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Philosophy of education as a basis for the development of innovative pedagogical technologies

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■ **Abstract.** The article aimed to explore the influence of philosophical concepts on the implementation of pedagogical innovations in the educational process. To achieve this, several philosophical movements were analysed in the context of their impact on educational innovations, and a survey of Ukrainian teachers was conducted. The results of the study demonstrated the significant influence of philosophical concepts on the development of educational technologies and pedagogical practices. According to the survey of Ukrainian teachers, constructivism was recognised as the most influential approach by 24.5% of respondents, while humanism was chosen by 20%. Pragmatism and existentialism were also named as important philosophical movements for fostering critical thinking and student autonomy. At the same time, a significant portion of respondents (31%) identified the lack of material and technical resources as the main obstacle to implementing innovations in the educational process. The study found that the integration of such innovative technologies as interactive platforms and virtual learning environments can significantly improve the quality of education if properly implemented. The research also showed that the use of innovative approaches can enhance student engagement in the learning process and increase the effectiveness of educational practices. The necessity of adapting educational technologies to the requirements of the 21st century was highlighted as crucial for the development of critical thinking, creativity, and social responsibility among students. Innovative approaches based on various philosophical concepts can ensure a higher quality educational process, contribute to personal development, and prepare students for the challenges of the 21st century. The study demonstrated that educational innovations can facilitate a rethinking of teaching approaches, improve adaptability, and enhance the relevance of the educational process

■ **Keywords:** constructivism; interactive platforms; critical thinking skills; student personal development; social responsibility

■ Introduction

The digital age has brought continuous changes to education, driven by the rapid development of technology and evolving societal demands. Educational institutions increasingly face the need to adapt their approaches

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to ensure that curricula meet new challenges and societal needs. In an information society where digitalisation and rapid transformations are an integral part of reality, there is a growing need for new methods that help students acquire theoretical knowledge and develop practical skills in critical thinking, adaptability, and independence. One of the possible ways to create more effective educational technologies is to turn to philosophical concepts that can serve as a foundation for the development of new pedagogical approaches. Implementing innovations based on philosophical approaches can provide new momentum for educational development, help design more flexible methods to address contemporary challenges, and offer students opportunities for comprehensive growth. Examining philosophical approaches in the context of technological and social changes can create conditions for a deeper understanding of the role of education and its impact on personality development. It can also identify philosophical ideas that contribute to the formation of a more adaptive, inclusive, and high-quality educational system.

Previous studies on the implementation of innovative educational technologies have revealed various aspects of this issue, particularly their relevance in the educational process and the challenges encountered. T. Voropayeva *et al*. (2022) explored the experience of implementing innovative technologies in the training of management professionals, highlighting the importance of modernising teaching approaches to align with labour market requirements. The authors found that the implementation process often faced resistance from educators and educational institutions, as well as a lack of resources, which hindered its effectiveness. Meanwhile, N. Mukan & S. Kravets (2022) defined the concept of "innovative pedagogical technologies" and concluded that it encompasses not only new teaching methods but also a comprehensive system that enhances the quality and effectiveness of education while fostering students' personal development. R. Susanto *et al*. (2020) found that technology use can significantly improve education quality, but success depends on the level of teacher training and student motivation. The study emphasised the need for a comprehensive approach to technology integration to ensure sustainable learning outcomes.

Studies of educational environments and their impact on the learning process have highlighted the importance of adapting learning spaces to the challenges of the 21st century. J. Charteris *et al*. (2020) examined how new materialist approaches transformed educational environments, making them active participants in the learning process. The authors found that the use of adaptive environmental elements promoted creative and dynamic interactions between students and teachers, which, in turn, increased learning effectiveness. I. Sasson *et al*. (2021) focused on creating educational spaces that support critical thinking, creativity, and personalised learning approaches. The integration of innovative pedagogical models in learning space design encouraged active student participation, positively impacting the quality of the educational process. A student-centred approach to adapting environments to individual needs facilitated better material comprehension and the development of essential future skills.

Research on the philosophy of education has revealed significant challenges and opportunities in this field. S. Hook (2020) emphasised that educational reforms could foster responsible citizens capable of actively participating in society and addressing its problems, while G.M. Ildefonso-Sanchez (2019) noted that incorporating leisure as an active element in educational programmes could promote critical thinking, creativity, and self-reflection. According to E. Muliadi & U. Nasri (2023), integrating philosophical approaches into education can positively influence the formation of a generation capable not only of adapting to changes but also of actively shaping them, addressing global issues, and supporting social transformations. While these studies outlined the importance of updating educational approaches, they did not provide sufficient practical recommendations for implementing these approaches in specific educational contexts.

Previous research in the philosophy of science has demonstrated the substantial impact of digital technologies on education and society while emphasising the importance of critically analysing scientific activities. M. Kultaieva (2020) examined how digital technologies alter human nature and the educational process, highlighting their dual impact: on the one hand, they created new learning opportunities, making education more accessible; on the other, they questioned traditional educational values and weakened interpersonal interactions. A. Rosenberg & L. McIntyre (2019) stressed the significance of the philosophy of science as a tool for critically analysing knowledge creation and verification, emphasising ethics, objectivity, and the social significance of scientific discoveries. Despite significant achievements, the reviewed studies lacked concrete practical recommendations for integrating philosophical approaches into digitalisation and scientific activities in real educational contexts, necessitating further research.

