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COMPETENCY-BASED APPROACH TO THE INTEGRATION OF ECONOMICS AND INFORMATICS

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Abstract

This article analyzes the theoretical and methodological foundations for forming a competency-based approach to the integration of economics and informatics. It substantiates that, in the context of the digital economy, the increasing complexity of economic processes and the rapid development of information technologies create a necessity to strengthen interdisciplinary integration within the education system. The study highlights the essence of the competency-based approach, its structural components (knowledge, skills, abilities, and practical experience), as well as the mechanisms for their development within the economic-educational process.

Keywords

integration, competence, digital economy, information technologies, economic thinking, interdisciplinary approach, educational effectiveness.

INTRODUCTION

In the context of today's globalization and digital transformation, one of the primary tasks of the education system is to train specialists who possess competitive, modern knowledge and skills. The widespread implementation of information technologies across all sectors of the economy has created a necessity for the integration of economics and informatics. In particular, an education process organized on a competency-based approach serves to develop not only theoretical knowledge but also practical skills among students.

One of the priority tasks of the modern education system is to train specialists who are highly competitive, professionally prepared, and aligned with labor market demands. In this process, it is crucial to improve the content and methods of education and to implement approaches aimed not only at developing students'

knowledge but also at enhancing their professional competencies. Therefore, a gradual transition from a traditional knowledge-based education model to a competency-based approach has become a contemporary necessity. Within the framework of the competency-based approach, the integrative method occupies a significant methodological role, as it allows the organization of the educational process in a manner that ensures interdisciplinary coherence, systematic structure, and close connection with practical activities. Through an integrative approach, the educational content is designed based on the harmonious combination of various subjects and types of activities, focusing on the comprehensive resolution of problems typical of professional practice.

As a result, a future specialist develops a holistic system of theoretical knowledge, practical skills, professional abilities, and personal-professional qualities. This, in turn, contributes to the enhancement of independent thinking, analysis of professional situations, and effective decision-making. In this regard, the integrative approach requires scientific justification as an effective pedagogical mechanism for forming and developing professional competence.

MAIN PART

Interdisciplinary integration refers to the process of ensuring interconnection between different subjects, harmonizing their content, and combining them towards a common goal. Economics and informatics are complementary disciplines by their nature. Tasks such as modeling economic processes, processing data, and conducting statistical analysis cannot be effectively performed without the use of informatics tools.

The competency-based approach provides significant opportunities for developing students' practical potential in the process of integrating economics and informatics. By reinforcing economic knowledge and analytical skills through the use of informatics tools, students not only acquire theoretical concepts but also gain the ability to apply them in real economic situations, analyze data, and make effective decisions.

For instance, the use of Python or Excel in modeling and forecasting economic processes helps students develop skills in managing complex data, visualizing statistical indicators, and interpreting results based on scientific reasoning. At the same time, working with databases and economic information systems fosters systematic thinking, data processing abilities, and the capacity to make analytical decisions among students. From this perspective, the integration of economics and informatics provides practical mechanisms for implementing a competency-based approach. Through project-based learning, practical assignments, working with real data, and the use of interactive software tools, students prepare themselves for

future professional activities. As a result, interdisciplinary integration develops students' competencies in innovative thinking, independent analysis, and solving complex problems, which serve as key factors in training competitive specialists in the context of the digital economy.

Practical aspects of integrating economics and informatics.

The practical aspects of integrating economics and informatics are primarily characterized by the expanded opportunities to analyze and manage economic processes using digital tools. In the context of the modern economy, data has become one of the key resources, and processes such as collecting, processing, and analyzing it cannot be effectively carried out without information technologies. Therefore, the comprehensive use of information and communication technologies in teaching economics has become a practical necessity.

Firstly, the use of modern software tools in statistical and econometric analysis enables the identification of economic patterns and the derivation of well-founded conclusions. With programs such as Excel, SPSS, Stata, and Python, students can perform regression analysis, calculate correlations, test hypotheses, and develop forecasting models. This process fosters students' competencies in analytical thinking, modeling of complex situations, and scientifically grounded interpretation of results.

Secondly, database management systems (such as MySQL, PostgreSQL, Oracle, and others) help develop students' skills in organizing and managing economic information. In enterprises, banks, or government institutions, economic data is generated in large volumes, and effective management of such data requires digital technologies. Therefore, in the educational process, it is crucial to teach students how to create databases, construct queries, and filter data through practical exercises.

Thirdly, economic modeling and visualization are key practical directions of integration. By creating graphs and charts, interactive dashboards, and economic simulation models, complex economic processes can be analyzed in a visually accessible manner. This not only facilitates the decision-making process but also helps develop systematic and strategic thinking among students.

Fourthly, project-based learning is one of the effective mechanisms for integration. For example, students may carry out tasks such as analyzing the activities of an enterprise based on real statistical data, developing a business plan, or evaluating the effectiveness of an investment project. In doing so, they achieve practical results by combining economic knowledge with informatics tools.

