associated with implementing the new technology, estimate its potential economic benefits, and assess the overall cost-effectiveness of the investment for the educational institution.

4. Integration of Digital Technologies

The integration of modern digital technologies into the educational process makes it possible to create an interactive learning environment in which students apply theoretical knowledge to solve authentic problems, model economic situations, analyze large volumes of data, and make informed decisions.

Implementation process:

Example 1. Students use production simulation software that allows them to modify key technological parameters, such as production volume or material costs, and observe the resulting economic outcomes. This approach enables students to analyze and predict the financial implications of technological changes.

Example 2. Students participate in simulations delivered through online learning platforms, such as virtual business management or manufacturing system simulations. These environments provide opportunities to practice decision-making within realistic economic scenarios and learn from mistakes in a safe educational setting.

5. Reflection and Self-Assessment

Reflection and self-assessment play a significant role in the development of critical thinking by encouraging students to analyze and evaluate their own learning activities. These practices help students identify their strengths and weaknesses, improve their professional skills, and deepen their understanding of economic processes.

Implementation process:

Example 1. After completing a case-study task or participating in a debate, students prepare a reflective report evaluating which approaches proved most effective, which aspects require further improvement, and which economic and technological knowledge was essential for solving the problem.

Example 2. Students conduct self-assessments of completed assignments by evaluating the quality of their decisions, reasoning, and argumentation throughout the learning process. This practice strengthens self-monitoring skills, promotes continuous self-improvement, and contributes to the development of independent critical thinking.

Conclusions. The development of critical thinking in the process of teaching economic disciplines represents a fundamental component of the professional preparation of future technology teachers. In the context of rapid technological advancement, digital transformation, and continuous socio-economic change, future educators must possess not only a solid understanding of economic concepts but also the ability to analyze information critically, evaluate alternative solutions, and make informed, evidence-based decisions. Consequently, critical thinking should be regarded as one of the core competencies underpinning the professional competence of future technology teachers.

The findings of this study demonstrate that the integration of economic knowledge with technological, pedagogical, and interdisciplinary content significantly enhances the quality of professional training. Such integration enables students to perceive economic processes as an integral part of technological education, establish meaningful connections between theory and practice, and develop a comprehensive understanding of contemporary production, entrepreneurship, and resource management.

The implementation of interactive teaching approaches—including problem-based learning, case-study methods, debates, collaborative learning, reflective activities, and the integration of modern digital technologies—creates favorable

conditions for developing higher-order cognitive skills. These instructional strategies encourage students to engage actively in the educational process, analyze complex economic situations, synthesize information from multiple sources, justify their decisions using evidence, and evaluate the potential consequences of alternative solutions. As a result, future teachers become better prepared to address professional challenges in dynamic educational and technological environments.

Furthermore, the integration of digital technologies into the teaching of economic disciplines expands opportunities for modeling authentic professional situations, analyzing large datasets, conducting economic simulations, and supporting data-driven decision-making. Such learning environments increase student engagement while simultaneously promoting independence, creativity, problem-solving abilities, and continuous professional self-development.

Therefore, the development of critical thinking should be considered one of the strategic priorities in the professional education of future technology teachers. Its systematic integration into the teaching of economic disciplines contributes not only to the formation of economic competence but also to the development of analytical thinking, professional responsibility, adaptability, and lifelong learning skills. Ultimately, these competencies enable future technology teachers to organize effective educational activities, respond successfully to the challenges of the modern labor market, and prepare future generations to make responsible and economically sound decisions in an increasingly complex and rapidly changing world.

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