Previous research has shown that the implementation of innovative educational technologies faces several challenges, including the absence of a unified conceptual framework and insufficient attention to the practical aspects of their integration into the learning process. The aim of this study was to determine how philosophical concepts influence the creation and implementation of innovative pedagogical technologies. To achieve this goal, the following objectives were set: analysing philosophical concepts and their impact on educational practices; conducting a survey among

teachers to identify the most effective approaches; and developing recommendations for educational institutions on integrating philosophical approaches into pedagogical practice.

Materials and Methods

At the first stage of the study, the method of analysis was used to examine the following philosophical approaches: constructivism, pragmatism, humanism, existentialism, postmodernism, the transformational approach, and critical pedagogy. Specifically, the analysis involved studying the fundamental principles of each approach, their evolution, and their impact on pedagogical practices. The synthesis method was used to generalise the obtained information and identify interconnections between different concepts, which allowed for a holistic understanding of their influence on educational practices. The deductive method enabled the transition from general philosophical concepts to specific innovative teaching methods and revealed their practical impact on 21st-century education.

The empirical part of the study involved conducting an online survey among 290 teachers. The sample was formed non-randomly from teachers of grades 1-11 in general secondary schools in the government-controlled territory of Ukraine. Among the respondents, there were 211 women and 79 men, with an average age of 50.8 years. The study was conducted in compliance with the ICC/ESOMAR International code on market, opinion and social research and data analytics (2016). During the survey, respondents were provided with online questionnaires, which allowed for the collection of data regarding teachers' perceptions of the influence of various philosophical concepts on their practice. The questionnaires included the following open and closed questions:

1. Which of the following philosophical concepts, in your opinion, have had the greatest influence on modern pedagogical practices?
   a. Constructivism
   b. Pragmatism
   c. Humanism
   d. Existentialism
   e. Postmodernism
   f. Transformational approach
   g. Critical pedagogy
2. Which examples of innovative pedagogical technologies do you consider the most successful in your practice?
3. What are the main challenges you see in implementing innovative technologies?
4. Do you believe that certain philosophical concepts can help overcome these challenges? If so, which ones?
5. Which of the following aspects, in your opinion, most hinder the implementation of innovations?
   a. Lack of material and technical resources (equipment, educational materials, infrastructure)
   b. Lack of human resources
   c. Insufficient teacher training
   d. Lack of support from management
   e. Resistance to change among staff
   f. Insufficient funding
   g. Lack of a clear implementation strategy
6. How important is the philosophical foundation for the development of new educational technologies? (Scale from 1 to 5, where 1 – not important at all, 5 – critically important)
7. What opportunities does the implementation of innovative technologies based on philosophical approaches offer?
8. Which of the following concepts have the greatest impact on pedagogical technologies?
   a. Constructivism
   b. Pragmatism
   c. Humanism
   d. Existentialism
   e. Postmodernism
   f. Transformational approach
   g. Critical pedagogy

The method of content analysis was applied to process teachers' responses, which made it possible to determine which concepts are considered the most influential and promising in the educational environment. To gain a clear understanding of the distribution of responses to closed questions, the survey results were processed using tables in Excel. Meanwhile, for drawing conclusions, interpreting, and generalising research results, the method of induction was used, allowing for the identification of general patterns in the perception of philosophical concepts and their influence on pedagogical practices.

Results

Theoretical foundations of innovative pedagogical technologies: The influence of philosophical concepts on the development of educational methods and practices

The main philosophical trends, including constructivism, pragmatism, humanism, existentialism, postmodernism, the transformational approach, and critical pedagogy, have become a significant foundation for the development of innovative teaching methods. Each of these concepts has contributed to shaping different approaches to education, influencing the content and nature of pedagogical technologies and allowing them to be adapted to educational needs.

For example, constructivism, which is based on the idea of actively constructing knowledge, has formed the basis for methods focused on collaboration and interactivity in the learning process. This approach created conditions for project-based learning and problem-based learning, in which students not only receive information but also actively create new knowledge while interacting with the educational material. It is

known that constructivism can have a particular impact on developing critical thinking skills, analytical abilities, and independence in problem-solving (Shah, 2019; Tan & Ng, 2021; Larison, 2022), which has become the foundation for integrating modern technologies into the educational process.

Pragmatism is characterised by the practical application of knowledge and the value of experience, which has stimulated the development of learning based on experimental activities. The approach of John Dewey, an American philosopher, educator, psychologist, and founder of the philosophy of education, focuses on creating learning situations that simulate real-life problems, forming the basis for the integration of inquiry-based and experiential learning (Riga, 2020). Pragmatism has contributed to the development of adaptive teaching practices aimed at forming students' life competencies and their ability to adapt to a changing world.

Humanistic approaches have highlighted the importance of personal development and self-actualisation, playing a crucial role in shaping teaching methods that consider students' individual needs. Carl Rogers and Abraham Maslow emphasised the importance of creating an environment that fosters self-expression and personal growth for each student (Maslow, 2019; Krikorian, 2023), which has led to the implementation of individualised educational programs, coaching technologies, and methods focused on supporting personal achievements. The humanistic approach has also significantly contributed to the development of mentoring, allowing students to receive support and guidance throughout their education.