Fifthly, elements of the digital economy – such as Big Data, artificial intelligence, blockchain, and financial technologies (FinTech) – represent promising

directions for integration. Studying these technologies in connection with economic disciplines fosters innovative thinking and develops digital competencies among students.

Overall, the practical aspects of integrating economics and informatics serve to organize the educational process according to modern requirements, connect theoretical knowledge with real economic practice, and prepare competitive specialists. This process represents a key condition for the effective implementation of a competency-based approach.

Economics is one of the key factors determining the development of society, studying both the theoretical and practical foundations of efficient resource use, organization of production processes, and regulation of distribution relations. The sustainable development of any society is closely linked to the proper functioning of economic relations, the effective use of productive forces, and the material well-being of the population.

"The discipline of economic theory is a social science that is closely interconnected with other social sciences such as philosophy, sociology, psychology, law, political science, and history; it draws methodological and scientific insights from them and also serves as a source for these fields. However, none of them can replace the discipline of economic theory itself, as it has its own specific tasks and subject matter"[1, 29].

In the context of contemporary globalization and digital transformation, the development of society increasingly depends on the efficiency of economic processes and scientifically grounded management mechanisms. Economics is not only a system for creating and distributing material wealth but also manifests as a strategic factor determining the stable development of the state, social welfare, and the standard of living of the population. Therefore, a thorough study of the theoretical and practical foundations of economics is one of the essential conditions for modern development. The development of market relations, the widespread introduction of innovative technologies, and the intensification of international economic integration have further increased the demand for economic knowledge. The discipline of economics systematically studies production, distribution, exchange, and consumption processes, developing the scientific foundations for rational resource use and effective management.

In modern society, the formation of economic thinking, the enhancement of financial literacy, and the development of a culture of economic decision-making have become pressing issues. From this perspective, the main purpose of this study is to scientifically analyze the role and significance of economics in societal

development and to highlight its function in the processes of socio-economic progress.

Today, computers, which form the foundation of modern information technologies, are rapidly penetrating all areas of our lives. Therefore, special attention must be paid to studying computer technologies. In this context, the study of informatics becomes particularly important. The methodology course in teaching informatics plays a crucial role in the effective instruction of this subject.

"In lecture sessions of the Informatics course, the teacher provides students with the main theoretical knowledge. During practical sessions, the given theoretical knowledge is reinforced. Laboratory classes in Informatics are conducted individually. In educational institutions, lessons in Informatics are organized in forms such as group work, individual study, and homework assignments. The lesson process utilizes various types of sessions, including lectures, seminars, practical exercises, and laboratory work. Extracurricular activities may include independent work, self-directed learning, excursions, clubs, Olympiads, and similar activities"[2, 40].

In the educational process, project-based learning, case studies, practical exercises, and interactive methods not only reinforce theoretical knowledge but also help develop the skills to apply it in real-life situations. In particular, during the integration of economics and informatics, students are assigned analytical tasks based on real economic data, which they process using statistical and informatics tools. This approach trains students in both algorithmic and analytical thinking and plays a crucial role in enhancing their professional competencies.

Practical exercises and project-based tasks enable students to identify problematic situations, develop strategies to address them, and visualize results using digital tools. For example, tasks such as preparing forecasts based on economic indicators, modeling business processes, or analyzing databases help students develop practical skills and create situations that closely simulate real work experience. Additionally, interactive methods – such as group work, discussions, debates, and role-playing – enhance students' creative and critical thinking abilities. Using these methods, students engage with the subject not only as recipients of knowledge but as active participants, significantly improving their decision-making and problem-analysis skills. Another advantage of integrated education is that when students analyze economic processes using informatics tools, they develop a deeper understanding of the subject and gain the ability to connect theoretical knowledge with practical application.

At the same time, project-based and practical approaches develop students' independent work skills. They learn to manage their time, allocate resources

efficiently, and process information systematically. These skills are particularly important for future specialists working in the economic and IT sectors. The use of interactive and integrated methods in the educational process also fosters a culture of collaboration and communication among students, increases responsibility in team work, and enhances their leadership potential.

As a result, teaching economics and informatics in an integrated manner not only deepens students' knowledge but also broadens their practical and professional competencies. By employing project-based, interactive, and practical methods, the educational process becomes more effective, motivational, and closely aligned with real-life situations. This, in turn, contributes to the formation of future specialists capable of independent thinking in economic analysis and informatics, solving problems with innovative solutions, and possessing high professional qualifications.

CONCLUSION

In conclusion, implementing a competency-based approach through the integration of economics and informatics is one of the priority directions of the modern education system. This approach not only reinforces students' theoretical knowledge but also enhances their readiness for practical activities. In the context of the digital economy, interdisciplinary integration serves as a key factor in preparing competitive specialists.

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