Existentialism, with its focus on freedom of choice, personal responsibility, and the search for meaning, has influenced teaching methods that promote reflection and critical thinking. Existentialists such as Jean-Paul Sartre and Martin Heidegger emphasised the importance of personal experience and independent decision-making, which has been reflected in pedagogical practices focused on dialogical learning and the formation of individual educational trajectories (Akinbode, 2023; Larivière & Quintin, 2023). This approach has contributed to the development of methods that encourage students to examine their values and beliefs, helping to shape and reconsider them.

Postmodernism, in turn, questioned established truths and norms, stimulating the development of inclusive educational practices that considered the diversity and uniqueness of each student. Postmodernist ideas (including knowledge decentralisation and critical analysis) became the foundation for methods that sought to take cultural and social contexts into account in learning. This influenced the development of multicultural education, which considered different perspectives and provided each student with the opportunity to express their opinion, fostering tolerance and an appreciation of diversity. The transformational approach, which focused on a deep re-evaluation of one's beliefs and a shift in worldview, became an essential part of pedagogy and contributed to the development of methods such as reflective learning and learning through participation in socially significant projects. This approach emphasised the importance of critically understanding one's experiences, allowing students not only to acquire new knowledge but also to integrate it into their lives, changing their attitudes and values. Thus, transformational learning contributed to the formation of individuals capable of social responsibility and active citizenship. Critical pedagogy, aimed at overcoming social inequality through education, significantly influenced the development of methods focused on shaping social awareness and an active civic stance. Paulo Freire, one of the founders of critical pedagogy, believed that education should serve as a tool for emancipation (Freire, 1978). This idea was reflected in the implementation of educational practices focused on analysing social issues, developing critical awareness, and engaging students in social projects. Such approaches helped shape students into active participants in society, capable of analysing social realities and influencing them.

Scholars noted that the impact of philosophical concepts on the development of innovative teaching methods is evident and multifaceted (Gordon & Lawton, 2002; Rosenberg & McIntyre, 2019; Liu *et al*., 2024). Each of the existing movements contributed to the formation of unique educational approaches, allowing the creation of diverse pedagogical practices that support the development of students' academic and personal competencies. The influence of philosophical concepts on the creation and use of innovative pedagogical technologies was manifested in the ways each movement's ideas were practically implemented in educational processes. Constructivism, for example, contributed to the introduction of technologies that encourage students to independently construct knowledge, such as interactive educational platforms and simulations, which allowed students to learn through experimentation and practice. These tools provided a personalised learning experience focused on inquiry and the practical application of knowledge.

Pragmatism influenced the development of pedagogical technologies that incorporate problem-based tasks and projects with a real social context. The use of digital tools for modelling and solving real-world problems (such as virtual laboratories or simulation games) became possible due to pragmatic ideas about learning through action and experience. Humanistic concepts were embodied in the creation of technologies that support an individualised approach to education. Tools such as learning systems with adaptive algorithms that adjust to each student's needs, or platforms for mentorship and coaching, illustrate the impact of humanistic ideas on innovative technologies.

These tools helped create an environment where students could feel supported in their personal development. Existentialism inspired educators to implement educational technologies that fostered student autonomy and self-determination. Self-directed learning platforms, which allow students to choose the pace and content of their studies according to their interests, emerged from existentialist ideas. Additionally, technologies that promote reflection, such as digital journals or portfolios, enabled students to analyse their own experiences and take responsibility for their learning. Postmodernism influenced the development of technologies that ensure diverse perspectives are considered in the learning process.

Innovative pedagogical platforms such as forums and online discussions allowed students to freely debate different viewpoints, fostering critical thinking and analytical skills. Postmodernism also facilitated the integration of multimedia resources into education, enabling the creation of multi-layered learning materials adapted to various cultural contexts. The transformational approach influenced the development of educational technologies aimed at deep personal change in students. Technologies that support reflection and socially meaningful activities – such as platforms for collaboration on social projects or tools for maintaining reflective journals – became an essential element of transformational learning. These technologies provided opportunities for critical reflection on experiences and encouraged students to reconsider their beliefs. Critical pedagogy contributed to the creation of educational technologies focused on analysing social realities and developing students' social engagement. For instance, platforms for civic education or simulators that model social processes allowed students to immerse themselves in societal issues and seek solutions, helping to cultivate critical awareness and a responsible civic stance, which are fundamental to critical pedagogy.

Results of expert interviews on the implementation of innovative technologies based on philosophical approaches

The results of expert interviews provided deeper insight into how philosophical foundations have influenced the implementation of innovative pedagogical technologies. During the survey, diverse opinions of educators were gathered, revealing their practical views on the importance of philosophical approaches in the educational process. This helped to understand both the theoretical influence of various concepts and their real-world applications in educational institutions. Such an approach made it possible to identify the factors that contributed to the successful implementation of innovations as well as the challenges educators faced (Fig. 1).

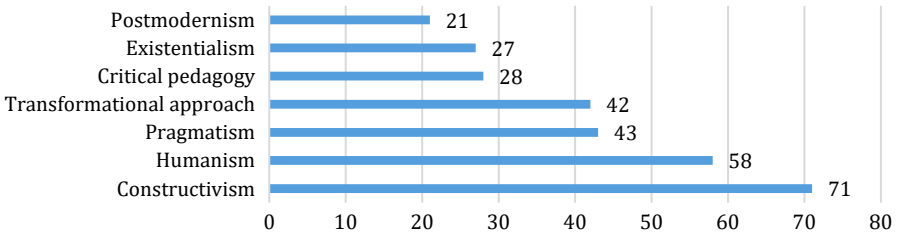

Figure 1. *"Which of the following philosophical concepts, in your opinion, have had the greatest influence on modern pedagogical practices?"*

Source: *compiled by the authors*

The survey results presented in Figure 1 showed that 71 respondents – 24.5% – preferred constructivism as the primary philosophical concept influencing existing pedagogical practices. Humanism also received significant support (58 respondents), garnering 20%, indicating the importance of creating an individualised and supportive learning environment for students. Pragmatism accounted for 14.8% of responses, while the transformational approach received 14.5%, highlighting the importance of the practical application of knowledge and personal development. These results may be linked to the characteristics of the Ukrainian education system, which is undergoing a transformation toward innovation and inclusivity. Constructivism and humanism have gained particular popularity due to educators' desire to promote active learning and personal student development, reflecting a general trend toward individualisation and more interactive approaches. Meanwhile, the popularity of pragmatism and the transformational approach indicates teachers' aspiration to make education more applied, preparing students for real-life challenges. A lower number of responses (28 respondents) regarding critical pedagogy (9.7%), existentialism (9.3%), and postmodernism (7.2%) may indicate that these concepts are less adapted to traditional teaching methods in Ukraine, where greater emphasis has been placed on standardised approaches and less on independence and critical rethinking of knowledge.

Responses to the question about examples of innovative pedagogical technologies revealed key trends in Ukrainian education. The majority of survey participants

emphasised the importance of interactive methods, such as project-based learning, which enables students to work on real-world tasks and apply their knowledge in practice: "Project-based learning is the most effective way to engage students because they see the practical significance of their work", stated one respondent. Project-based learning was also identified as a method for developing critical thinking and collaboration skills. Respondents also highlighted the importance of digital tools such as Google Classroom and Edmodo for interactive testing, as well as virtual laboratories, including PhET Interactive Simulations and Labster. Teachers stressed that these technologies make the learning process more accessible and interactive. As one respondent, a chemistry teacher, explained: "The use of virtual laboratories allows students to see what is difficult to organise in the classroom. Virtual laboratories enhance understanding of complex scientific concepts and enable me to conduct experiments that are not feasible under normal conditions". Teachers also mentioned blended learning as an effective approach that combines traditional lessons with remote elements, giving students more autonomy. "Blended learning has allowed me to provide an individualised approach to each student", shared one of the survey participants, a special education teacher. This suggests that blended learning contributes to meeting students' educational needs more effectively by adapting the learning process to each individual's abilities.

Coaching methods and mentoring were recognised as effective ways to motivate students and create a supportive environment. According to the respondents, these methods help develop soft skills such as leadership and critical thinking, which are crucial for preparing students for real-life challenges. Respondents identified several key challenges in implementing innovative technologies in the educational process. Most teachers noted a lack of material and technical resources. "There is not enough equipment to implement new technologies, even when there is a strong desire to do so", noted one educator. The absence of proper technical infrastructure limits the potential for using modern tools in education. Another significant challenge mentioned was insufficient teacher training. "Not all educators have the necessary knowledge or experience to work with digital technologies, and this becomes a serious obstacle", emphasised one of the survey participants, an IT teacher. The lack of training and professional development programmes may create barriers to the effective use of innovations.

Teachers also pointed out resistance to change from colleagues, particularly those from older generations: "Resistance to change is often encountered, especially among colleagues accustomed to traditional teaching methods". In response to the question of whether certain philosophical concepts could help overcome challenges, most respondents agreed with this assertion and highlighted humanism as a foundation that could support the development of both teachers and students in a supportive environment. Respondents also mentioned constructivism, which allows students to be actively engaged in the learning process through project-based tasks. "Constructivism enables to work alongside students as true partners in learning rather than merely serving as sources of knowledge", noted one teacher. Additionally, some educators highlighted pragmatism and the practical application of knowledge. "Pragmatism helps focus on the outcomes and benefits of innovations", observed one respondent, adding: "This approach facilitates the more effective implementation of new technologies". Other factors hindering innovation are presented in Figure 2.

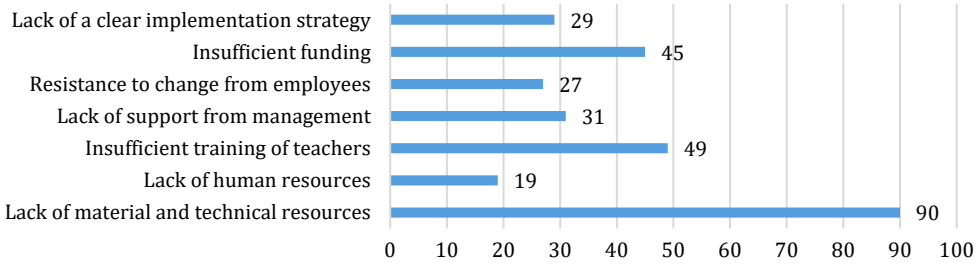

Figure 2. *Distribution of responses among Ukrainian teachers regarding factors that hinder the implementation of innovations*

Source: *compiled by the authors*

The most significant challenge for surveyed teachers in implementing innovative technologies was the lack of material and technical resources, as cited by 90 respondents (31%). This indicates that many schools in Ukraine face a shortage of necessary equipment and infrastructure, limiting the ability to integrate modern technologies into the educational process. Insufficient teacher training and lack of support from school leadership were also identified as major obstacles, highlighting the need for professional development and the creation of favourable working conditions for educators. The relatively low percentage of responses mentioning a lack of human resources and resistance to change among staff suggests that these issues have a

lesser impact but still require attention for the successful implementation of innovations. The importance of a philosophical foundation for the development of new educational technologies is illustrated in Figure 3.

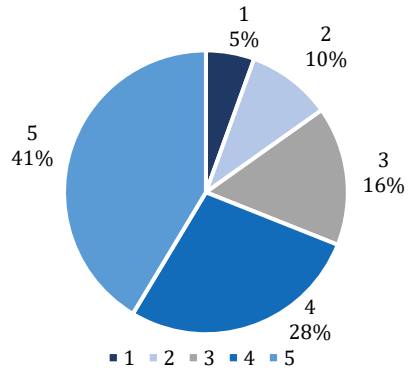

Figure 3. *Distribution of responses among Ukrainian teachers regarding the importance of a philosophical foundation in the development of new educational technologies*
Note: *1 – not important at all, 5 – critically important*
Source: *compiled by the authors*

The majority of respondents stated that a philosophical foundation is important for the development of new educational technologies. Specifically, 41% of teachers rated the importance of a philosophical foundation at the highest level (5), while a further 28% rated it as a 4. The results indicate that over two-thirds of respondents consider philosophical concepts significant for the creation of effective educational innovations. Only a small proportion of respondents rated its importance at a low level: 6% at 1 and 10% at 2. This suggests that philosophical ideas are predominantly perceived by teachers as a foundation for successfully implementing new technologies, enhancing understanding of the educational process and students' needs.

The implementation of innovative technologies based on philosophical approaches presents significant opportunities for improving the educational process. Many respondents noted that such technologies promote individualised learning and provide a more flexible approach to students' needs. "Innovative technologies based on humanism allow to focus on each student's needs and create an environment where everyone feels supported", emphasised one survey participant, a primary school teacher. Other respondents noted that innovative technologies help ensure that each student can progress at their own pace. Additionally, respondents highlighted those technologies based on constructivism contribute to the development of critical thinking and active student engagement in the learning process. One respondent, a mathematics teacher, remarked: "When I encourage students to use technologies that require independent research and analysis, they absorb information much more effectively". Overall, the implementation of innovative technologies based on philosophical approaches was identified as promoting individualised education, the development of critical thinking, and fostering responsibility for one's own learning.

The survey results indicated that, according to teachers, constructivism has the greatest influence on pedagogical technologies, receiving 25.9% of the votes (75 respondents). This is not surprising, as constructivism encourages active student participation in the learning process and knowledge creation, which forms the foundation of many existing educational approaches. Teachers are increasingly moving away from ideas of passive information absorption and seeking methods that enable students to become co-creators of their learning experience (Fig. 4).

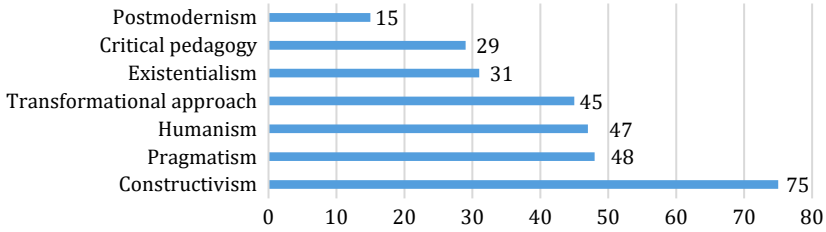

Figure 4. *Distribution of responses among Ukrainian teachers regarding which philosophical concepts have the greatest influence on pedagogical technologies*
Source: *compiled by the authors*

Pragmatism (16.6%) and humanism (16.2%) also have significant influence, as the former emphasises practicality and the usefulness of learning, aligning with the requirements for preparing students for real-life challenges, while the latter fosters a supportive learning environment that considers the individual needs of each student. These approaches help maintain a balance between academic achievement and students' personal development. The transformational approach also received substantial support (45 respondents – 15.5%), indicating educators' interest in changing educational paradigms and developing students as independent thinkers. Meanwhile, existentialism, critical pedagogy, and postmodernism have a lesser influence, which may be due to their lower practicality or the complexity of integrating them into everyday educational practice.

Postmodernism, which received only 5.2% of the votes (15 respondents), often requires a deep rethinking of traditional approaches, which is not always easy to implement in modern school settings. Teachers prefer concepts that support active student engagement, practical knowledge application, and the creation of a supportive environment.

Recommendations for the development and implementation of innovative pedagogical technologies based on philosophical concepts

Determining optimal approaches to implementing innovations based on various philosophical concepts is crucial for ensuring the development of a holistic and effective education system. Constructivism, pragmatism, humanism, existentialism, postmodernism, the transformational approach, and critical pedagogy represent diverse epistemological and methodological perspectives that can be integrated to create a comprehensive strategy for innovative educational implementation. The synthesis of these concepts allows for the formation of an educational process that meets challenges and satisfies the diverse needs of learners.

Constructivism advocates for the active involvement of students in knowledge creation, enabling the incorporation of innovations such as project-based learning and inquiry-based learning. These methods foster a deep understanding of educational material through active engagement, ensuring that students are not passive consumers of information but active participants in knowledge construction. This is fundamental to developing critical thinking skills and independent problem-solving abilities (Petrasová, 2018). Pragmatism adds an emphasis on practicality and the real-world applicability of learning, which can help integrate educational tasks oriented toward solving real-life problems. Combining these approaches can promote the development of essential life skills among students. Humanism, by focusing on the individual needs and development of each student, supports the implementation of technologies that allow for adaptive learning tailored to personal capabilities, including individualised learning plans and the use of digital platforms for self-directed learning. Existentialism, in turn, adds a component of self-awareness, fostering responsibility for one's own learning and the development of critical thinking. Postmodernism and critical pedagogy emphasise the development of critical thinking, the ability to analyse different perspectives, and the consideration of issues from unconventional viewpoints. Applying these approaches can be particularly effective in creating an environment where students feel free to express their ideas and develop independent thinking. The transformational approach enables not only the transmission of knowledge but also the transformation of students, helping them become more autonomous and open to new experiences.

The practical application of philosophical principles in designing and implementing new educational technologies can significantly enhance the learning process's effectiveness and contribute to students' comprehensive development. For educational institutions and teachers, it is essential to consider several key recommendations based on different philosophical approaches to integrate these concepts into the learning process as effectively as possible. The implementation of constructivist approaches requires creating conditions where students can actively interact with materials and construct their own knowledge. This recommendation can be realised through project-based learning, research assignments, and interactive laboratories that encourage students to explore, experiment, and analyse. Educational institutions should provide access to resources that allow students to be active participants in the process rather than mere consumers of information. The pragmatic approach focuses on real-world student needs and the practical application of knowledge: educators can use tasks that simulate real-life situations or problems, helping students understand the significance of learning. For example, collaboration with local communities or businesses can aid in implementing interdisciplinary projects that demonstrate the value of acquired knowledge.

The humanistic approach to education aims to create a supportive environment that considers each student's individual needs. This can be achieved through personalised learning plans and providing psychological support to ensure students feel valued and motivated in their educational journey. Institutions can organise teacher training sessions on applying humanistic principles in the educational process, emphasising the development of emotional competence and supportive communication. Critical pedagogy and postmodernist approaches, which focus on developing critical thinking, require teachers to encourage students to analyse different perspectives and deconstruct established norms. Practical exercises involving discussions on social and cultural issues, media text analysis, or debates can help students develop skills in critical reflection and independent decision-making. The transformational approach involves creating conditions for students' personal growth through reflection and gaining new experiences. The use of coaching methods and mentoring elements can help students find personal meaning in learning and develop a deeper understanding of themselves and the world around them. Educational institutions can establish mentorship programs where teachers act as coaches, supporting students' individual development. Integrating philosophical principles into the creation and application of new educational technologies can enhance their effectiveness and significance for students. Practical recommendations based on these concepts enable educational institutions and teachers to create an innovative and

individualised learning environment that promotes students' comprehensive development and prepares them for real-world challenges.

Discussion

The conducted study has examined in detail the impact of philosophical concepts on the development of innovative educational technologies and pedagogical practices. Particular attention was given to constructivism, pragmatism, humanism, existentialism, postmodernism, the transformational approach, and critical pedagogy. It was found that each of these schools of thought has significantly contributed to the formation of innovative teaching methods that help adapt education to the demands of the 21st century and foster students' key competencies.

The analysis of pragmatist philosophy in education demonstrated that this approach emphasises the practical application of knowledge and the value of experience. The views of John Dewey laid the foundation for pragmatic education, which focuses on creating learning situations that model real-world problems. Pragmatism has promoted learning through experimentation and action, enhancing the adaptability of pedagogical practices and developing students' life competencies, aligning with the need for education that prepares them for life in a dynamic world. The study by C. Koopman & D. Garside (2019) revealed the necessity of rethinking the philosophy of pragmatist education in light of social and cultural changes brought about by technological advancements and the digitalisation of education. The authors suggested that pragmatism should be reoriented toward a more dynamic understanding of education, considering both individual needs and societal changes. Unlike Dewey's approach, which focused on real-world problem models, C. Koopman & D. Garside (2019) proposed making pragmatism more adaptive. They emphasised that education should become active and flexible, cantered on critical action, creative problem-solving, and social engagement, thereby expanding traditional pragmatist ideas and making them more relevant in 21st-century educational settings.

The presented methods for developing critical thinking in education highlighted the importance of fostering conditions for independent student thought, active learning participation, and the consideration of alternative perspectives. Approaches such as open-ended questions, discussions, text analysis, and integrating real-world problems into learning can promote critical analysis and reflection skills. M.A. Peters (2020) examined Ludwig Wittgenstein's philosophy as a tool for developing critical thinking in education. Wittgenstein emphasised the importance of linguistic analysis, reflection, and self-criticism, helping educators avoid dogmatic approaches. Compared to the recommended active participation methods, Wittgenstein's approach focused on deep reflection and avoiding simplistic truths. Both approaches aim to shape students into independent thinkers capable of critically understanding the world. However, Wittgenstein's methods can complement students' learning by fostering a deeper comprehension of the educational process.

The study of philosophical foundations in education has revealed a significant diversity of approaches, including constructivism, pragmatism, humanism, existentialism, postmodernism, the transformative approach, and critical pedagogy. Each of these approaches has contributed to the development of innovative educational technologies: pragmatism emphasised methods for the practical application of knowledge, humanism underscored the importance of considering students' individual needs, existentialism encouraged the development of reflection and personal responsibility skills, while critical pedagogy focused on social justice and civic engagement. Thus, the examined philosophical approaches have not only influenced the formation of pedagogical methods but also ensured the comprehensive development of educational technologies that address the challenges of the 21st century, directing education toward preparing well-rounded individuals capable of critical thinking, social responsibility, and active participation in society. A.A. Abdi (2021) examined the philosophies of Paulo Freire and Ubuntu, considering them as complementary in creating an educational environment focused on collaboration and solidarity. Freire emphasised critical consciousness and liberation through education, whereas Ubuntu highlighted the importance of community and collective responsibility. The integration of these approaches could contribute to the development of students' critical thinking and social responsibility. Y. Waghid (2020) also explored the implementation of Ubuntu principles in higher education in Africa to enhance inclusivity and cultural relevance. Unlike Western models, Ubuntu fostered a supportive environment that helped reduce social inequalities in educational opportunities. Compared to other philosophical approaches analysed in this study, Freire's and Ubuntu's philosophies are more oriented toward collective development and interaction, which can serve as an essential foundation for overcoming inequality and fostering a more just society.

The role of philosophers in shaping the philosophy of education and pedagogical innovations is crucial for understanding educational approaches in the 21st century. In particular, the contributions of philosophers such as John Dewey, Paulo Freire, Jean-Paul Sartre, and others have significantly influenced the development of pedagogical ideas aimed at active participation, student independence, critical thinking, and social responsibility. The ideas of these thinkers have formed the foundation for new pedagogical practices that promote student integration into the learning process and the

development of their value system. The study by I. Snir (2020), compared to the analysis of philosophers' roles in developing educational philosophy presented in this study, revealed an additional level of critical reflection. The author examined the educational ideas of philosophers from the continental tradition, such as Adorno, Arendt, Deleuze, Derrida, and Rancière, which focused on criticising standardisation and creating conditions for the development of critical thinking. While John Dewey and Freire emphasised active student engagement, Adorno and Arendt highlighted the need for critical reflection and creating space for discussion. These approaches, though different in their orientations, complement each other and contribute to a broader foundation for developing educational systems aimed at forming conscious and responsible citizens.

A survey of Ukrainian teachers on the impact of various philosophical schools on students and pedagogical practice showed that constructivism, humanism, pragmatism, and the transformative approach had the greatest significance. Most teachers favoured constructivism, as it promotes active student engagement in the learning process and the development of critical thinking skills. Humanism and pragmatism were identified as philosophical movements that, in the pedagogical context, consider students' individual needs and the practical application of knowledge, which is especially important in the 21st century. Meanwhile, the transformative approach fosters students' rethinking of their own beliefs and the formation of socially responsible individuals. Comparing these results with the study by R. Hung *et al*. (2021), one can see similarities in emphasising the importance of moral education and collective responsibility. The Confucian and Buddhist approaches examined by the authors also highlight the significance of social harmony and self-improvement, aligning with the humanistic values of Ukrainian teachers. The study by S. Sappe (2020) emphasised the importance of combining spiritual and rational aspects of knowledge, complementing the pragmatic approach of Ukrainian teachers, who noted the need to balance academic knowledge with moral principles. This indicates that different cultural philosophical traditions can mutually complement each other in creating a well-rounded educational model.

The analysis of innovations in technical support for educational institutions and pedagogical approaches demonstrated significant interest in integrating technologies and implementing new teaching methods. Technical innovations included digital tools such as virtual laboratories, Google Classroom, Edmodo, and other platforms that enhanced interactivity and student engagement. These technologies can create conditions for more dynamic student involvement in the learning process and help teachers organise education more effectively. Thus, pedagogical innovations focus on using active learning methods, including project-based learning, developing critical thinking through problem-oriented tasks, and individualised approaches that allow for consideration of each student's needs, ensuring interactivity and personal development. The study by P. Jandrić & J. Knox (2022) examined the concept of the post-digital society and its impact on educational practice. Unlike traditional digitalisation, the authors defined technology integration as a background element of education that has already become a familiar part of the learning process. In the post-digital era, it is essential not only to use technology but also to create conditions for the development of critical thinking, creativity, and collaboration. Unlike the presented innovations, which emphasised technological capabilities, the approach of P. Jandrić & J. Knox (2022) contributed to rethinking the role of technology as an integral part of society and the need to adapt educational paradigms to new realities. The reviewed studies primarily focused on the significance of philosophical concepts for the development of educational innovations. However, certain gaps require further investigation, particularly the practical methods for adapting philosophical approaches to real learning conditions and the effectiveness of their implementation in different cultural and social contexts.

Conclusions

The conducted study identified the significant influence of philosophical concepts on the development of innovative pedagogical technologies. The main philosophical schools were examined: constructivism, pragmatism, humanism, existentialism, postmodernism, the transformative approach, and critical pedagogy, which laid the foundation for the creation of existing teaching methods. Each of these concepts uniquely influenced the formation of educational practices and contributed to their adaptation to the demands and needs of 21st-century education. For example, constructivism facilitated the development of collaboration- and interactivity-oriented methods such as project-based and problem-oriented learning, while pragmatism emphasised the importance of the practical application of knowledge and stimulated research and experiment-based learning. Humanism supported the development of individualised educational programs and coaching technologies focused on students' personal growth. Existentialism influenced the implementation of methods that fostered reflection and critical thinking, whereas postmodernism promoted inclusivity and consideration of cultural diversity. The transformative approach introduced practices of rethinking personal experience and values, while critical pedagogy encouraged social consciousness and active civic engagement.

The empirical part of the study included a survey of Ukrainian teachers regarding the influence of philosophical concepts on pedagogical practices and the

implementation of innovative technologies. The results showed that 38% of respondents considered constructivism to be the most influential concept shaping modern teaching approaches, while 34% identified humanism as such a concept. Respondents particularly emphasised that constructivism fostered active student engagement in the learning process, encouraged collaboration, and promoted critical thinking. As for humanism, many educators highlighted the importance of creating a supportive environment that would accommodate the individual needs of each student and contribute to personal development. This indicated teachers' aspiration to ensure active learning and a safe educational environment, aligning with trends in the individualisation of education and the development of critical thinking. Additionally, 25% of teachers noted that pragmatism has a significant impact on educational practices, particularly in the context of the practical application of knowledge and problem-solving in real-world situations. Meanwhile, 20% of respondents mentioned the transformational approach, recognising its role in fostering independent thinking skills and encouraging students to reconsider their own experiences.

The survey results also identified key challenges in implementing innovative technologies. Among these, 31% of teachers cited a lack of material and technical resources, 17% pointed to insufficient teacher training, and 10% mentioned resistance to change from some staff members. At the same time, 45% of teachers believed that philosophical approaches, particularly humanism and constructivism, could help overcome these challenges by creating a favourable environment for both students and educators. The study demonstrated that the implementation of innovative technologies based on philosophical concepts has significant potential for improving the learning process. Further research is needed to explore the integration of critical pedagogy into educational technologies, particularly in digital learning, which could significantly enhance students' social awareness. Research in this area has the potential to contribute to the development of a learning environment more focused on social justice, inclusivity, and active student participation in social processes, which would ultimately have a positive impact on the formation of responsible citizens.

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Філософія освіти як основа розробки інноваційних педагогічних технологій

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■ **Анотація.** Метою статті було розкрити вплив філософських концепцій на можливості впровадження педагогічних інновацій у навчальний процес. Для цього було проаналізовано ряд філософських течій у контексті їхнього впливу на освітні інновації та проведено опитування українських вчителів. Результати проведеного дослідження продемонстрували значний вплив філософських концепцій на розвиток освітніх технологій і педагогічних практик. За результатами опитування українських вчителів, конструктивізм визнали найбільш впливовим напрямком 24,5 % респондентів, тоді як гуманізм обрали 20 %. Прагматизм і екзистенціалізм також були названі важливими філософськими течіями для формування навичок критичного мислення та самостійності учнів. Разом з тим, значна частина респондентів (31 %) відзначила недостатність матеріально-технічних ресурсів як основну перешкоду для впровадження інновацій у навчальний процес. У ході роботи було виявлено, що інтеграція таких інноваційних технологій, як інтерактивні платформи й віртуальні навчальні середовища, може значно покращити якість освіти за умови належного впровадження. Також дослідження показало, що використання інноваційних підходів можу сприяти більш активному залученню учнів до навчального процесу та підвищенню ефективності освітніх практик. Було виявлено необхідність адаптації освітніх технологій до вимог XXI століття, що є важливим для розвитку критичного мислення, творчості та соціальної відповідальності учнів. Інноваційні підходи, засновані на різних філософських концепціях, здатні забезпечити більш якісний освітній процес, сприяти особистісному розвитку та підготовці учнів до викликів XXI століття. Дослідження продемонструвало, що інновації в освіті здатні сприяти переосмисленню підходів до навчання, підвищити адаптивність та релевантність освітнього процесу

■ **Ключові слова:** конструктивізм; інтерактивні платформи; навички критичного мислення; особистісний розвиток учнів; соціальна відповідальність